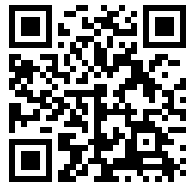

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Mineral Resources

Revised as of July 1, 1974

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30

Mineral Resources

Revised as of July 1, 1974



**CONTAINING
A CODIFICATION OF DOCUMENTS
OF GENERAL APPLICABILITY
AND FUTURE EFFECT
AS OF JULY 1, 1974**

With Ancillaries

**Published by
the Office of the Federal Register
National Archives and Records Service
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**as a Special Edition of
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Cite this Code CFR

thus: 30 CFR 1.1

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The Code of Federal Regulations is a codification of the general and permanent rules published in the Federal Register by the Executive departments and agencies of the Federal Government. The Code is divided into 50 titles which represent broad areas subject to Federal regulation. Each title is divided into Chapters which usually bear the name of the issuing agency. Each Chapter is further subdivided into Parts covering specific regulatory areas.

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Each volume of the Code is revised at least once each calendar year and issued on a quarterly basis approximately as follows:

Title 1 through Title 16.....as of January 1
Title 17 through Title 27.....as of April 1
Title 28 through Title 41.....as of July 1
Title 42 through Title 50.....as of October 1

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FRED J. EMERY

July 1, 1974.

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Bureau of Land Management, Department of the Interior, regulations with respect to mineral lands: 43 CFR, Chapter II, Subchapter C.
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Foreign Trade Statistics, Bureau of the Census, Department of Commerce: 15 CFR Part 30.
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CHAPTER I—MINING ENFORCEMENT AND SAFETY ADMINISTRATION, DEPARTMENT OF THE INTERIOR¹

Former Subchapters A, K, and M were redesignated and transferred to Chapter VI at 39 FR 23997, June 28, 1974.

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- Part*
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- 11 Respiratory Protective Devices; Tests for Permissibility; Fees.
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¹ 39 FR 23997, June 28, 1974.

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SUBCHAPTER A—OFFICIAL EMBLEM

PART 1—MINING ENFORCEMENT AND SAFETY ADMINISTRATION; ESTABLISHMENT AND USE OF OFFICIAL EMBLEM

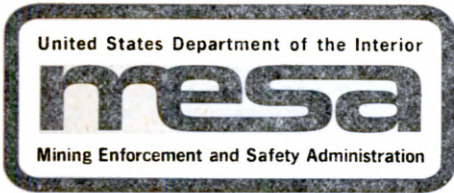
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- 1.1 Official emblem.
- 1.2 Description.
- 1.3 Use of letters and acronym MESA.

AUTHORITY: Sec. 508, Federal Coal Mine Health and Safety Act of 1969; sec. 301 of Title 5, United States Code.

SOURCE: 39 FR 23997, June 28, 1974, unless otherwise noted.

§ 1.1 Official emblem.

The following emblem is established and shall be used as the official emblem of the Mining Enforcement and Safety Administration, except where use of the Departmental Seal is required:



§ 1.2 Description.

The emblem of the Mining Enforcement and Safety Administration is of

contemporary design with the letters and acronym of the Administration delineated as MESA appearing in large letters in the middle of the emblem. Above the letters and acronym appear the words "United States Department of the Interior" and below the letters and acronym appear the words "Mining Enforcement and Safety Administration."

§ 1.3 Use of letters and acronym MESA.

The letters and acronym MESA may be used and substituted for the words "Mining Enforcement and Safety Administration" in correspondence, rules, regulations, and in certificates of approval, approval plates, labels, and markings prescribed by the Mining Enforcement and Safety Administration to designate and denote equipment, devices, and apparatus approved as "permissible" and suitable for use in mines under the applicable Parts of Chapter I of this Title, and in such other documents, publications, and pamphlets, and on signs, clothing and uniforms, and offices of the Administration and at such times and locations as may be deemed appropriate by the Administrator.

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AUTHORITY: Secs. 202(h), 204, and 508, 83 Stat. 783, 764 and 803; 30 U.S.C. 842(h), 844 and 957; secs. 2, 3, and 5, 36 Stat. 370, as amended 37 Stat. 681; 30 U.S.C. 3, 5, and 7; sec. 8(g), 84 Stat. 1600; 29 U.S.C. 657(g).

SOURCE: 37 FR 6244, Mar. 25, 1972, unless otherwise noted.

Subpart A—General Provisions

§ 11.1 Purpose.

The purpose of the regulations contained in this Part 11 is: (a) To establish procedures and prescribe requirements which must be met in filing applications for joint approval by the Bureau of Mines and the National Institute for Occupational Safety and Health of respirators or changes or modifications of approved respirators; (b) to establish a schedule of fees to be charged each applicant for the inspections, examinations, and test-

ing conducted by the Institute under the provisions of this part; (c) to provide for the issuance of certificates of approval or modifications of certificates of approval for respirators which have met the applicable construction, performance, and respiratory protection requirements set forth in this part; and (d) to specify minimum requirements and to prescribe methods to be employed by the Institute and by the applicant in conducting inspections, examinations, and tests to determine the effectiveness of respirators used during entry into or escape from hazardous atmospheres.

[37 FR 6246, Mar. 25, 1972, as amended at 38 FR 6993, Mar. 15, 1973]

§ 11.2 Approved respirators.

(a) Until September 30, 1974, respirators or combination of respirators shall be approved for use in hazardous atmospheres where such respirators or combinations of respirators are maintained in an approved condition and are the same in all respects as those respirators:

(1) For which a certificate of approval has been issued under his part; or

(2) Fabricated, assembled, or built under any approval or any modification thereof, issued by the U.S. Bureau of Mines, Department of the Interior, in accordance with the schedules set forth in this paragraph;

(i) Self-contained Breathing Apparatus, Bureau of Mines Schedules 13, March 5, 1919; 13A, January 21, 1930; 13B, August 12, 1935; 13C, July 9, 1946; 13D, September 22, 1956, and 13E, July 19, 1968.

(ii) Gas Masks, Bureau of Mines Schedule 14F, April 23, 1955.

(iii) Supplied-air Respirators, Bureau of Mines Schedule 19B, April 19, 1955.

(iv) Filter-type Dust, Fume, and Mist Respirators, Bureau of Mines Schedule 21B, January 19, 1965.

(v) Nonemergency Gas Respirators, Bureau of Mines Schedule 23B, August 4, 1959.

(b) After September 30, 1974, respirators or combinations of respirators shall be approved for use in hazardous atmospheres where such respirators or combinations of respirators are maintained in an approved condition and are the same in all respects as those respirators: (1) For which a certificate of approval has been issued under this part; or (2) fabricated, assembled, or built under any approval or any modification thereof issued by the U.S. Bureau of Mines in

accordance with the schedules set forth in paragraph (a) and in accordance with a quality control plan approved under this part: *Provided*, That if a respirator is purchased on or before September 30, 1974 and at the time of purchase was the same in all respects as a respirator approved under a Bureau of Mines Schedule, it shall be approved for use until the following dates:

Until March 31, 1979, for self-contained breathing apparatus approved under Bureau of Mines Schedules 13-13E;

Until March 31, 1977, for gas masks approved under Bureau of Mines Schedule 14F.

Until March 31, 1980, for supplied-air respirators approved under Bureau of Mines Schedule 19B.

Until March 31, 1976, for filter-type dust, fume, and mist respirators approved under Bureau of Mines Schedule 21B and for non-emergency gas respirators approved under Bureau of Mines Schedule 23B.

(c) After March 31, 1975, respirators or combinations of respirators shall be approved for use in hazardous atmospheres where such respirators or combinations of respirators are maintained in an approved condition and are the same in all respects as those respirators for which a certificate of approval has been issued under this part: *Provided*, That if a respirator is purchased on or before March 31, 1975, and at the time of purchase was the same in all respects as a respirator approved under a Bureau of Mines Schedule and was manufactured pursuant to a quality control plan approved under this part, it shall be approved for use until the following dates:

Until March 31, 1979, for self-contained breathing apparatus approved under Bureau of Mines Schedule 13-13E;

Until March 31, 1977, for gas masks approved under Bureau of Mines Schedule 14F;

Until March 31, 1980, for supplied-air respirators approved under Bureau of Mines Schedule 19B;

Until March 31, 1976, for filter-type dust, fume, and mist respirators approved under Bureau of Mines Schedule 21B and for non-emergency gas respirators approved under Bureau of Mines Schedule 23B.

[39 FR 12864, Apr. 9, 1974]

§ 11.2-1 Selection, fit, use, and maintenance of approved respirators.

In order to insure the maximum amount of respiratory protection, approved respirators shall be selected, fitted, used, and maintained in accordance with the provisions of the American

National Standard Practices for Respiratory Protection, Z88.2, obtainable from American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.

§ 11.3 Definitions.

As used in this part—

(a) "Air Contamination Level" means the standards of contaminant levels prescribed by the Secretary of Labor in accordance with the provisions of the Occupational Safety and Health Act of 1970 (Public Law 91-596; 84 Stat. 1590).

(b) "Applicant" means an individual, partnership, company, corporation, association, or other organization that designs, manufactures, assembles, or controls the assembly of a respirator and who seeks to obtain a certificate of approval for such respirator.

(c) "Approval" means a certificate or formal document issued by the Bureau and the Institute stating that an individual respirator or combination of respirators has met the minimum requirements of this Part 11, and that the applicant is authorized to use and attach an approval label to any respirator, respirator container, or instruction card for any respirator manufactured or assembled in conformance with the plans and specifications upon which the approval was based, as evidence of such approval.

(d) "Approved" means conforming to the minimum requirements of this Part 11.

(e) "Auxiliary equipment" means a self-contained breathing apparatus, the use of which is limited in underground mine rescue and recovery operations to situations where the wearer has ready access to fresh air and at least one crew equipped with approved self-contained breathing apparatus of 2 hours or longer rating, is in reserve at a fresh-air base.

(f) "Bureau" means the U.S. Bureau of Mines, Department of the Interior.

(g) "Compressed breathing gas" means oxygen or air stored in a compressed state and supplied to the wearer in gaseous form.

(h) "Concentration limits for radionuclides" means the concentration limits set forth in Appendix B, Table 1, Column I of Title 10 CFR Part 20 by the Atomic Energy Commission.

(i) "dBA" means sound pressure levels in decibels, as measured with the A-weighted network of a standard sound level meter using slow response.

(j) "DOP" means a homogenous liquid aerosol, having a particle diameter of 0.3 micrometer, which is generated by vaporization and condensation of dioctyl phthalate.

(k) "Dust" means a solid mechanically produced particle with a size ranging from submicroscopic to macroscopic.

(l) Respirators "for entry into and escape from" means respiratory devices providing protection during entry into and escape from hazardous atmospheres.

(m) Respirators "for escape only" means respiratory devices providing protection only during escape from hazardous atmospheres.

(n) A "facepiece" or "mouthpiece" is a respirator component designed to provide a gas-tight or dust-tight fit with the face and may include headbands, valves, and connections for canisters, cartridges, filters, or respirable gas source.

(o) "Final inspection" means that activity carried out on a product after all manufacturing and assembly operations are completed to insure completeness and adherence to performance or other specifications, including satisfactory appearance.

(p) "Fume" means a solid condensation particle, generally less than 1 micrometer in diameter.

(q) "Gas" means an aeriform fluid which is in a gaseous state at ordinary temperature and pressure.

(r) "Hazardous atmosphere" means: (1) Any atmosphere containing a toxic or disease producing gas, vapor, dust, fume, mist, or pesticide, either immediately or not immediately dangerous to life or health; or (2) any oxygen-deficient atmosphere.

(s) A "hood" or "helmet" is a respirator component which covers the wearer's head and neck, or head, neck, and shoulders, and is supplied with incoming respirable air for the wearer to breathe. It may include a headharness and connection for a breathing tube.

(t) "Immediately dangerous to life or health" means conditions that pose an immediate threat to life or health or conditions that pose an immediate threat of severe exposure to contaminants, such as radioactive materials, which are likely to have adverse cumulative or delayed effects on health.

(u) "Incoming inspection" means the activity of receiving, examining, and accepting only those materials and parts whose quality conforms to specification requirements.

(v) "In-process inspection" means the control of products at the source of production and at each step of the manufacturing process, so that departures from specifications can be corrected before defective components or materials are assembled into the finished product.

(w) "Institute" means the National Institute for Occupational Safety and Health, Department of Health, Education, and Welfare.

(x) "Liquefied breathing gas" means oxygen or air stored in liquid form and supplied to the wearer in a gaseous form.

(y) "Mist" means a liquid condensation particle with a size ranging from submicroscopic to macroscopic.

(z) "Not immediately dangerous to life or health" means any hazardous atmosphere which may produce physical discomfort immediately, chronic poisoning after repeated exposure, or acute adverse physiological symptoms after prolonged exposure.

(aa) "Oxygen deficient atmosphere" means an atmosphere which contains an oxygen partial pressure of less than 148 millimeters of mercury (19.5 percent by volume at sea level).

(bb) "Pesticide" means (1) any substance or mixture of substances (including solvents and impurities) intended to prevent, destroy, repel, or mitigate any insect, rodent, nematode, fungus, weed, or other form of plant or animal life or virus, and (2) any substance or mixture of substances (including solvents and impurities) intended for use as a plant regulator, defoliant, or desiccant, as defined in the Federal Insecticide, Fungicide, and Rodenticide Act of 1947, as amended (7 U.S.C. 135-135k), excluding fumigants which are applied as gases or vapors or in a solid or liquid form as pellets or poured liquids for subsequent release as gases or vapors.

(cc) "Powered air-purifying respirator" means a device equipped with a facepiece, hood, or helmet, breathing tube, canister, cartridge, filter, canister with filter, or cartridge with filter, and a blower.

(dd) "Radionuclide" means an atom identified by the constitution of its nucleus (specified by the number of protons Z , number of neutrons N , and energy, or, alternatively, by the atomic number Z , mass number $A=(N+Z)$, and atomic mass) which exists for a measurable time; decays or disintegrates spontaneously, emits radiation, and results in the formation of new nuclides.

(ee) "Respirable dust" means a dust particle aerodynamically capable of reaching the terminal airways of the lung.

(ff) "Respirator" means any device designed to provide the wearer with respiratory protection against inhalation of a hazardous atmosphere.

(gg) "Smoke" means the products of incomplete combustion of organic substances in the form of solid and liquid particles and gaseous products in air, usually of sufficient concentration to perceptibly obscure vision.

(hh) "Testing and Certification Laboratory" means the Testing and Certification Laboratory, National Institute for Occupational Safety and Health, 944 Chestnut Ridge Road, Morgantown, W V 26505.

(ii) "Vapor" means the gaseous state of a substance that is solid or liquid at ordinary temperature and pressure.

[37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6993, Mar. 15, 1973]

§ 11.4 Incorporation by reference.

In accordance with 5 U.S.C. 552(a) (1), the technical publications to which reference is made in this Part 11, and which have been prepared by organizations other than the Bureau or the Institute, are hereby incorporated by reference and made a part hereof. The incorporated technical publications are available for examination at Approval and Testing, Health and Safety Technical Support Center, Bureau of Mines, 4800 Forbes Avenue, Pittsburgh, PA 15213, and at the Testing and Certification Laboratory. In addition, copies of the American National Standards Institute Standard Z88.2-1969, "Practices for Respiratory Protection," are available for examination in every Coal Mine Health and Safety District and Subdistrict Office.

[38 FR 6993, Mar. 15, 1973]

Subpart B—Application for Approval

§ 11.10 Application procedures.

(a) Inspection, examination, and testing leading to the approval of the types of respirators classified in Subpart F of this part shall be undertaken by the Institute only pursuant to written applications which meet the minimum requirements set forth in this Subpart B.

(b) Applications shall be submitted to the Testing and Certification Laboratory, and shall be accompanied by a check,

bank draft, or money order in the amount specified in Subpart C of this part payable to the order of the National Institute for Occupational Safety and Health.

(c) Except as provided in § 11.64 and in paragraph (e) of this section, the examination, inspection, and testing of all respirators shall be conducted by the Testing and Certification Laboratory.

(d) Applicants, manufacturers, or their representatives may visit or communicate with the Testing and Certification Laboratory in order to discuss the requirements for approval of any respirator or the proposed designs thereof. No charge shall be made for such consultation and no written report shall be issued to applicants, manufacturers, or their representatives by the Institute as a result of such consultation.

(e) Inspection, examination, and testing of electrical components of respirators that are required to be permissible shall be tested in accordance with Part 18 of this chapter, and such components shall be submitted to Approval and Testing, Bureau of Mines, 4800 Forbes Avenue, Pittsburgh, PA 15213.

[38 FR 6993, Mar. 15, 1973]

§ 11.11 Contents of application.

(a) Each application for approval shall contain a complete written description of the respirator for which approval is requested together with drawings and specifications (and lists thereof) showing full details of construction of the respirator and of the materials used. Drawings and specifications (and lists thereof) shall be submitted in triplicate.

(b) Drawings shall be titled, numbered, and dated; any revision dates shall be shown on the drawings, and the purpose of each revision being sought shall be shown on the drawing or described on an attachment to the drawing to which it applies.

(c) Each application for approval shall contain a proposed plan for quality control which meets the minimum requirements set forth in Subpart E of this part.

(d) Each application shall contain a statement that the respirator has been pretested by the applicant as prescribed in § 11.64, and shall include the results of such tests.

(e) Each application for approval shall contain a statement that the respirator and component parts submitted for approval are either (1) prototypes, or (2) made on regular production tooling, with no operation included which will not be

incorporated in regular production processing.

§ 11.12 Delivery of respirators and components by applicant; requirements.

(a) Each applicant shall, when an application is filed pursuant to § 11.10, be advised by the Institute of the total number of respirators and component parts required for testing.

(b) The applicant shall deliver, at his own expense, the number of completely assembled respirators and component parts required for testing, to Testing and Certification Laboratory.

(c) Respirators and component parts submitted for approval must be made from materials specified in the application.

(d) One completely assembled respirator approved under the provisions of this part may be retained by the Institute as a laboratory exhibit, the remaining respirators may be returned to the applicant at his own expense, upon written request within 30 days after notice of approval. If no such request is made, the respirators will be disposed of by the Institute in such manner as it deems appropriate.

(e) Where a respirator fails to meet the requirements for approval set forth in this part, all respirators and components delivered in accordance with this section may be returned to the applicant at his own expense, upon written request within 30 days after notice of disapproval. If no such request is made, the respirators will be disposed of by the Institute in such manner as it deems appropriate.

[37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6993, Mar. 15, 1973]

Subpart C—Fees

§ 11.20 Examination, inspection and testing of complete respirator assemblies; fees.

Except as provided in § 11.22, the following fees shall be charged by the Institute for the examination, inspection and testing of complete respirator assemblies:

- (a) Self-contained breathing apparatus—
 - (1) Entry and escape, 1 hour or more ----- \$3,500
 - (2) Entry and escape, less than 1 hour ----- 2,750
 - (3) Escape only ----- 2,000
- (b) Gas masks, including pesticide gas masks—

- (1) Single hazard ----- 1,100
- (2) Type N ----- 4,100
- (c) Supplied-air respirators ----- 750
- (d) Dust, fume and mist respirators—
 - (1) Single particulate hazard having an Air Contamination Level more than 0.05 mg./m.³ or 2 million particles per cubic foot ----- 500
 - (2) Combination particulate hazards having an Air Contamination Level more than 0.05 mg./m.³ or 2 million particles per cubic foot ----- 750
 - (3) Particulate hazards having an Air Contamination Level less than 0.05 mg./m.³ or 2 million particles per cubic foot, radon daughters ----- 1,250
 - (4) All dusts, fumes and mists ----- 2,000
 - (e) Chemical cartridge respirators ----- 1,150
 - (f) Paint spray respirators ----- 1,600
 - (g) Pesticide respirators ----- 1,600

[37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6993, Mar. 15, 1973]

§ 11.21 Examination, inspection and testing of respirator components or subassemblies; fees.

Except as provided in § 11.22, the following fees shall be charged by the Institute for the examination, inspection and testing of the individual respirator components or subassemblies:

- (a) Facepieces ----- \$450
- (b) Canisters ----- 900
- (c) Cartridges ----- 600
- (d) Filters ----- 650
- (e) Hoses ----- 250
- (f) Blowers ----- 250
- (g) Harnesses ----- 100

[37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6993, Mar. 15, 1973]

§ 11.22 Unlisted fees; additional fees; payment by applicant prior to approval.

(a) Applications for the examination, inspection and testing of complete respirator assemblies which are not listed in § 11.20, or for the examination, inspection, and testing of respirator components or subassemblies which are not listed in § 11.21, shall be accompanied by the following deposits:

- (1) Complete respirator assembly ----- \$1,500
- (2) Each individual component or subassembly ----- 500

The Bureau and the Institute reserve the right to conduct any examination, inspection or test they deem necessary to determine the quality and effective-

ness of any listed or unlisted respirator assembly or respirator component or subassembly, and to assess the cost of such examinations, inspections, or tests against the applicant prior to the issuance of any approval for such assembly, component, or subassembly.

(c) The fees charged for the examination, inspection, and testing of unlisted respirator assemblies, unlisted individual respirator components or subassemblies, and for the additional examination, inspection, and testing of listed respirator assemblies and components or subassemblies shall be at the rate of \$100 per day for each man-day required to be expended by the Institute.

(d) Upon completion of all examinations, inspections, and tests of unlisted respirator assemblies or components, or following the completion of any additional examination, inspections, or tests of listed assemblies, or components or subassemblies, including retesting subsequent to disapproval, the Institute shall advise the applicant in writing of the total cost assessed and the additional amount, if any, which must be paid to the Institute as a condition of approval.

(e) In the event the amount assessed by the Institute for unlisted assemblies, or components or subassemblies is less than the amount of the deposit submitted in accordance with paragraph (a) of this section, the Institute shall refund the overpayment upon the issuance of any approval or notice of disapproval.

[37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6993, Mar. 15, 1973]

Subpart D—Approval and Disapproval

§ 11.30 Certificates of approval; scope of approval.

(a) The Bureau and the Institute shall issue certificates of approval pursuant to the provisions of this subpart only for individual, completely assembled respirators which have been examined, inspected, and tested, and which meet the minimum requirements set forth in Subparts H through M of this part, as applicable.

(b) The Bureau and the Institute will not issue certificates of approval for any respirator component or for any respirator subassembly.

(c) The Bureau and the Institute shall not issue an informal notification of approval. However, if the application for approval, submitted in accordance

with § 11.11, states that the submitted respirator and component parts are only prototypes, the Institute will examine, inspect, and test such respirator and component parts in accordance with the provisions of this Part 11. If, upon completion of such examinations, inspections and tests, it is found that the prototype meets the minimum requirements set forth in this part, the Bureau and the Institute may inform the applicant, in writing, of the results of the examinations, inspections, and tests, and may require him to resubmit respirators and component parts made on regular production tooling, with no operations included which will not be incorporated in regular production processing, for further examination, inspection, and testing, prior to issuance of the certificate of approval.

(d) Applicants required to resubmit respirators and component parts made on regular production tooling, with no operation included which will not be incorporated in regular production processing, shall be charged fees in accordance with Subpart C of this part.

[37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6994, Mar. 15, 1973]

§ 11.31 Certificates of approval; contents.

(a) The certificate of approval shall contain a classification and a description of the respirator or combination of respirators for which it is issued, as provided in this part.

(b) The certificate of approval shall specifically set forth any restrictions or limitations on the respirator's use in hazardous atmospheres.

(c) Each certificate of approval shall be accompanied by the drawings and specifications (and lists thereof) submitted by the applicant in accordance with § 11.11. These drawings and specifications shall be incorporated by reference in the certificate of approval, and shall be maintained by the applicant. The drawings and specifications listed in each certificate of approval shall set forth in detail the design and construction requirements which shall be met by the applicant during commercial production of the respirator.

(d) Each certificate of approval shall be accompanied by a reproduction of the approval label design to be employed by the applicant with each approved respirator, as provided in § 11.33.

(e) No test data or specific laboratory findings will accompany any certificate of approval, however, the Bureau or the Institute will release pertinent test data and specific findings upon written request by the applicant, or as required by statute or regulation.

(f) Each certificate of approval shall also contain the approved quality control plan as specified in § 11.42.

[37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6994, Mar. 15, 1973]

§ 11.32 Notice of disapproval.

(a) If, upon the completion of the examinations, inspections, and tests required to be conducted in accordance with the provisions of this part, it is found that the respirator does not meet the minimum requirements set forth in this part, the Bureau and the Institute shall issue a written notice of disapproval to the applicant.

(b) Each notice of disapproval shall be accompanied by all pertinent data or findings with respect to the defects of the respirator for which approval was sought with a view to the possible correction of any such defects.

(c) The Bureau and the Institute shall not disclose, except to the applicant or as required by statute or regulation, any data, findings, or other information with respect to any respirator for which a notice of disapproval is issued.

§ 11.33 Approval labels and markings; approval of contents; use.

(a) Full-scale reproductions of approval labels and markings, and a sketch or description of the method of application and position on the harness, container, canister, cartridge, filter, or other component, together with instructions for the use and maintenance of the respirator shall be submitted to the Bureau and the Institute for approval.

(b) Approval labels shall bear the seals of the U.S. Bureau of Mines and the Department of Health, Education, and Welfare, the applicant's name and address, an approval number assigned by the Institute, and, where appropriate, restrictions or limitations placed upon the use of the respirator by the Bureau and the Institute. The approval number assigned by the Institute shall be designated by the prefix TC and a serial number.

(c) The Bureau and the Institute shall, where necessary, notify the applicant

when additional labels, markings, or instructions will be required.

(d) Approval labels and markings shall only be used by the applicant to whom they were issued.

(e) Legible reproductions or abbreviated forms of the label approved by the Bureau and the Institute for use on each respirator shall be attached to or printed at the following locations:

| Respirator type | Label type | Location |
|--|--------------|--|
| Self-contained breathing apparatus. | Entire..... | Harness assembly and canister (where applicable). |
| Gas mask..... | Entire..... | Mask container and canister. |
| Supplied-air respirator. | Entire..... | Respirator container or instruction card. |
| Dust, fume, and mist respirator. | Entire..... | Respirator container and filter container. |
| | Abbreviated. | Filters. |
| Chemical-cartridge respirator, including paint spray respirator. | Entire..... | Respirator container, cartridge container, and filter containers (where applicable). |
| | Abbreviated. | Cartridges and filter containers. |
| Pesticide respirator. | Entire..... | Respirator container, and cartridge and filter containers. |
| | Abbreviated. | Cartridges and filters. |

(f) The use of any Bureau and Institute approval label obligates the applicant to whom it is issued to maintain or cause to be maintained the approved quality control sampling schedule and the acceptable quality level for each characteristic tested, and to assure that it is manufactured according to the drawings and specifications upon which the certificate of approval is based.

(g) Each respirator, respirator component, and respirator container shall, as required by the Bureau and the Institute to assure quality control and proper use of the respirator, be labeled distinctly to show the name of the applicant, and the name and letters or numbers by which the respirator or respirator component is designated for trade purposes, and the lot number, serial number, or approximate date of manufacture.

[37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6994, Mar. 15, 1973]

§ 11.34 Revocation of certificates of approval.

The Bureau and the Institute reserve the right to jointly revoke, for cause, any

certificate of approval issued pursuant to the provisions of this part. Such causes include, but are not limited to, misuse of approval labels and markings, misleading advertising, and failure to maintain or cause to be maintained the quality control requirements of the certificate of approval.

[37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6994, Mar. 15, 1973]

§ 11.35 Changes or modification of approved respirators; issuance of modification of certificate of approval.

(a) Each applicant may, if he desires to change any feature of an approved respirator, request a modification of the original certificate of approval issued by the Bureau and the Institute for such respirator by filing an application for such modification in accordance with the provisions of this section.

(b) Applications shall be submitted as for an original certificate of approval, with a request for a modification of the existing certificate to cover any proposed change.

(c) The application shall be accompanied by appropriate drawings and specifications, and by a proposed quality control plan which meets the requirements of Subpart E of this part.

(d) The application for modification, together with the accompanying material, shall be examined by the Institute to determine whether testing will be required.

(e) The Institute shall inform the applicant of the fee required for any additional testing and the applicant will be charged for the actual cost of any examination, inspection, or test required, and such fees shall be submitted in accordance with the provisions of Subpart C of this part.

(f) If the proposed change or modification meets the requirements of this part, a formal certificate of modification will be issued, accompanied, where necessary, by a list of new and revised drawings and specifications covering the change(s) and reproductions of revised approval labels.

[37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6993, Mar. 15, 1973]

§ 11.36 Delivery of changed or modified approved respirator.

An approved respirator for which a formal certificate of modification has been issued shall be delivered, with proper markings and containers, by the applicant to the Testing and Certification

Laboratory, as soon as it is commercially produced.

[37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6993, Mar. 15, 1973]

Subpart E—Quality Control

§ 11.40 Quality control plans, filing requirements.

As a part of each application for approval or modification of approval submitted pursuant to this part, each applicant shall file with the Bureau and the Institute a proposed quality control plan which shall be designed to assure the quality of respiratory protection provided by the respirator for which approval is sought.

§ 11.41 Quality control plans; contents.

(a) Each quality control plan shall contain provisions for the management of quality, including: (1) Requirements for the production of quality data and the use of quality control records; (2) control of engineering drawings, documentations, and changes; (3) control and calibration of measuring and test equipment; (4) control of purchased material to include incoming inspection; (5) lot identification, control of processes, manufacturing, fabrication, and assembly work conducted in the applicant's plant; (6) audit of final inspection of the completed product; and, (7) the organizational structure necessary to carry out these provisions.

(b) Each provision for incoming and final inspection in the quality control plan shall include a procedure for the selection of a sample of respirators and the components thereof for testing, in accordance with procedures set forth in Military Standard MIL-STD-105D, "Sampling Procedures and Tables for Inspection by Attributes," or Military Standard MIL-STD-414, "Sampling Procedures and Tables for Inspection by Variables for Percent Defective," or an approved equivalent sampling procedure, or an approved combination of sampling procedures. Incoming bulk raw material inspection or verification of specification, and in-process inspection shall be sufficient to ensure control of product quality through the manufacturing cycle.

(c) The sampling procedure shall include a list of the characteristics to be tested by the applicant or his agent.

(d) The characteristics listed in accordance with paragraph (c) of this section shall be classified according to the

potential effect of such defect and grouped into the following classes:

(1) *Critical*. A defect that judgment and experience indicate is likely to result in a condition immediately hazardous to life or health for individuals using or depending upon the respirator;

(2) *Major A*. A defect, other than critical, that is likely to result in failure to the degree that the respirator does not provide any respiratory protection, or a defect that reduces protection and is not detectable by the user;

(3) *Major B*. A defect, other than Major A or critical, that is likely to result in reduced respiratory protection, and is detectable by the user; and

(4) *Minor*. A defect that is not likely to materially reduce the usability of the respirator for its intended purpose, or a defect that is a departure from established standards and has little bearing on the effective use or operation of the respirator.

(e) The quality control inspection test method to be used by the applicant or his agent for each characteristic required to be tested shall be described in detail.

(f) Each item manufactured shall be 100 percent inspected for defects in all critical characteristics and all defective items shall be rejected.

(g) The Acceptable Quality Level (AQL) for each major or minor defect so classified by the applicant shall be:

(1) *Major A*. 1.0 percent;

(2) *Major B*. 2.5 percent; and

(3) *Minor*. 4.0 percent.

(h) Except as provided in paragraph (i) of this section, inspection level II as described in MIL-STD-105D, or inspection level IV as described in MIL-STD-414, shall be used for major and minor characteristics and 100 percent inspection for critical characteristics.

(i) Subject to the approval of the Bureau and the Institute, where the quality control plan provisions for raw material, processes, manufacturing, and fabrication inspection are adequate to insure control of finished article quality, destructive testing of finished articles may be conducted at a lower level of inspection than that specified in paragraph (h) of this section.

§ 11.42 Proposed quality control plans; approval by the Bureau and the Institute.

(a) Each proposed quality control plan submitted in accordance with this

subpart shall be reviewed by the Bureau and the Institute to determine its effectiveness in insuring the quality of respiratory protection provided by the respirator for which an approval is sought.

(b) If the Bureau and the Institute determine that the proposed quality control plan submitted by the applicant will not insure adequate quality control, the Bureau and the Institute shall require the applicant to modify the procedures and testing requirements of the plan prior to approval of the plan and issuance of any certificate of approval.

(c) Approved quality control plans shall constitute a part of and be incorporated into any certificate of approval issued by the Bureau and the Institute, and compliance with such plans by the applicant shall be a condition of approval.

§ 11.43 Quality control records; review by the Bureau and the Institute; revocation of approval.

(a) The applicant shall keep quality control inspection records sufficient to carry out the procedures required in MIL-STD-105D or MIL-STD-414, or an approved equivalent sampling procedure.

(b) The Bureau and the Institute reserve the right to have their representatives inspect the applicant's quality control test methods, equipment, and records, and to interview any employee or agent of the applicant in regard to quality control test methods, equipment, and records.

(c) The Bureau and the Institute reserve the right to jointly revoke, for cause, any certificate of approval where it is found that the applicant's quality control test methods, equipment, or records do not insure effective quality control over the respirator for which the approval was issued.

Subpart F—Classification of Approved Respirators; Scope of Approval; Atmospheric Hazards; Service Time

§ 11.50 Types of respirators to be approved; scope of approval.

Approvals shall be issued for the types of respirators which have been classified pursuant to this Subpart F, have been inspected, examined and tested by the Institute, in accordance with the provisions of Subparts G through M of this part, and have been found to provide respiratory protection for fixed periods

of time against the hazards specified in such approval.

[37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6993, Mar. 15, 1973]

§ 11.51 Entry and escape, or escape only; classification.

Respirators described in Subparts H through M of this part shall be classified for use as follows:

(a) *Entry and escape.* Respirators designed and approved for use during entry into a hazardous atmosphere, and for escape from a hazardous atmosphere; or,

(b) *Escape only.* Respirators designed and approved for use only during escape from a hazardous atmosphere.

§ 11.52 Respiratory hazards; classification.

Respirators described in Subparts H through M of this part shall be classified as approved for use against any or all of the following respiratory hazards:

(a) Oxygen deficiency;

(b) Gases and vapors;

(c) Particles, including dusts, fumes and mists; and

(d) Pesticides.

§ 11.53 Service time; classification.

(a) Respirators described in Subparts H through M of this part shall be classified, where applicable, as approved for use during the following prescribed service times:

(1) Four hours;

(2) Three hours;

(3) Two hours;

(4) One hour;

(5) Forty-five minutes;

(6) Thirty minutes;

(7) Fifteen minutes;

(8) Ten minutes;

(9) Five minutes;

(10) Three minutes.

(b) Other service times may be prescribed by the Institute.

[37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6993, Mar. 15, 1973]

Subpart G—General Construction and Performance Requirements

§ 11.60 Construction and performance requirements; general.

(a) The Bureau and the Institute shall issue approvals for the types of respirators described in Subparts H through M of this part which have met the minimum requirements set forth for such respirators in this Part 11.

(b) In addition to the types of respirators specified in Subparts H through M, the Bureau and the Institute shall issue approvals for other respiratory protective devices not specifically described in this Part 11 subject to such additional requirements as may be imposed in accordance with § 11.63(c).

§ 11.61 General construction requirements.

(a) Respirators will not be accepted by the Institute for examination, inspection and testing unless they are designed on sound engineering and scientific principles, constructed of suitable materials and evidence good workmanship.

(b) Respirator components which come into contact with the wearer's skin shall be made of nonirritating materials.

(c) Components replaced during or after use shall be constructed of materials which will not be damaged by normal handling.

(d) Mouthpieces, hoods, helmets, and facepieces, except those employed in single-use respirators, shall be constructed of materials which will withstand repeated disinfection as recommended by the applicant in his instructions for use of the device.

(e) The components of each respirator approved by the Bureau and the Institute for use where permissibility is required shall meet the requirements for permissibility and intrinsic safety set forth in Part 18, Subchapter D of this chapter (Bureau of Mines Schedule 2G). [37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6993, Mar. 15, 1973]

§ 11.62 Component parts; minimum requirements.

(a) The component parts of each respirator shall be:

(1) Designed, constructed, and fitted to insure against creation of any hazard to the wearer;

(2) Assembled to permit easy access for inspection and repair of functional parts; and

(3) Assembled to permit easy access to parts which require periodic cleaning and disinfecting.

(b) Replacement parts shall be designed and constructed to permit easy installation and to maintain the effectiveness of the respirator.

§ 11.63 Test requirements; general.

(a) Each respirator and respirator component shall when tested by the

applicant and by the Institute, meet the applicable requirements set forth in Subparts H through M of this part.

(b) Where a combination respirator is assembled from two or more types of respirators, as described in this part, each of the individual respirator types which have been combined shall, as applicable, meet the minimum requirements for such respirators set forth in Subparts H through M of this part, and such combination respirators, except as specified in § 11.70(b)(2), will be classified by the type of respirator in the combination which provides the least protection to the user.

(c) In addition to the minimum requirements set forth in Subparts H through M of this part, the Bureau and the Institute reserve the right to require, as a further condition of approval, any additional requirements deemed necessary to establish the quality, effectiveness, and safety of any respirator used as protection against hazardous atmospheres.

(d) Where it is determined after receipt of an application that additional requirements will be required for approval, the Institute will notify the applicant in writing of these additional requirements, and necessary examinations, inspections, or tests, stating generally the reasons for such requirements, examinations, inspections, or tests.

[37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6993, Mar. 15, 1973]

§ 11.64 Pretesting by applicant; approval of test methods.

(a) Prior to making or filing any application for approval or modification of approval, the applicant shall conduct, or cause to be conducted, examinations, inspections, and tests of respirator performance which are equal to or exceed the severity of those prescribed in this part.

(b) With the application, the applicant shall provide a statement to the Institute showing the types and results of the examinations, inspections, and tests required under paragraph (a) of this section and state that the respirator meets the minimum requirements of Subparts H through M of this part, as applicable. Complete examination, inspection, and test data shall be retained on file by the applicant and be submitted, upon request, to the Institute.

(c) The Institute may, upon written request by the applicant, provide draw-

ings and descriptions of its test equipment and otherwise assist the applicant in establishing a test laboratory or securing the services of a testing agency.

(d) No approval will be issued until the Institute has validated the applicant's test results.

[37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6993, Mar. 15, 1973]

§ 11.65 Conduct of examinations, inspections, and tests by the Bureau and the Institute; assistance by applicant; observers; recorded data; public demonstrations.

(a) All examinations, inspections, and tests conducted pursuant to Subparts H through M of this part will be under the sole direction and control of the Bureau and the Institute.

(b) The Bureau and the Institute may, as a condition of approval, require the assistance of the applicant or agents of the applicant during the assembly, disassembly, or preparation of any respirator or respirator component prior to testing or in the operation of such equipment during testing.

(c) Only Bureau and Institute personnel, persons assisting the Bureau pursuant to paragraph (b) of this section, and such other persons as are requested by the Bureau, the Institute, or the applicant to be observers, shall be present during any examination, inspection, or test conducted prior to the issuance of an approval by the Bureau and the Institute for the equipment under consideration.

(d) The Bureau and the Institute shall hold as confidential any analyses, drawings, specifications, or materials submitted by the applicant and shall not disclose any principles or patentable features of such equipment, except as required by statute or regulation.

(e) As a condition of each approval issued for any respirator, the Bureau and the Institute reserve the right, following the issuance of such approval, to conduct such public tests and demonstrations of the approved respiratory equipment as is deemed appropriate.

§ 11.66 Withdrawal of applications; refund of fees.

(a) Any applicant may, upon a written request submitted to the Bureau or the Institute, withdraw any application for approval of any respirator.

(b) Upon receipt of a written request for the withdrawal of an application, the Institute shall determine the total man-

days expended and the amount due for services already performed during the course of any examinations, inspections, or tests conducted pursuant to such application. The total amount due shall be determined in accordance with the provisions of § 11.22 and assessed against the fees submitted by the applicant. If the total amount assessed is less than the fees submitted, the Institute shall refund the balance together with a statement of the charges made for services rendered. [37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6993, Mar. 16, 1973]

Subpart H—Self-Contained Breathing Apparatus

§ 11.70 Self-contained breathing apparatus; description.

(a) Self-contained breathing apparatus, including all completely assembled, portable, self-contained devices designed for use as respiratory protection during entry into and escape from or escape only from hazardous atmospheres, are described as follows:

(1) *Closed-circuit apparatus.* An apparatus of the type in which the exhalation is rebreathed by the wearer after the carbon dioxide has been effectively removed and a suitable oxygen concentration restored from sources composed of:

- (i) Compressed oxygen; or
- (ii) Chemical oxygen; or
- (iii) Liquid-oxygen.

(2) *Open-circuit apparatus.* An apparatus of the following types from which exhalation is vented to the atmosphere and not rebreathed:

(i) *Demand-type apparatus.* An apparatus in which the pressure inside the facepiece in relation to the immediate environment is positive during exhalation and negative during inhalation.

(ii) *Pressure-demand-type apparatus.* An apparatus in which the pressure inside the facepiece in relation to the immediate environment is positive during both inhalation and exhalation.

(b) The following respirators may be classified as designed and approved for use during emergency entry into a hazardous atmosphere: A combination respirator which includes a self-contained breathing apparatus and a Type "C" or Type "CE" supplied air respirator, where (1) the self-contained breathing apparatus is classified for 3-, 5-, or 10-minute service time and the air line supply is used during entry, or (2) the self-contained breathing apparatus is classi-

fied for 15 minutes or longer service time and not more than 20 percent of the rated capacity of the air supply is used during entry.

(c) Self-contained breathing apparatus classified for less than 1 hour service time will not be approved for use during underground mine rescue and recovery operations except as auxiliary equipment.

(d) Self-contained breathing apparatus classified for less than 30 minutes' service time will not be approved for use as auxiliary equipment during underground mine rescue and recovery operations.

§ 11.71 Self-contained breathing apparatus; required components.

(a) Each self-contained breathing apparatus described in § 11.70 shall, where its design requires, contain the following component parts:

- (1) Facepiece or mouthpiece, and noseclip;
- (2) Respirable breathing gas container;
- (3) Supply of respirable breathing gas;
- (4) Gas pressure or liquid level gages;
- (5) Timer;
- (6) Remaining service life indicator or warning device;
- (7) Hand-operated valves;
- (8) Breathing bag;
- (9) Safety relief valve or safety relief system; and
- (10) Harness.

(b) The components of each self-contained breathing apparatus shall meet the minimum construction requirements set forth in Subpart G of this part.

§ 11.72 Breathing tubes; minimum requirements.

(a) Flexible breathing tubes used in conjunction with breathing apparatus shall be designed and constructed to prevent:

- (1) Restriction of free head movement;
- (2) Disturbance of the fit of facepieces and mouthpieces;
- (3) Interference with the wearer's activities; and,
- (4) Shutoff of airflow due to kinking, or from chin or arm pressure.

§ 11.73 Harnesses; installation and construction; minimum requirements.

(a) Each apparatus shall, where necessary, be equipped with a suitable

harness designed and constructed to hold the components of the apparatus in position against the wearer's body.

(b) Harnesses shall be designed and constructed to permit easy removal and replacement of apparatus parts, and, where applicable, provide for holding a full facepiece in the ready position when not in use.

§ 11.74 Apparatus containers; minimum requirements.

(a) Apparatus may be equipped with a substantial, durable container bearing markings which show the applicant's name, the type and commercial designation of the respirator it contains, and all appropriate approval labels.

(b) Containers supplied by the applicant for carrying or storing self-contained breathing apparatus will be inspected, examined, and tested as components of the respirator for which approval is sought.

(c) Containers for self-contained breathing apparatus shall be designed and constructed to permit easy removal of the apparatus.

§ 11.75 Half-mask facepieces, full facepieces, mouthpieces; fit; minimum requirements.

(a) Half-mask facepieces and full facepieces shall be designed and constructed to fit persons with various facial shapes and sizes, either (1) by providing more than one facepiece size, or (2) by providing one facepiece size which will fit varying facial shapes and sizes.

(b) Full facepieces shall provide for the optional use of corrective spectacles or lenses which shall not reduce the respiratory protective qualities of the apparatus.

(c) Apparatus with mouthpieces shall be equipped with noseclips which are securely attached to the mouthpiece or apparatus and provide an airtight seal.

(d) Facepieces shall be designed to prevent eyepiece, spectacle, and lens fogging.

§ 11.76 Facepieces; eyepieces; minimum requirements.

(a) Facepieces shall be designed and constructed to provide adequate vision which is not distorted by the eyepiece.

(b) All eyepieces shall be designed and constructed to meet the impact and penetration requirements specified in Federal Specification, Mask, Air Line, and Respirator, Air Filtering, Industrial,

GGG-M-125d, October 11, 1965. This Federal Specification is available from the Government Printing Office or the General Services Administration.

§ 11.77 Inhalation and exhalation valves; minimum requirements.

(a) Inhalation and exhalation valves shall be provided where necessary and protected against damage and distortion.

(b) Exhalation valves shall be:

(1) Protected against external influence, and

(2) Designed and constructed to prevent inward leakage of contaminated air.

§ 11.78 Head harnesses; minimum requirements.

(a) Facepieces shall be equipped with adjustable and replaceable head harnesses designed and constructed to provide adequate tension during suspension and an even distribution of pressure over the entire area in contact with the face.

(b) Mouthpieces shall be equipped, where applicable, with adjustable and replaceable harnesses designed and constructed to hold the mouthpiece in place.

§ 11.79 Breathing gas; minimum requirements.

(a) Breathing gas used to supply apparatus shall be respirable and contain no less than 19.5 (dry atmosphere) volume percent of oxygen.

(b) Oxygen, including liquid oxygen, shall meet the minimum requirements for medical or breathing oxygen set forth in the U.S. Pharmacopoeia.

(c) Compressed, gaseous breathing air shall meet the applicable minimum grade requirements for Type I gaseous air set forth in the Compressed Gas Association Commodity Specification for Air, G-7.1 (Grade D or higher quality).

(d) Compressed, liquefied breathing air shall meet the applicable minimum grade requirements for Type II liquid air set forth in the Compressed Gas Association Commodity Specification for Air, G-7.1 (Grade B or higher quality).

§ 11.79-1 Interchangeability of oxygen and air prohibited.

Approvals shall not be issued by the Bureau and the Institute for any apparatus, combination of respirator assemblies, or any apparatus or respirator component which is designed or constructed to permit the interchangeable use of oxygen and air.

§ 11.80 Compressed breathing gas and liquefied breathing gas containers; minimum requirements.

(a) Compressed breathing gas and liquefied breathing gas containers shall meet the minimum requirements of the Department of Transportation for Interstate shipment of such containers when fully charged.

(b) Such containers shall be permanently and legibly marked to identify their contents, e.g., compressed breathing air, compressed breathing oxygen, liquefied breathing air, or liquefied breathing oxygen.

(c) Containers normally removed from apparatus for refilling shall be equipped with a dial indicating gage which shows the pressure in the container.

(d) Compressed breathing gas contained valves or a separate charging system or adapter provided with each apparatus shall be equipped with outlet threads specified for the service by the American National Standard for Compressed Gas Cylinder Valve Outlet and Inlet Connections, B57.1 (1965), obtainable from American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.

§ 11.81 Gas pressure gages; minimum requirements.

(a) Gas pressure gages employed on compressed breathing gas containers shall be calibrated in pounds per square inch.

(b) Liquid-level gages shall be calibrated in fractions of total container capacity, or in units of liquid volume.

(c) Gas pressure gages other than those specified in paragraphs (a) and (b) of this section shall be calibrated in:

(1) Pounds per square inch, or

(2) In fractions of total container capacity, or

(3) Both in pounds per square inch and fractions of total container capacity.

(d) (1) Dial-indicating gages shall be reliable to within ± 5 percent of full scale when tested both up and down the scale at each of 5 equal intervals.

(2) The full scale graduation of dial-indicating gages shall not exceed 150 percent of the maximum rated cylinder pressures specified for the container in

applicable Department of Transportation specifications or permits.

(e) (1) Stem-type gages shall be readable by sight and by touch and shall have a stem travel distance of not less than one-fourth inch between each graduation.

(2) A minimum of five graduations shall be engraved on the stem of each gage and these graduations shall include readings for empty, one-quarter, one-half, three-quarters, and full.

(3) Stem gage readings shall not vary from true readings by more than one-sixteenth inch per inch of stem travel.

(f) The loss of gas through a broken gage or severed gage connection shall not exceed 70 liters per minute when the cylinder pressure is 6,900 kN/m.² (1,000 pounds per square inch gage) or when the liquid level is at one-half.

(g) Where gages are connected to the apparatus through a gage line, the gage and line shall be capable of being isolated from the apparatus except where the failure of the gage or line would not impair the performance or service life of the apparatus.

(h) Oxygen pressure gages shall have the words, "Oxygen" and "Use No Oil," marked prominently on the gage.

(i) (1) Apparatus using compressed breathing gas, except apparatus classified for escape only, shall be equipped with gages visible to the wearer which indicate the remaining gas content in the container.

(2) Apparatus using liquefied breathing gas, except apparatus classified for escape only, shall be equipped with gages visible to the wearer which indicate the remaining liquid content in the container; however, where the liquid content cannot be rapidly vented, and the service time of the device begins immediately after filling, a timer shall be provided in place of a visible gage.

§ 11.82 Timers; elapsed time indicators; remaining service life indicator; minimum requirements.

(a) Elapsed time indicators shall be provided for apparatus with a chemical oxygen source, except:

(1) Apparatus used for escape only; or,

(2) Liquefied breathing gas apparatus equipped with gages visible to the wearer

which indicate the remaining liquid content in the container.

(b) The timer or other indicator shall be accurately calibrated in minutes of remaining service life.

(c) Timers shall be readable by sight and by touch during use by the wearer.

(d) Timers shall be equipped with automatically preset alarms which will warn the wearer for a period of 7 seconds or more after the preset time has elapsed.

(e) Remaining service-life indicators or warning devices shall be provided in addition to a pressure gage on compressed gas self-contained breathing apparatus, except apparatus used for escape only, and shall operate automatically without preadjustment by the wearer.

(f) Each remaining service-life indicator or warning device shall give an alarm when the remaining service life of the apparatus is reduced within a range of 20 to 25 percent of its rated service time.

§ 11.83 Hand-operated valves; minimum requirements.

(a) Hand-operated valves shall be designed and constructed to prevent removal of the stem from the valve body during normal usage to insure against a sudden release of the full pressure of the container when the valve is opened.

(b) Valves shall be designed or positioned to prevent accidental opening and closing, and damage from external forces.

(c) Valves operated during use of the apparatus shall be installed in locations where they can be readily adjusted by the wearer.

(d) Main-line valves, designed and constructed to conserve gas in the event of a regulator or demand valve failure, shall be provided in addition to gas container valves, except when such failure will not affect performance.

(e) Hand-operated bypass systems designed and constructed to permit the wearer to breathe and to conserve his gas supply in the event of a regulator or demand valve failure, shall be provided where necessary.

(f) Valves installed on apparatus shall be clearly distinguishable from one another by sight and touch.

(g) The bypass system valve control shall be colored red.

(h) A main-line or bypass valve or system will not be required on apparatus for escape only.

(i) Safety relief valves or systems, designed and constructed to release excess pressure in the breathing circuit, shall be provided on closed-circuit apparatus, and shall meet the following requirements:

(1) The relief valve or system shall operate automatically when the pressure in the breathing circuit on the inhalation side of the breathing bag reaches 13 mm. (one-half inch) water-column height of pressure above the minimum pressure required to fill the breathing bag, within the breathing resistance requirements for the apparatus.

(2) The relief valve or system shall be designed to prevent external atmospheres from entering the breathing circuit.

(3) The relief valve or system shall be designed to permit manual overriding for test purposes and in the event of a failure in the valve or system.

§ 11.84 Breathing bags; minimum requirements.

(a) Breathing bags shall have sufficient volume to prevent gas waste during exhalation and to provide an adequate reserve for inhalation.

(b) Breathing bags shall be constructed of materials which are flexible and resistant to gasoline vapors.

(c) Breathing bags shall be installed in a location which will protect them from damage or collapse by external forces, except on apparatus classified for escape only.

§ 11.85 Self-contained breathing apparatus; performance requirements; general.

Self-contained breathing apparatus and the individual components of each such device shall as applicable meet the requirements specified in §§ 11.85-1 through 11.85-19.

§ 11.85-1 Component parts exposed to oxygen pressures; minimum requirements.

Each applicant shall certify that the materials employed in the construction of component parts exposed to oxygen

pressures above atmospheric pressure are safe and compatible for their intended use.

§ 11.85-2 Compressed gas filters; minimum requirements.

All self-contained breathing apparatus using compressed gas shall have a filter downstream of the gas source to effectively remove particles from the gas stream.

§ 11.85-3 Breathing bag test.

(a) Breathing bags will be tested in an air atmosphere saturated with gasoline vapor at room temperature (24°-30° C./75°-85° F.) for a continuous period of twice the rated time of the apparatus (except for apparatus for escape only where the test period shall be the rated time of the apparatus).

(b) The bag will be operated during this test by a breathing machine with 24 respirations per minute and a minute-volume of 40 liters.

(c) A breathing machine cam with a work rate of 622 kg.-m./min. will be used.¹

(d) The air within the bag(s) shall not contain more than 100 parts per million of gasoline vapor at the end of the test.

§ 11.85-4 Weight requirement.

(a) The completely assembled and fully charged apparatus shall not weigh more than 16 kg. (35 pounds); however, where the weight decreases by more than 25 percent of its initial charge weight during its rated service life, the maximum allowable weight of a completely assembled and fully charged apparatus shall be 18 kg. (40 pounds).

(b) Where an apparatus employs equipment which contributes materially to the wearer's comfort, e.g., a cooling system, the completely assembled and fully charged apparatus shall not weigh more than 18 kg. (40 pounds) regardless of the decrease in weight during use.

¹Silverman, L., G. Lee, T. Plotkin, L. Amory, and A. R. Yancey, *Fundamental Factors in Design of Protective Equipment*, O.S.R.D. Report No. 5732, issued Apr. 1, 1945. The dimensions of the breathing machine cam are available from the Bureau upon request.

§ 11.85-5 Breathing resistance test; inhalation.

(a) Resistance to inhalation airflow will be measured in the facepiece or mouthpiece while the apparatus is operated by a breathing machine as described in § 11.85-3.

(b) The inhalation resistance of open-circuit apparatus shall not exceed 32 mm. (1.25 inch) water-column height (at a flow rate of 120 liters per minute).

(c) The inhalation resistance of closed-circuit apparatus shall not exceed the difference between exhalation resistance (§ 11.85-6(e)) and 10 cm. (4 inches) water-column height.

§ 11.85-6 Breathing resistance test; exhalation.

(a) Resistance to exhalation airflow will be measured in the facepiece or mouthpiece of open-circuit apparatus with air flowing at a continuous rate of 85 liters per minute.

(b) The exhalation resistance of demand apparatus shall not exceed 25 mm. (1 inch) water-column height.

(c) The exhalation resistance of pressure-demand apparatus shall not exceed the static pressure in the facepiece by more than 51 mm. (2 inches) water-column height.

(d) The static pressure (at zero flow) in the facepiece shall not exceed 38 mm. (1.5 inches) water-column height.

(e) Resistance to exhalation airflow will be measured in the facepiece or mouthpiece of closed-circuit apparatus with a breathing machine as described in § 11.85-3, and the exhalation resistance shall not exceed 51 mm. (2 inches) water-column height.

§ 11.85-7 Exhalation valve leakage test.

(a) Dry exhalation valves and valve seats will be subjected to a suction of 25 mm. (1 inch) water-column height while in a normal operating position.

(b) Leakage between the valve and the valve seat shall not exceed 30 milliliters per minute.

§ 11.85-8 Gas flow test; open-circuit apparatus.

(a) A static-flow test will be performed on all open-circuit apparatus.

(b) The flow from the apparatus shall be greater than 200 liters per minute

when the pressure in the facepiece of demand-apparatus is lowered by 51 mm. (2 inches) water-column height when full container pressure is applied.

(c) Where pressure demand apparatus are tested, the flow will be measured at zero gage pressure in the facepiece.

(d) Where apparatus with compressed-breathing-gas containers are tested, the flow test shall also be made with 3,450 kN/m.² (500 p.s.i.g.) container pressure applied.

§ 11.85-9 Gas flow test; closed-circuit apparatus.

(a) Where oxygen is supplied by a constant-flow device only, the rate of flow shall be at least 3 liters per minute for the entire rated service time of the apparatus.

(b) Where constant flow is used in conjunction with demand flow, the constant flow shall be greater than 1.5 liters per minute for the entire rated service time.

(c) All demand-flow devices shall provide at least 30 liters of oxygen per minute when in the fully open position.

§ 11.85-10 Service time test; open-circuit apparatus.

(a) Service time will be measured with a breathing machine as described in § 11.85-3.

(b) The open-circuit apparatus will be classified according to the length of time it supplies air or oxygen to the breathing machine.

(c) The service time obtained on this test will be used to classify the open-circuit apparatus in accordance with § 11.53.

§ 11.85-11 Service time test; closed-circuit apparatus.

(a) The closed-circuit apparatus will be classified according to the length of time it supplies adequate breathing gas to the wearer during man test No. 4 described in Table 4.

(b) The service time obtained on man test No. 4 will be used to classify the closed-circuit apparatus in accordance with § 11.53.

§ 11.85-12 Test for carbon dioxide in inspired gas; open- and closed-circuit apparatus; maximum allowable limits.

(a) Open-circuit apparatus:

(1) The concentration of carbon dioxide in inspired gas in open-circuit

apparatus will be measured at the mouth while the apparatus mounted on a dummy head is operated by a breathing machine.²

(2) The breathing rate will be 14.5 respirations per minute with a minute-volume of 10.5 liters.

(3) A sedentary breathing machine can will be used.

(4) The apparatus will be tested at a temperature of 27° ± 2° C. (80° ± 5° F.).

(5) A concentration of 5 percent carbon dioxide in air will be exhaled into the facepiece.

(b) Closed-circuit apparatus:

(1) The concentration of carbon dioxide in inspired gas in closed-circuit apparatus will be measured at the mouth while the parts of the apparatus contributing to dead-air space are mounted on a dummy head and operated by the breathing machine as in paragraphs (a) (1) through (5) of this section.

(c) During the testing required by paragraphs (a) and (b) of this section, the concentration of carbon dioxide in inspired gas at the mouth will be continuously recorded, and the maximum average concentration during the inhalation portion of the breathing cycle shall not exceed the following limits:

| <i>Where the service time is:</i> | <i>Maximum allowable average concentration of carbon dioxide in inspired air, percent by volume</i> |
|-----------------------------------|---|
| Not more than 30 minutes..... | 2.5 |
| 1 hour..... | 2.0 |
| 2 hours..... | 1.5 |
| 3 hours..... | 1.0 |
| 4 hours..... | 1.0 |

(d) In addition to the tests requirements for closed-circuit apparatus set forth in paragraph (b) of this section, gas samples will be taken during the course of the man tests described in Tables 1, 2, 3, and 4. These gas samples will be taken from the closed-circuit apparatus at a point downstream of the carbon dioxide sorbent, and they shall not contain more than 0.5 percent carbon dioxide at any time.

² Kloos, E. J., and J. Lamonica, *A Machine-Test Method for Measuring Carbon Dioxide in the Inspired Air of Self-Contained Breathing Apparatus*. Bureau of Mines Report of Investigations 6865, 1966, 11 pp.

§ 11.85-13 Tests during low temperature operation.

(a) The applicant shall specify the minimum temperature for safe operation and two persons will perform the tests described in paragraphs (c) and (d) of this section, wearing the apparatus according to applicant's directions. At the specified temperature, the apparatus shall meet all the requirements described in paragraph (e) of this section.

(b) The apparatus will be precooled at the specified minimum temperature for 4 hours.

(c) The apparatus will be worn in the low temperature chamber for 30 minutes, or for the service time of the apparatus, whichever is less.

(d) During the test period, alternate 1-minute periods of exercise and rest will be required with the exercise periods consisting of stepping onto and off a box 21.5 cm. (8½ inches) high at a rate of 30 cycles per minute.

(e) (1) The apparatus shall function satisfactorily at the specified minimum temperature on duplicate tests.

(2) The wearer shall have sufficient unobscured vision to perform the work.

(3) The wearer shall not experience undue discomfort because of airflow restriction or other physical or chemical changes in the operation of the apparatus.

(f) Auxiliary low-temperature parts which are commercially available to the user may be used on the apparatus to meet the requirements described in paragraph (e) of this section.

§ 11.85-14 Man tests; testing conditions; general requirements.

(a) The man tests described in Tables 1, 2, 3, and 4 represent the workload performed in the mining, mineral, or allied industries by a person wearing the apparatus tested.

(b) The apparatus tested will be worn by Institute personnel trained in the use of self-contained breathing apparatus, and the wearer will, before participating in these tests, pass a physical examination conducted by a qualified physician.

(c) All man tests will be conducted by the Institute.

(d) The apparatus will be examined before each man test to ensure that it is in proper working order.

(e) Breathing resistance will be measured within the facepiece or mouthpiece

and the wearer's pulse and respiration rate will be recorded during each 2 minute sample period prescribed in tests 1, 2, 3, and 4.

(f) Man tests 1, 2, 3, 4, 5, and 6 will be conducted in duplicate.

(g) If man tests are not completed through no fault of the apparatus, the test will be repeated.

[37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6993, Mar. 15, 1973]

§ 11.85-15 Man tests 1, 2, 3, and 4; requirements.

(a) Man tests 1, 2, 3, and 4, set forth in Tables 1, 2, 3, and 4 respectively, prescribe the duration and sequence of specific activities. These tests will be conducted to:

(1) Familiarize the wearer with the apparatus during use;

(2) Provide for a gradual increase in activity;

(3) Evaluate the apparatus under different types of work and physical orientation; and

(4) Provide information on the operating and breathing characteristics of the apparatus during actual use.

§ 11.85-16 Man test 5; requirements.

(a) Test 5 will be conducted to determine the maximum length of time the apparatus will supply the respiratory needs of the wearer while he is sitting at rest.

(b) The wearer will manipulate the devices controlling the supply of breathing gas to the advantage of the apparatus.

(c) Samples of inspiration from within the apparatus facepiece or mouthpiece shall be taken once every 15 minutes, and shall meet the minimum requirement for oxygen specified in § 11.79(a) of this part, and the maximum allowable average concentration of carbon dioxide specified in § 11.85-12(c).

(d) One sample of inspiration will be taken in the case of 3-, 5-, and 10-minute apparatus.

§ 11.85-17 Man test 6; requirements.

(a) Man test 6 will be conducted with respect to liquefied breathing gas apparatus only.

(b) This test will be conducted to evaluate operation of the apparatus in other than vertical positions.

(c) The wearer will lie face downward for one-fourth the service life of the apparatus with a full charge of liquefied breathing gas, and then a one-quarter full charge of liquefied breathing gas.

(d) The test will be repeated with the wearer lying on each side and on his back.

(e) The oxygen content of the gas supplied to the wearer by the apparatus will be continuously measured.

§ 11.85-18 Man tests; performance requirements.

(a) The apparatus shall satisfy the respiratory requirements of the wearer for the classified service time.

(b) Fogging of the eyepiece shall not obscure the wearer's vision, and the wearer shall not experience undue discomfort because of fit or other characteristics of the apparatus.

(c) When the ambient temperature during testing is $24^{\circ} \pm 6^{\circ}$ C. ($75^{\circ} \pm 10^{\circ}$ F.), the maximum temperature of inspired air recorded during man tests shall not exceed the following, after correction for deviation from 24° C. (75° F.):

| Where service life of apparatus is— | Where percent relative humidity of inspired air is— | Maximum permissible temperature of inspired air shall not exceed— | |
|-------------------------------------|---|---|------|
| | | ° F. | ° C. |
| ¼ hour or less..... | 0-100 | 135 | 57 |
| ½ hour to ¾ hour... | 0-50 | 125 | 52 |
| | 50-100 | 110 | 43 |
| 1 to 2 hours..... | 0-50 | 115 | 46 |
| | 50-100 | 105 | 41 |
| 3 hours..... | 0-50 | 110 | 43 |
| | 50-100 | 100 | 38 |
| 4 hours..... | 0-50 | 105 | 41 |
| | 50-100 | 95 | 35 |

¹ Where percent relative humidity is 50-100 and apparatus is designed for escape only, these maximum permissible temperatures will be increased by 5° C. (10° F.).

§ 11.85-19 Gas tightness test; minimum requirements.

(a) Each apparatus will be tested for tightness by persons wearing it in an atmosphere of 1,000 p.p.m. isoamyl acetate.

(b) Six persons will each wear the apparatus in the test concentrations specified in paragraph (a) of this section for 2 minutes and none shall detect the odor or taste of the test vapor.

TABLE 1.—DURATION AND SEQUENCE OF SPECIFIC ACTIVITIES FOR TEST 1, IN MINUTES
(30 CFR Part 11, Subpart II, § 11.86, et seq.)

| Activity | Service time— | | | | | | | | | | 1 hour | 2, 3, and 4 hours | |
|--|---------------|-----------|------------|------------|------------|------------|--------|----|----|----|--------|-------------------|--|
| | 3 minutes | 5 minutes | 10 minutes | 15 minutes | 30 minutes | 45 minutes | 1 hour | 2 | 2 | 2 | | | |
| Sampling and readings..... | | | | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | Perform 1 hour test 2, 3, or 4 times respectively. |
| Walks at 4.8 km. (3 miles) per hour..... | | | | | 4 | 8 | 8 | 12 | 18 | 18 | 18 | 18 | |
| Sampling and readings..... | 3 | 5 | 8 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| Walks at 4.8 km. (3 miles) per hour..... | | | | 8 | 5 | 8 | 8 | 12 | 18 | 18 | 18 | 18 | |
| Sampling and readings..... | | | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| Walks at 4.8 km. (3 miles) per hour..... | | | | | 6 | 6 | 6 | 13 | 16 | 16 | 16 | 16 | |
| Sampling and readings..... | | | | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |

TABLE 2.—DURATION AND SEQUENCE OF SPECIFIC ACTIVITIES FOR TEST 2, IN MINUTES
(30 C.F.R. Part 11, Subpart II, § 11.85, et seq.)

| Activity | Service Time— | | | | | | | | |
|---|---------------|-----------|----------------------|----------------------|-----------------------|-----------------------|------------------------|------------------------|--------|
| | 3 minutes | 5 minutes | 10 minutes | 15 minutes | 30 minutes | 45 minutes | 1 hour | 2, 3 and 4 hours 1 | |
| Sampling and readings | | | | | 2 | 2 | 2 | 2 | 2, 10. |
| Walks at 4.8 km. (3 miles) per hour | | | 1 | 1 | 2 | 2 | 2 | 2 | 10. |
| Carries 23 kg. (50 pound) weight over overcast. | | | 1 time in 2 minutes. | 1 time in 2 minutes. | 2 times in 4 minutes. | 3 times in 6 minutes. | 4 times in 8 minutes. | 5 times in 10 minutes. | |
| Walks at 4.8 km. (3 miles) per hour. | | | 1 | 1 | 3 | 3 | 3 | 3 | 5. |
| Climbs vertical treadmill* (or equivalent). | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1. |
| Walks at 4.8 km. (3 miles) per hour. | | | 1 | 1 | 1 | 1 | 1 | 1 | 5. |
| Climbs vertical treadmill (or equivalent) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1. |
| Sampling and readings | | | | | 2 | 2 | 2 | 2 | 2. |
| Walks at 4.8 km. (3 miles) per hour. | | | 2 | 2 | 2 | 2 | 2 | 2 | 1. |
| Climbs vertical treadmill (or equivalent) | | | 1 | 1 | 1 | 1 | 1 | 1 | 1. |
| Carries 23 kg. (50 pound) weight over overcast. | | | 1 time in 2 minutes. | 1 time in 2 minutes. | 3 times in 6 minutes. | 4 times in 8 minutes. | 5 times in 10 minutes. | 5 times in 10 minutes. | |
| Sampling and readings | | | 2 | 2 | 2 | 2 | 2 | 2 | 2. |
| Walks at 4.8 km. (3 miles) per hour. | | | 1 | 1 | 1 | 1 | 1 | 1 | 1. |
| Climbs vertical treadmill (or equivalent) | | | 1 | 1 | 1 | 1 | 1 | 1 | 1. |
| Walks at 4.8 km. (3 miles) per hour. | | | 2 | 2 | 2 | 2 | 2 | 2 | 2. |
| Climbs vertical treadmill (or equivalent) | | | 1 | 1 | 1 | 1 | 1 | 1 | 1. |
| Walks at 4.8 km. (3 miles) per hour. | | | 2 | 2 | 2 | 2 | 2 | 2 | 2. |
| Climbs vertical treadmill (or equivalent) | | | 1 | 1 | 1 | 1 | 1 | 1 | 1. |
| Walks at 4.8 km. (3 miles) per hour. | | | 1 | 1 | 1 | 1 | 1 | 1 | 1. |
| Carries 20 kg. (45 pound) weight and walks at 4.8 km. (3 miles) per hour. | | | 1 | 1 | 1 | 1 | 1 | 1 | 1. |
| Walks at 4.8 km. (3 miles) per hour. | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2. |
| Sampling and readings | | | | | | | | | |

* Total test time for Test 2 for 2-hour, 3-hour, and 4-hour apparatus is 2 hours.
 † Treadmill shall be inclined 15° from vertical and operated at a speed of 1 foot per second.

TABLE 3.—DURATION AND SEQUENCE OF SPECIFIC ACTIVITIES FOR TEST 3, IN MINUTES
(30 CFR Part 11, Subpart H, § 11.85, et seq.)

| Activity | Service time— | | | | | | | |
|---|---------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|---|
| | 3 minutes | 5 minutes | 10 minutes | 15 minutes | 30 minutes | 45 minutes | 1 hour | 2, 3 and 4 hours ¹ |
| Sampling and readings..... | | | | 2 | 2 | 2 | 2 | 2 |
| Walks at 4.8 km. (3 miles) per hour..... | | | 1 | 1 | 1 | 1 | 1 | 1 |
| Runs at 9.7 km. (6 miles) per hour..... | | | 1 | 1 | 1 | 1 | 1 | 1 |
| Pulls 20 kg. (45 pound) weight to 5 feet..... | | 15 times in 1 minute. | 1 | 30 times in 2 minutes. | 30 times in 2 minutes. | 30 times in 2 minutes. | 60 times in 6 minutes. | Perform test No. 3 for 1 hr. apparatus; then perform test No. 1 for 1 hour apparatus. |
| Lies on side..... | 1/4 | 1 | 1 | 2 | 3 | 4 | 5 | |
| Lies on back..... | 1/4 | 1 | 1 | 2 | 3 | 4 | 5 | |
| Crawls on hands and knees..... | 1 | 1 | 1 | 2 | 2 | 2 | 2 | |
| Sampling and readings..... | | | 2 | 2 | 2 | 2 | 2 | |
| Runs at 9.7 km. (6 miles) per hour..... | | | 2 | 2 | 2 | 2 | 2 | |
| Walks at 4.8 km. (3 miles) per hour..... | | | 1 | 1 | 1 | 1 | 1 | |
| Pulls 20 kg. (45 pound) weight to 5 feet..... | | 30 times in 2 minutes. | 30 times in 2 minutes. | 60 times in 6 minutes. | 60 times in 6 minutes. | 60 times in 6 minutes. | 60 times in 6 minutes. | |
| Sampling and readings..... | | | 2 | 2 | 2 | 2 | 2 | |
| Walks at 4.8 km. (3 miles) per hour..... | | | 1 | 1 | 1 | 1 | 1 | |
| Lies on side..... | | | 1 | 2 | 3 | 4 | 5 | |
| Lies on back..... | | | 1 | 2 | 3 | 4 | 5 | |
| Sampling and readings..... | | | 2 | 2 | 2 | 2 | 2 | |

¹ Total test time for Test 3 for 2-hour, 3-hour, and 4-hour apparatus is 2 hours.

TABLE 4.—DURATION AND SEQUENCE OF SPECIFIC ACTIVITIES FOR TEST 4, IN MINUTES
(80 CFR Part 11, Subpart H, § 11.85, et seq.)

| Activity | Service time— | | | | | | | | | | |
|---|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|---|--|--|
| | 3 minutes | 5 minutes | 10 minutes | 15 minutes | 20 minutes | 30 minutes | 45 minutes | 1 hour | 2 hours | 3 hours | 4 hours |
| Sampling and readings..... | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | Perform test No. 1 for 30-minute apparatus; then perform test No. 4 for 1-hour apparatus; then perform test No. 1 for 1-hour apparatus. | Perform test No. 1 for 1-hour apparatus; then perform test No. 4 for 1-hour apparatus; then perform test No. 1 for 1-hour apparatus. | Perform test No. 1 for 1-hour apparatus twice (i.e., two one-hour tests). |
| Walks at 4.8 km. (3 miles) per hour..... | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | Perform test No. 4 for 1-hour apparatus; then perform test No. 1 for 1-hour apparatus. | Perform test No. 4 for 1-hour apparatus; then perform test No. 1 for 1-hour apparatus. | Perform test No. 4 for 1-hour apparatus; then perform test No. 1 for 1-hour apparatus. |
| (Climbs vertical treadmill ¹ (or equivalent).) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | Perform test No. 4 for 1-hour apparatus; then perform test No. 1 for 1-hour apparatus. | Perform test No. 4 for 1-hour apparatus; then perform test No. 1 for 1-hour apparatus. | Perform test No. 4 for 1-hour apparatus; then perform test No. 1 for 1-hour apparatus. |
| Walks at 4.8 km. (3 miles) per hour..... | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | Perform test No. 1 for 1-hour apparatus. | Perform test No. 1 for 1-hour apparatus. | Perform test No. 1 for 1-hour apparatus. |
| Pulls 20 kg. (45 pound) weight to 5 feet..... | 30 times in 2 minutes. | 30 times in 2 minutes. | 30 times in 2 minutes. | 30 times in 2 minutes. | 30 times in 2 minutes. | 30 times in 2 minutes. | 30 times in 2 minutes. | 30 times in 2 minutes. | 60 times in 5 minutes. | 60 times in 5 minutes. | 60 times in 5 minutes. |
| Walks at 4.8 km. (3 miles) per hour..... | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | Perform test No. 4 for 1-hour apparatus; then perform test No. 1 for 1-hour apparatus. | Perform test No. 4 for 1-hour apparatus; then perform test No. 1 for 1-hour apparatus. | Perform test No. 4 for 1-hour apparatus; then perform test No. 1 for 1-hour apparatus. |
| Carries 23 kg. (50 pound) weight over obstacle..... | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | Perform test No. 4 for 1-hour apparatus; then perform test No. 1 for 1-hour apparatus. | Perform test No. 4 for 1-hour apparatus; then perform test No. 1 for 1-hour apparatus. | Perform test No. 4 for 1-hour apparatus; then perform test No. 1 for 1-hour apparatus. |
| Sampling and readings..... | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | Perform test No. 1 for 1-hour apparatus. | Perform test No. 1 for 1-hour apparatus. | Perform test No. 1 for 1-hour apparatus. |
| Walks at 4.8 km. (3 miles) per hour..... | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | Perform test No. 4 for 1-hour apparatus; then perform test No. 1 for 1-hour apparatus. | Perform test No. 4 for 1-hour apparatus; then perform test No. 1 for 1-hour apparatus. | Perform test No. 4 for 1-hour apparatus; then perform test No. 1 for 1-hour apparatus. |
| Pulls 20 kg. (45 pound) weight to 5 feet..... | 15 times in 1 minute. | 15 times in 1 minute. | 15 times in 1 minute. | 15 times in 1 minute. | 15 times in 1 minute. | 15 times in 1 minute. | 15 times in 1 minute. | 15 times in 1 minute. | 30 times in 2 minutes. | 30 times in 2 minutes. | 30 times in 2 minutes. |
| Sampling and readings..... | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | Perform test No. 1 for 1-hour apparatus. | Perform test No. 1 for 1-hour apparatus. | Perform test No. 1 for 1-hour apparatus. |
| Walks at 4.8 km. (3 miles) per hour..... | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | Perform test No. 4 for 1-hour apparatus; then perform test No. 1 for 1-hour apparatus. | Perform test No. 4 for 1-hour apparatus; then perform test No. 1 for 1-hour apparatus. | Perform test No. 4 for 1-hour apparatus; then perform test No. 1 for 1-hour apparatus. |
| Carries 20 kg. (45 pound) weight and walks at 4.8 km. (3 miles) per hour..... | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | Perform test No. 1 for 1-hour apparatus. | Perform test No. 1 for 1-hour apparatus. | Perform test No. 1 for 1-hour apparatus. |
| Sampling and readings..... | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | Perform test No. 1 for 1-hour apparatus. | Perform test No. 1 for 1-hour apparatus. | Perform test No. 1 for 1-hour apparatus. |

¹ Treadmill shall be inclined 15° from vertical and operated at a speed of 30 cm. (1 foot) per second.

Subpart I—Gas Masks

§ 11.90 Gas masks; description.

(a) Gas masks including all completely assembled air purifying masks which are designed for use as respiratory protection during entry into and escape or escape only from hazardous atmospheres containing adequate oxygen to support life are described as follows:

(1) *Front-mounted or back-mounted gas mask.* A gas mask which consists of a full facepiece, a breathing tube, a canister at the front or back, a canister harness, and associated connections.

(2) *Type "N" front-mounted or back-mounted gas mask.* A gas mask specifically designed to protect against acid gases, ammonia, carbon monoxide, organic vapors, and particulate contaminants which consists of a full facepiece, breathing tube, a canister at the front or back, a canister harness, and associated connections.

(3) *Chin-style gas mask.* A gas mask which consists of a full facepiece, a canister which is usually attached to the facepiece, and associated connections.

(4) *Escape gas mask.* A gas mask designed for use during escape only from hazardous atmospheres which consists of a half-mask facepiece or mouthpiece, a canister, and associated connections.

(b) Gas masks shall be further described according to the specific gases or vapors against which they are designed to provide respiratory protection, as follows:

Maximum use concentration, percent by volume

| | |
|---|---|
| Type of front-mounted or back-mounted gas mask: | |
| Acid gas ^{2, 4} | 2 |
| Ammonia ² | 3 |
| Carbon monoxide ² | 2 |
| Organic vapors ^{2, 4} | 2 |

| | |
|--------------------------------------|-----|
| Type of chin-style gas mask: | |
| Acid gas ^{2, 4} | 0.5 |
| Ammonia..... | .5 |
| Organic vapors ^{2, 4} | .5 |

Maximum use concentration, parts per million

| | |
|---|--------|
| Type of escape gas mask: | |
| Acid gas ^{2, 4, 6} | 1,000 |
| Ammonia ⁶ | 5,000 |
| Carbon monoxide..... | 10,000 |
| Organic vapors ^{2, 4, 6} | 5,000 |

² Approval may be for acid gases or organic vapors as a class or for specific acid gases, ammonia, or organic vapors. Approval may also be granted for combinations of acid

gases, organic vapors, and other gases and vapors.

⁴ Not for use against acid gases or organic vapors with poor warning properties or which generate high heats of reaction with sorbent materials in the canister.

⁶ Suggested maximum use concentrations are lower than these for some acid gases and organic vapors.

⁶ Eye protection may be required in certain concentrations of acid gases, ammonia, and organic vapors.

(c) Gas masks for respiratory protection against gases and vapors other than those specified in paragraph (b) of this section, may be approved upon submittal of an application in writing for approval to the Testing and Certification Laboratory listing the gas or vapor and suggested maximum use concentration for the specific type of gas mask. The Institute and the Bureau will consider the application and accept or reject it on the basis of effect on the wearer's health and safety and any field experience in use of gas masks for such exposures. If the application is accepted, the Institute will test such masks in accordance with the requirements of this subpart.

[37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6994, Mar. 15, 1973]

§ 11.91 Gas masks; required components.

(a) Each gas mask described in § 11.90 shall, where its design requires, contain the following component parts:

- (1) Facepiece or mouthpiece and noseclip;
- (2) Canister or cartridge;
- (3) Canister harness;
- (4) External check valve; and
- (5) Breathing tube.

(b) The components of each gas mask shall meet the minimum construction requirements set forth in Subpart G of this part.

§ 11.92 Canisters and cartridges in parallel; resistance requirements.

Where two or more canisters or cartridges are used in parallel, their resistance to airflow shall be essentially equal.

§ 11.93 Canisters and cartridges; color and markings; requirements.

The color and markings of all canisters and cartridges or labels shall conform with the requirements of the American National Standard for Identification of Gas Mask Canisters, K13.1, obtainable from American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.

§ 11.94 Filters used with canisters and cartridges; location; replacement.

(a) Particulate matter filters used in conjunction with a canister or cartridge shall be located on the inlet side of the canister or cartridge.

(b) Filters shall be incorporated in or firmly attached to the canister or cartridge and each filter assembly shall, where applicable, be designed to permit its easy removal from and replacement in the canister or cartridge.

§ 11.95 Breathing tubes; minimum requirements.

(a) Flexible breathing tubes used in conjunction with gas masks shall be designed and constructed to prevent:

(1) Restriction of free head movement;

(2) Disturbance of the fit of facepieces or mouthpieces;

(3) Interference with the wearer's activities; and,

(4) Shutoff of airflow due to kinking, or from chin or arm pressure.

§ 11.96 Harnesses; installation and construction; minimum requirements.

(a) Each gas mask shall, where necessary, be equipped with a suitable harness designed and constructed to hold the components of the gas mask in position against the wearer's body.

(b) Harnesses shall be designed and constructed to permit easy removal and replacement of gas mask parts, and where applicable, provide for holding a full facepiece in the ready position when not in use.

§ 11.97 Gas mask containers; minimum requirements.

(a) Gas masks shall be equipped with a substantial, durable container bearing markings which show the applicant's name, the type and commercial designation of mask it contains and all appropriate approval labels.

(b) Containers for gas masks shall be designed and constructed to permit easy removal of the mask.

§ 11.98 Half-mask facepieces, full facepieces and mouthpieces; fit; minimum requirements.

(a) Half-mask facepieces and full facepieces shall be designed and constructed to fit persons with various facial shapes and sizes either: (1) By provid-

ing more than one facepiece size, or (2) by providing one facepiece size which will fit varying facial shapes and sizes.

(b) Full facepieces shall provide for optional use of corrective spectacles or lenses, which shall not reduce the respiratory protective qualities of the gas mask.

(c) Half-mask facepieces shall not interfere with the fit of common industrial safety spectacles, as determined by the Institute's facepiece tests in § 11.102-3.

(d) Gas masks with mouthpieces shall be equipped with noseclips which are securely attached to the mouthpiece or gas mask and provide an airtight seal.

(e) Facepieces shall be designed to prevent eyepiece fogging.

[37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6993, Mar. 15, 1973]

§ 11.99 Facepieces; eyepieces; minimum requirements.

(a) Full facepieces shall be designed and constructed to provide adequate vision which is not distorted by the eyepiece.

(b) All eyepieces shall be designed and constructed to meet the impact and penetration requirements specified in Federal Specification, Mask, Air Line: and Respirator, Air Filtering, Industrial, GGG-M-125d, October 11, 1965.

§ 11.100 Inhalation and exhalation valves; minimum requirements.

(a) Inhalation and exhalation valves shall be provided where necessary and protected against damage and distortion.

(b) Inhalation valves shall be designed and constructed to prevent excessive exhaled air from adversely affecting cartridges, canisters, and filters.

(c) Exhalation valves shall be protected against external influence, and designed and constructed to prevent inward leakage of contaminated air.

§ 11.101 Head harnesses; minimum requirements.

(a) Facepieces shall be equipped with adjustable and replaceable head harnesses, designed and constructed to provide adequate tension during use and an even distribution of pressure over the entire area in contact with the face.

(b) Mouthpieces shall be equipped, where applicable, with adjustable and replaceable harnesses designed and constructed to hold the mouthpiece in place.

§ 11.102 Gas masks; performance requirements; general.

Gas masks and the individual components of each such device shall, as appropriate, meet the requirements for performance and protection specified in the tests described in §§ 11.102-1 through 11.102-5.

§ 11.102-1 Breathing resistance test; minimum requirements.

(a) Resistance to airflow will be measured in the facepiece or mouthpiece of a gas mask mounted on a breathing machine both before and after each test conducted in accordance with §§ 11.102-3, 11.102-4, and 11.102-5, with air flowing at a continuous rate of 85 liters per minute.

(b) The maximum allowable resistance requirements for gas masks are as follows:

MAXIMUM RESISTANCE
(mm. water-column height)

| Type of gas mask | Inhalation | | Exhalation |
|---|------------|--------------------|------------|
| | Initial | Final ¹ | |
| Front-mounted or back-mounted (without particulate filter)..... | 60 | 75 | 20 |
| Front-mounted or back-mounted (with approved particulate filter)..... | 70 | 85 | 20 |
| Chin-style (without particulate filter)..... | 40 | 55 | 20 |
| Chin-style (with approved particulate filter)..... | 65 | 80 | 20 |
| Escape (without particulate filter)... | 60 | 75 | 20 |
| Escape (with approved particulate filter)..... | 70 | 85 | 20 |

¹ Measured at end of the service life specified in Tables 8, 6, and 7.

§ 11.102-2 Exhalation valve leakage test.

(a) Dry exhalation valves and valve seats will be subjected to a suction of 25 mm. water-column height while in a normal operating position.

(b) Leakage between the valve and valve seat shall not exceed 30 milliliters per minute.

§ 11.102-3 Facepiece tests; minimum requirements.

(a) The complete gas mask will be fitted to the faces of persons having varying facial shapes and sizes.

(b) Where the applicant specifies a facepiece size or sizes for the gas mask,

together with the approximate measurements of faces they are designed to fit, the Institute will insure that test subjects suit such facial measurements.

(c) Any gas mask parts which must be removed to perform the facepiece or mouthpiece fit test shall be replaceable without special tools and without disturbing the facepiece or mouthpiece fit.

(d) The facepiece or mouthpiece fit test, using positive or negative pressure recommended by the applicant and described in his instructions will be used before each test specified in paragraph (e) of this section, and in § 11.102-4.

(e) (1) Each wearer will enter a chamber containing 100 p.p.m. isoamyl acetate vapor for a half-mask facepiece and 1,000 p.p.m. isoamyl acetate vapor for a full facepiece or mouthpiece.

(2) The facepiece or mouthpiece may be adjusted, if necessary, in the test chamber before starting the tests.

(3) Each wearer will remain in the chamber for 8 minutes while performing the following activities:

(i) Two minutes, nodding and turning head;

(ii) Two minutes, calisthenic arm movements;

(iii) Two minutes, running in place, and

(iv) Two minutes, pumping with a tire pump into a 28 liter (1 cubic foot) container.

(4) Each wearer shall not detect the odor of isoamyl acetate during the test. [37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6993, Mar. 15, 1973]

§ 11.102-4 Dust, fume, mist, and smoke tests; canisters containing filters; minimum requirements.

(a) Gas mask canisters containing filters for protection against dusts, fumes, mists, and smokes in combination with gases, vapors, or gases and vapors, will be tested as prescribed in § 11.140.

(b) Gas mask canisters designed for protection against smokes will be tested in an atmospheric concentration of 100 micrograms of dioctyl phthalate per liter of air at continuous flow rates of (1) 32 liters per minute, and (2) 85 liters per minute for a period of 5 to 10 seconds, and the DOP leakage through the canister shall not exceed 0.03 percent of the test concentration.

§ 11.102-5 Canister bench tests; minimum requirements.

(a) (1) Bench tests, except for carbon monoxide tests, will be made on an apparatus that allows the test atmosphere at 50±5 percent relative humidity and room temperature (25±2.5° C.) to enter the canister continuously at concentrations and rates of flow specified in Tables 5, 6, and 7.

(2) Three canisters will be removed from containers and tested as received from the applicant.

(3) Two canisters, other than those described in paragraph (a)(2) of this section, will be equilibrated at room temperature by passing 25 percent relative humidity air through them at 64 liters per minute for 6 hours.

(4) Two canisters, other than those described in paragraphs (a) (2) and (3) of this section, will be equilibrated at room temperature by passing 85 percent relative humidity air through them at 64 liters per minute for 6 hours.

(5) The equilibrated canisters will be resealed, kept in an upright position at room temperature, and tested within 18 hours.

(b) Front-mounted and back-mounted gas mask canisters will be tested and shall meet the minimum requirements set forth in Table 5.

(c) (1) Front-mounted and back-mounted canisters designated as Type N canisters shall have a window or other indicator to warn the gas mask wearer when the canister will no longer satisfactorily remove carbon monoxide from the inhaled air.

(2) Other types of front- and back-mounted canisters may also be equipped with a window or other indicator to warn of imminent leakage of other gases or vapors.

(3) The window indicator canisters will be tested as regular canisters, but shall show a satisfactory indicator change or other warning before the allowable canister penetration has occurred.

(d) Chin-style gas mask canisters shall meet the minimum requirements set forth in Table 6.

(e) Escape gas mask canisters shall meet the minimum requirements set forth in Table 7.

TABLE 5.—CANISTER BENCH TESTS AND REQUIREMENTS FOR FRONT AND BACK-MOUNTED GAS MASK CANISTERS (30 CFR Part 11, Subpart I, § 11.102-5)

| Canister type | Test condition | Test atmosphere | | | Number of tests | Maximum allowable penetration, p.p.m. | Minimum service life, minutes ¹ | |
|-----------------|----------------|------------------|-----------------------|------------------|-----------------|---------------------------------------|--|---|
| | | Gas or vapor | Concentration, p.p.m. | Flow rate, lp.m. | | | | |
| Acid gas | As received | SO ₂ | 20,000 | 64 | 3 | 5 | 12 | |
| | | Cl ₂ | 20,000 | 64 | 3 | 5 | 12 | |
| | | NO ₂ | 20,000 | 64 | 3 | 5 | 12 | |
| | Equilibrated | SO ₂ | 20,000 | 32 | 4 | 5 | 12 | |
| | | Cl ₂ | 20,000 | 32 | 4 | 5 | 12 | |
| | | NO ₂ | 20,000 | 32 | 4 | 5 | 12 | |
| Organic vapors | As received | CCl ₄ | 20,000 | 64 | 3 | 5 | 12 | |
| | Equilibrated | CCl ₄ | 20,000 | 32 | 4 | 5 | 12 | |
| Ammonia | As received | NH ₃ | 30,000 | 64 | 3 | 50 | 12 | |
| | Equilibrated | NH ₃ | 30,000 | 32 | 4 | 50 | 12 | |
| Carbon monoxide | As received | CO | 20,000 | 64 | 2 | (3) | 60 | |
| | | CO | 5,000 | 132 | 3 | (3) | 60 | |
| | | CO | 3,000 | 132 | 3 | (3) | 60 | |
| | | CO | 3,000 | 132 | 3 | (3) | 60 | |
| Type N | As received | SO ₂ | 20,000 | 64 | 3 | 5 | 6 | |
| | | Cl ₂ | 20,000 | 64 | 3 | 5 | 6 | |
| | | NO ₂ | 20,000 | 64 | 3 | 5 | 6 | |
| | | CCl ₄ | 20,000 | 64 | 3 | 5 | 6 | |
| | | NH ₃ | 30,000 | 64 | 3 | 50 | 6 | |
| | | CO | 20,000 | 164 | 2 | (3) | 60 | |
| | | CO | 5,000 | 132 | 3 | (3) | 60 | |
| | | CO | 3,000 | 132 | 3 | (3) | 60 | |
| | | Equilibrated | SO ₂ | 20,000 | 32 | 4 | 5 | 6 |
| | | | Cl ₂ | 20,000 | 32 | 4 | 5 | 6 |
| | | | NO ₂ | 20,000 | 32 | 4 | 5 | 6 |
| | | | CCl ₄ | 20,000 | 32 | 4 | 5 | 6 |
| | | | NH ₃ | 30,000 | 32 | 4 | 50 | 6 |

¹ Minimum life will be determined at the indicated penetration.
² Relative humidity of test atmosphere will be 95±3 percent; temperature of test atmosphere will be 25±2.5° C.
³ Maximum allowable CO penetration will be 385 cc. during the minimum life. The penetration shall not exceed 500 p.p.m. during this time.
⁴ Relative humidity of test atmosphere will be 95±3 percent; temperature of test atmosphere entering the test fixture will be 0+2.5° C.—0° C.

TABLE 6.—CANISTER BENCH TESTS AND REQUIREMENTS FOR CHIN-STYLE GAS MASK CANISTERS
(30 CFR Part 11, Subpart I, § 11.102-5)

| Canister type | Test condition | Test atmosphere | | | Number of tests | Maximum allowable penetration, p.p.m. | Minimum service life, minutes ¹ |
|----------------|----------------|------------------|-----------------------|-------------------|-----------------|---------------------------------------|--|
| | | Gas or vapor | Concentration, p.p.m. | Flow rate, l.p.m. | | | |
| Acid gas | As received | SO ₂ | 5,000 | 64 | 3 | 5 | 12 |
| | | Cl ₂ | 5,000 | 64 | 3 | 5 | 12 |
| | | NO ₂ | 5,000 | 64 | 3 | 5 | 12 |
| | Equilibrated | SO ₂ | 5,000 | 32 | 4 | 5 | 12 |
| | | Cl ₂ | 5,000 | 32 | 4 | 5 | 12 |
| | | NO ₂ | 5,000 | 32 | 4 | 5 | 12 |
| Organic vapors | As received | CCl ₄ | 5,000 | 64 | 3 | 5 | 12 |
| | Equilibrated | CCl ₄ | 5,000 | 32 | 4 | 5 | 12 |
| Ammonia | As received | NH ₃ | 5,000 | 64 | 3 | 50 | 12 |
| | Equilibrated | NH ₃ | 5,000 | 32 | 4 | 50 | 12 |

¹ Minimum life will be determined at the indicated penetration.

TABLE 7.—CANISTER BENCH TESTS AND REQUIREMENTS FOR ESCAPE GAS MASK CANISTERS
(30 CFR Part 11, Subpart I, § 11.102-5)

| Canister type | Test condition | Test atmosphere | | | Number of tests | Maximum allowable penetration, p.p.m. | Minimum service life, minutes ¹ |
|-----------------|----------------|------------------|-----------------------|-------------------|-----------------|---------------------------------------|--|
| | | Gas or vapor | Concentration, p.p.m. | Flow rate, l.p.m. | | | |
| Acid gas | As received | SO ₂ | 5,000 | 64 | 3 | 5 | 12 |
| | | Cl ₂ | 5,000 | 64 | 3 | 5 | 12 |
| | | NO ₂ | 5,000 | 64 | 3 | 5 | 12 |
| | Equilibrated | SO ₂ | 5,000 | 32 | 4 | 5 | 12 |
| | | Cl ₂ | 5,000 | 32 | 4 | 5 | 12 |
| | | NO ₂ | 5,000 | 32 | 4 | 5 | 12 |
| Organic vapors | As received | CCl ₄ | 5,000 | 64 | 3 | 5 | 12 |
| | Equilibrated | CCl ₄ | 5,000 | 32 | 4 | 5 | 12 |
| Ammonia | As received | NH ₃ | 5,000 | 64 | 3 | 50 | 12 |
| | Equilibrated | NH ₃ | 5,000 | 32 | 4 | 50 | 12 |
| Carbon monoxide | As received | CO | 10,000 | 32 | 2 | (²) | 60 |
| | | CO | 5,000 | 32 | 3 | (³) | 60 |
| | | CO | 3,000 | 32 | 3 | (³) | 60 |

¹ Minimum life will be determined at the indicated penetration.

² Relative humidity of test atmosphere will be 95±3 percent; temperature of test atmosphere will be 25±2.5° C.

³ Maximum allowable CO penetration will be 385 cc. during the minimum life. The penetration shall not exceed 500 p.p.m. during this time.

⁴ If effluent temperature exceeds 100° C. during this test, the escape gas mask shall be equipped with an effective heat exchanger.

⁵ Relative humidity of test atmosphere will be 95±3 percent; temperature of test atmosphere entering the test fixture will be 0+2.5° C.—0° C.

Subpart J—Supplied-Air Respirators

§ 11.110 Supplied-air respirators; description.

(a) Supplied-air respirators, including all completely assembled respirators designed for use as respiratory protection during entry into and escape from hazardous atmospheres are described as follows:

(1) *Type "A" supplied-air respirators.*

A hose mask respirator, for entry into and escape from hazardous atmospheres, which consists of a motor-driven or hand-operated blower that permits the

free entrance of air when the blower is not operating, a strong large-diameter hose having a low resistance to airflow, a harness to which the hose and the lifeline are attached and a tight-fitting facepiece.

(2) *Type "AE" supplied-air respirators.* A Type "A" supplied-air respirator equipped with additional devices designed to protect the wearer's head and neck against impact and abrasion from rebounding abrasive material, and with shielding material such as plastic, glass, woven wire, sheet metal, or other suitable material to protect the window(s) of

facepieces, hoods, and helmets which do not unduly interfere with the wearer's vision and permit easy access to the external surface of such window(s) for cleaning.

(3) *Type "B" supplied-air respirators.* A hose mask respirator, for entry into and escape from atmospheres not immediately dangerous to life or health, which consists of a strong large-diameter hose with low resistance to air-flow through which the user draws inspired air by means of his lungs alone, a harness to which the hose is attached, and a tight-fitting facepiece.

(4) *Type "BE" supplied-air respirators.* A type "B" supplied-air respirator equipped with additional devices designed to protect the wearer's head and neck against impact and abrasion from rebounding abrasive material, and with shielding material such as plastic, glass, woven wire, sheet metal, or other suitable material to protect the window(s) of facepieces, hoods, and helmets which do not unduly interfere with the wearer's vision and permit easy access to the external surface of such window(s) for cleaning.

(5) *Type "C" supplied-air respirators.* An airline respirator, for entry into and escape from atmospheres not immediately dangerous to life or health, which consists of a source of respirable breathing air, a hose, a detachable coupling, a control valve, orifice, a demand valve or pressure demand valve, an arrangement for attaching the hose to the wearer, and a facepiece, hood, or helmet.

(6) *Type "CE" supplied-air respirators.* A type "C" supplied-air respirator equipped with additional devices designed to protect the wearer's head and neck against impact and abrasion from rebounding abrasive material, and with shielding material such as plastic, glass, woven wire, sheet metal, or other suitable material to protect the window(s) of facepieces, hoods, and helmets which do not unduly interfere with the wearer's vision and permit easy access to the external surface of such window(s) for cleaning.

§ 11.111 Supplied-air respirators: required components.

(a) Each supplied-air respirator described in § 11.110 shall, where its design requires, contain the following component parts:

- (1) Facepiece, hood, or helmet;

- (2) Air supply valve, orifice, or demand or pressure-demand regulator;

- (3) Hand operated or motor driven air blower;

- (4) Air supply hose;

- (5) Detachable couplings;

- (6) Flexible breathing tube; and

- (7) Respirator harness.

(b) The component parts of each supplied-air respirator shall meet the minimum construction requirements set forth in Subpart G of this part.

§ 11.112 Breathing tubes; minimum requirements.

(a) Flexible breathing tubes used in conjunction with supplied-air respirators shall be designed and constructed to prevent:

- (1) Restriction of free head movement;

- (2) Disturbance of the fit of facepieces, mouthpieces, hoods, or helmets;

- (3) Interference with the wearer's activities; and

- (4) Shutoff of airflow due to kinking, or from chin or arm pressure.

§ 11.113 Harnesses; installation and construction; minimum requirements.

(a) Each supplied-air respirator shall, where necessary, be equipped with a suitable harness designed and constructed to hold the components of the respirator in position against the wearer's body.

(b) Harnesses shall be designed and constructed to permit easy removal and replacement of respirator parts, and where applicable, provide for holding a full facepiece in the ready position when not in use.

§ 11.114 Respirator containers; minimum requirements.

Supplied-air respirators shall be equipped with a substantial, durable container bearing markings which show the applicant's name, the type and commercial designation of the respirator it contains, and all appropriate approval labels.

§ 11.115 Half-mask facepieces, full facepieces, hoods, and helmets; fit; minimum requirements.

(a) Half-mask facepieces and full facepieces shall be designed and constructed to fit persons with various facial shapes and sizes either (1) by providing more than one facepiece size, or (2) by

providing one facepiece size which will fit varying facial shapes and sizes.

(b) Full facepieces shall provide for optional use of corrective spectacles or lenses, which shall not reduce the respiratory protective qualities of the respirator.

(c) Hoods and helmets shall be designed and constructed to fit persons with various head sizes, provide for the optional use of corrective spectacles or lenses, and insure against any restriction of movement by the wearer.

(d) Facepieces, hoods, and helmets shall be designed to prevent eyepiece fogging.

§ 11.116 Facepieces, hoods, and helmets; eyepieces; minimum requirements.

(a) Facepieces, hoods, and helmets shall be designed and constructed to provide adequate vision which is not distorted by the eyepiece.

(b) All eyepieces except those on Types B, BE, C, and CE supplied-air respirators shall be designed and constructed to meet the impact and penetration requirements specified in Federal Specification, Mask, Air Line, and Respirator, Air Filtering, Industrial GGG-M-125d, October 11, 1965.

(c) (1) The eyepieces of AE, BE, and CE type supplied-air respirators shall be shielded by plastic, glass, woven wire, sheet metal, or other suitable material which does not interfere with the vision of the wearer.

(2) Shields shall be mounted and attached to the facepiece to provide easy access to the external surface of the eyepiece for cleaning.

§ 11.117 Inhalation and exhalation valves; check valves; minimum requirements.

(a) Inhalation and exhalation valves shall be provided where necessary and protected against distortion.

(b) Exhalation valves shall be:

(1) Protected against damage and external influence; and

(2) Designed and constructed to prevent inward leakage of contaminated air.

(c) Check valves designed and constructed to allow airflow toward the facepiece only shall be provided in the connections to the facepiece or in the hose fitting near the facepiece of all Type A, AE, B, and BE supplied-air respirators.

§ 11.118 Head harnesses; minimum requirements.

Facepieces shall be equipped with adjustable and replaceable head harnesses which are designed and constructed to provide adequate tension during use, and an even distribution of pressure over the entire area in contact with the face.

§ 11.119 Head and neck protection; supplied-air respirators; minimum requirements.

Type AE, BE, and CE supplied-air respirators shall be designed and constructed to provide protection against impact and abrasion from rebounding abrasive materials to the wearer's head and neck.

§ 11.120 Air velocity and noise levels; hoods and helmets; minimum requirements.

Noise levels generated by the respirator will be measured inside the hood or helmet at maximum airflow obtainable within pressure and hose length requirements and shall not exceed 80 dBA.

§ 11.121 Breathing gas; minimum requirements.

(a) Breathing gas used to supply supplied-air respirators shall be respirable breathing air and contain no less than 19.5 volume-percent of oxygen.

(b) Compressed, gaseous breathing air shall meet the applicable minimum grade requirements for Type I gaseous air set forth in the Compressed Gas Association Commodity Specification for Air, G-7.1 (Grade D or higher quality).

(c) Compressed, liquefied breathing air shall meet the applicable minimum grade requirements for Type II liquid air set forth in the Compressed Gas Association Commodity Specification for Air, G-7.1 (Grade B or higher quality).

§ 11.122 Air supply source; hand-operated or motor driven air blowers; Type A supplied-air respirators; minimum requirements.

(a) Blowers shall be designed and constructed to deliver an adequate amount of air to the wearer with either direction of rotation, unless constructed to permit rotation in one direction only, and to permit the free entrance of air to the hose when the blower is not operated.

(b) No multiple systems, whereby more than one user is supplied by one blower, will be approved, unless each hose line is connected directly to a manifold at the blower.

§ 11.123 Terminal fittings or chambers; Type B supplied-air respirators; minimum requirements.

(a) Blowers or connections to air supplies providing positive pressures shall not be approved for use on Type B supplied-air respirators.

(b) Terminal fittings or chambers employed in Type B supplied-air respirators, shall be:

(1) Installed in the inlet of the hose;

(2) Designed and constructed to provide for the drawing of air through corrosion resistant material arranged so as to be capable of removing material larger than 0.149 mm. in diameter (149 micrometers, 100-mesh, U.S. Standard sieve).

(3) Installed to provide a means for fastening or anchoring the fitting or chamber in a fixed position in a zone of respirable air.

§ 11.124 Supplied-air respirators; performance requirements; general.

Supplied-air respirators and the individual components of each such device shall, as appropriate, meet the requirements for performance and protection specified in the tests described in §§ 11.124-1 through 11.124-24.

§ 11.124-1 Hand-operated blower test: minimum requirements.

(a) Hand-operated blowers shall be tested by attaching them to a mechanical drive and operating them 6 to 8 hours daily for a period of 100 hours at a speed necessary to deliver 50 liters of air per minute through each completely assembled respirator. Each respirator shall be equipped with the maximum length of hose with which the device is to be approved and the hose shall be connected to each blower or manifold outlet designed for hose connections.

(b) The crank speed of the hand-operated blower shall not exceed 50 revolutions per minute in order to deliver the required 50 liters of air per minute to each facepiece.

(c) The power required to deliver 50 liters of air per minute to each wearer

through the maximum length of hose shall not exceed one-fiftieth horsepower, and the torque shall not exceed a force of 2.3 kg. (5 pounds) on a 20 cm. (8-inch) crank, as defined in § 11.124-3.

(d) The blower shall operate throughout the period without failure or indication of excessive wear of bearings or other working parts.

§ 11.124-2 Motor-operated blower test; minimum requirements.

(a) Motor-operated blowers shall be tested by operating them at their specified running speed 6 to 8 hours daily for a period of 100 hours when assembled with the kind and maximum length of hose for which the device is to be approved and when connected to each blower or manifold outlet designed for hose connections.

(b) The connection between the motor and the blower shall be so constructed that the motor may be disengaged from the blower when the blower is operated by hand.

(c) The blower shall operate throughout the period without failure or indication of excessive wear of bearings or other working parts.

(d) Where a blower, which is ordinarily motor driven, is operated by hand, the power required to deliver 50 liters of air per minute to each wearer through the maximum length of hose shall not exceed one-fiftieth horsepower, and the torque shall not exceed a force of 2.3 kg. (5 pounds) on a 20 cm. (8-inch) crank, as defined in § 11.124-3.

(e) Where the respirator is assembled with the facepiece and 15 m. (50 feet) of the hose for which it is to be approved, and when connected to one outlet with all other outlets closed and operated at a speed not exceeding 50 revolutions of the crank per minute, the amount of air delivered into the respiratory-inlet covering shall not exceed 150 liters per minute.

§ 11.124-3 Method of measuring the power and torque required to operate blowers.

As shown in Figure 1, the blower crank is replaced by a wooden drum. *a* (13 cm. (5 inches) in diameter is convenient). This drum is wound with about 12 m. (40 feet) of No. 2 picture cord. *b*. A weight, *c*, of sufficient mass to rotate the blower at the desired speed is suspended from

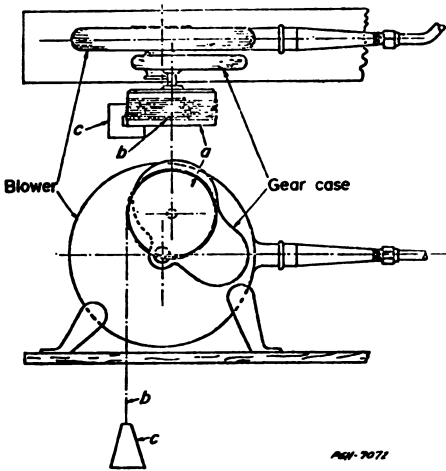


Figure 1.—Apparatus for measuring power required to operate blower. (30 CFR Part 11, Subpart J, § 11.124-3)

this wire cord. A mark is made on the cord about 3 to 4.5 m. (10 to 15 feet) from the weight, *c*. Another mark is placed at a measured distance (6-9 m./20-30 feet is convenient) from the first. These are used to facilitate timing. To determine the torque or horsepower required to operate the blower, the drum is started in rotation manually at or slightly above the speed at which the power measurement is to be made. The blower is then permitted to assume constant speed, and then as the first mark on the wire leaves the drum, a stopwatch is started. The watch is stopped when the second mark leaves the drum. From these data the foot-pounds per minute and the torque may be calculated.

§ 11.124-4 Type B supplied-air respirator; minimum requirements.

No Type B supplied-air respirator shall be approved for use with a blower or with connection to an air supply device at positive pressures.

§ 11.124-5 Type C supplied-air respirator, continuous flow class; minimum requirements.

(a) Respirators tested under this section shall be approved only when they supply respirable air at the pressures and quantities required.

(b) The pressure at the inlet of the hose connection shall not exceed 863

kN/m². (125 pounds per square inch gage).

(c) Where the pressure at any point in the supply system exceeds 863 kN/m² (125 pounds per square inch gage), the respirator shall be equipped with a pressure-release mechanism that will prevent the pressure at the hose connection from exceeding 863 kN/m² (125 pounds per square inch gage) under any conditions.

§ 11.124-6 Type C supplied-air respirator, demand and pressure demand class; minimum requirements.

(a) Respirators tested under this section shall be approved only when used to supply respirable air at the pressures and quantities required.

(b) The manufacturer shall specify the range of air pressure at the point of attachment of the air-supply hose to the air-supply system, and the range of hose length for the respirator. For example, he might specify that the respirator be used with compressed air at pressures ranging from 280-550 kN/m² (40 to 80 pounds per square inch) with from 6 to 76 m. (15 to 250 feet) of air-supply hose.

(c) The specified air pressure at the point of attachment of the hose to the air-supply system shall not exceed 863 kN/m² (125 pounds per square inch gage).

(d) (1) Where the pressure in the air-supply system exceeds 863 kN/m² (125 pounds per square inch gage), the respirator shall be equipped with a pressure-release mechanism that will prevent the pressure at the point of attachment of the hose to the air-supply system from exceeding 863 kN/m² (125 pounds per square inch gage).

(2) The pressure-release mechanism shall be set to operate at a pressure not more than 20 percent above the manufacturer's highest specified pressure. For example, if the highest specified pressure is 863 kN/m² (125 pounds per square inch), the pressure-release mechanism would be set to operate at a maximum of 1,035 kN/m² (150 pounds per square inch).

§ 11.124-7 Air-supply line tests; minimum requirements.

Air supply lines employed on Type A, Type B, and Type C supplied-air respirators shall meet the minimum test requirements set forth in Table 8.

TABLE 8.—AIR-SUPPLY-LINE REQUIREMENTS AND TESTS

(30 CFR Part 11, Subpart J, § 11.124-7)

| Specific requirements | Requirements for the air-supply lines of the indicated type of supplied-air respirator | | |
|-----------------------|---|--|---|
| | Type A | Type B | Type C |
| Length of hose... | Maximum of 91 m. (300 feet), in multiples of 7.6 m. (25 feet). | Maximum of 23 m. (75 feet) in multiples of 7.6 m. (25 feet). | Maximum of 91 m. (300 feet) in multiples of 7.6 m' (25 feet). It will be permissible for the applicant to supply hose of the approved type of shorter length than 7.6 m. (25 feet) provided it meets the requirements of the part. |
| Air flow..... | None..... | None..... | The air-supply hose with air regulating valve or orifice shall permit a flow of not less than 115 liters (4 cubic feet) per minute to tight-fitting and 170 liters (6 cubic feet) per minute to loose-fitting respiratory-inlet coverings through the maximum length of hose for which approval is granted and at the minimum specified air-supply pressure. The maximum flow shall not exceed 425 liters (15 cubic feet) per minute at the maximum specified air-supply pressure with the minimum length of hose for which approval is granted. The air-supply hose, detachable coupling, and demand valve of the demand class or pressure-demand valve of the pressure-demand class for Type C supplied-air respirators, demand and pressure-demand classes, shall be capable of delivering respirable air at a rate of not less than 115 liters (4 cubic feet) per minute to the respiratory-inlet covering at an inhalation resistance not exceeding 50 millimeters (2 inches) of water-column height measured in the respiratory-inlet covering with any combination of air-supply pressure and length of hose within the applicant's specified range of pressure and hose length. The air-flow rate and resistance to inhalation shall be measured while the demand or pressure-demand valve is actuated 20 times per minute by a source of intermittent suction. The maximum rate of flow to the respiratory-inlet covering shall not exceed 425 liters (15 cubic feet) per minute under the specified operating conditions. |
| Air-regulating valve. | None..... | None..... | If an air-regulating valve is provided, it shall be so designed that it will remain at a specific adjustment, which will not be affected by the ordinary movement of the wearer. The valve must be so constructed that the air supply with the maximum length of hose and at the minimum specified air-supply pressure will not be less than 115 liters (4 cubic feet) of air per minute to tight-fitting and 170 liters (6 cubic feet) of air per minute to loose-fitting respiratory inlet coverings for any adjustment of the valve. If a demand or pressure-demand valve replaces the air-regulating valve, it shall be connected to the air-supply at the maximum air pressure for which approval is sought by means of the minimum length of air-supply hose for which approval is sought. The outlet of the demand or pressure-demand valve shall be connected to a source of intermittent suction so that the demand or pressure-demand valve is actuated approximately 20 times per minute for a total of 100,000 inhalations. To expedite this test, the rate of actuation may be increased if mutually agreeable to the applicant and the Bureau. During this test the valve shall function without failure and without excessive wear of the moving parts. The demand or pressure-demand valve shall not be damaged in any way when subjected at the outlet to a pressure or suction of 25 cm. (10 inches) of water gage for 2 minutes. |
| Noncollapsibility. | The hose shall not collapse or exhibit permanent deformation when a force of 90 kg. (200 pounds) is applied for 5 minutes between 2 planes 7.6 cm. (3 inches) wide on opposite sides of the hose. | Same as Type A... None. | |

TABLE 8.—AIR-SUPPLY-LINE REQUIREMENTS AND TESTS—Continued
(30 CFR Part 11, Subpart J, § 11.124-7)

| Specific requirements | Requirements for the air-supply lines of the indicated types of supplied-air respirators | | |
|---------------------------------|--|---------------------|---|
| | Type A | Type B | Type C |
| Nonkink-ability. | None..... | None..... | A 7.6 m. (25 foot) section of the hose will be placed on a horizontal-plane surface and shaped into a one-loop coil with one end of the hose connected to an airflow meter and the other end of the hose supplied with air at the minimum specified supply pressure. The connection shall be in the plane of the loop. The other end of the hose will be pulled tangentially to the loop and in the plane of the loop until the hose straightens. To meet the requirements of this test the loop shall maintain a uniform near-circular shape and ultimately unfold as a spiral, without any localized deformation that decreases the flow of air to less than 90 percent of the flow when the hose is tested while remaining in a straight line. |
| Strength of hose and couplings. | Hose and couplings shall not separate or fall when tested with a pull of 113 kg. (250 pounds) for 5 minutes. | Same as Type A.. | Hose and couplings shall not exhibit any separation or failure when tested with a pull of 45 kg. (100 pounds) for 5 minutes and when tested by subjecting them to an internal air pressure of 2 times the maximum respirator-supply pressure that is specified by the applicant or at 173 kN/m. ² (25 pounds per square inch) gage, whichever is higher. |
| Tightness..... | No air leakage shall occur when the hose and couplings are joined and the joint(s) are immersed in water and subjected to an internal air pressure of 35 kN/m. ² (5 pounds per square inch) gage. | None..... | Leakage of air exceeding 50 cc. per minute at each coupling shall not be permitted when the hose and couplings are joined and are immersed in water, with air flowing through the respirator under a pressure of 173 kN/m. ² (25 pounds per square inch) gage applied to the inlet end of the air-supply hose, or at twice the maximum respirator-supply pressure that is specified by the applicant, whichever is higher. |
| Permeation of hose by gasoline. | The permeation of the hose by gasoline will be tested by immersing 7.6 m. (25 feet) of hose and one coupling in gasoline, with air flowing through the hose at the rate of 8 liters per minute for 6 hours. The air from the hose shall not contain more than 0.01 percent by volume of gasoline vapor at the end of the test. | Same as for Type A. | Same as for Type A, except the test period shall be 1 hour. |
| Detachable coupling. | None..... | None..... | A hand-operated detachable coupling by which the wearer can readily attach or detach the connecting hose shall be provided at a convenient location. This coupling shall be durable, remain connected under all conditions of normal respirator use, and meet the prescribed tests for strength and tightness of hose and couplings. |

§ 11.124-8 Harness test; minimum requirements.

(a) (1) Shoulder straps employed on Type A supplied-air respirators shall be tested for strength of material, joints, and seams and must separately withstand a pull of 113 kg. (250 pounds) for 30 minutes without failure.

(2) Belts, rings, and attachments for life lines must withstand a pull of 136 kg. (300 pounds) for 30 minutes without failure.

(3) The hose shall be firmly attached to the harness so as to withstand a pull

of 113 kg. (250 pounds) for 30 minutes without separating, and the hose attachments shall be arranged so that the pull or drag of the hose behind an advancing wearer does not disarrange the harness or exert pull upon the facepiece.

(4) The arrangement and suitability of all harness accessories and fittings will be considered.

(b) (1) The harness employed on Type B supplied-air respirators shall not be uncomfortable, disturbing, or interfere with the movements of the wearer.

(2) The harness shall be easily adjustable to various sizes.

(3) The hose shall be attached to the harness in a manner that will withstand a pull of 45 kg. (100 pounds) for 30 minutes without separating or showing signs of failure.

(4) The design of the harness and attachment of the line shall permit dragging the maximum length of hose considered for approval over a concrete floor without disarranging the harness or exerting a pull on the facepiece.

(5) The arrangement and suitability of all harness accessories and fittings will be considered.

(c) The harness employed on Type C respirators shall be similar to that required on the Type B respirator, or, it may consist of a simple arrangement for attaching the hose to a part of the wearer's clothing in a practical manner that prevents a pull equivalent to dragging the maximum length of the hose over a concrete floor from exerting pull upon the respiratory-inlet covering.

(d) Where supplied-air respirators have a rigid or partly rigid head covering, a suitable harness shall be required to assist in holding this covering in place.

§ 11.124-9 Breathing tube test; minimum requirements.

(a) (1) Type A and Type B supplied-air respirators shall employ one or two flexible breathing tubes of the non-kinking type which extend from the facepiece to a connecting hose coupling attached to the belt or harness.

(2) The breathing tubes employed shall permit free head movement, insure against closing off by kinking or by chin or arm pressure, and they shall not create a pull that will loosen the facepiece or disturb the wearer.

(b) Breathing tubes employed on Type C supplied-air respirators of the continuous flow class shall meet the minimum requirements set forth in paragraph (a) of this section, however, an extension of the connecting hose may be employed in lieu of the breathing tubes required.

(c) (1) A flexible, nonkinking type breathing tube shall: (i) Be employed on Type C supplied-air respirators of the demand and pressure-demand class; and (ii) extend from the facepiece to the demand or pressure-demand valve, except

where the valve is attached directly to the facepiece.

(2) The breathing tube shall permit free head movement, insure against closing off by kinking or by chin or arm pressure, and shall not create a pull that will loosen the facepiece or disturb the wearer.

§ 11.124-10 Airflow resistance test, Type A and Type AE supplied-air respirators; minimum requirements.

(a) Airflow resistance will be determined when the respirator is completely assembled with the respiratory-inlet covering, the air-supply device, and the maximum length of air-supply hose coiled for one-half its length in loops 1.5 to 2.1 m. (5 to 7 feet) in diameter.

(b) The inhalation resistance, drawn at the rate of 85 liters (3 cubic feet) per minute when the blower is not operating or under any practical condition of blower operation shall not exceed the following amounts:

| Maximum length of hose for which respirator is approved | | Maximum resistance, water column height | |
|---|--------|---|-------------|
| Feet | Meters | Inches | Millimeters |
| 75 | 23 | 1.5 | 38 |
| 150 | 46 | 2.5 | 64 |
| 250 | 76 | 3.5 | 89 |
| 300 | 91 | 4.0 | 102 |

(c) The exhalation resistance shall not exceed 25 mm. (1 inch) of water-column height at a flow rate of 85 liters (3 cubic feet) per minute when the blower is not operating or under any practical condition of blower operation.

§ 11.124-11 Airflow resistance test; Type B and Type BE supplied-air respirators; minimum requirements.

(a) Airflow resistance shall be determined when the respirator is completely assembled with the respiratory-inlet covering and the hose in the maximum length to be considered for approval, coiled in loops 1.5 to 2.1 m. (5 to 7 feet) in diameter.

(b) Airflow resistance shall not exceed 38 mm. (1.5 inches) of water-column height to air drawn at the flow rate of 85 liters (3 cubic feet) per minute.

(c) The exhalation resistance shall not exceed 25 mm. (1 inch) of water-column height at this flow rate.

§ 11.124-12 Airflow resistance test; Type C supplied-air respirator, continuous flow class and Type CE supplied-air respirator; minimum requirements.

The resistance to air flowing from the respirator shall not exceed 25 mm. (1 inch) of water-column height when the air flow into the respiratory-inlet covering is 115 liters (4 cubic feet) per minute.

§ 11.124-13 Airflow resistance test; Type C supplied-air respirator, demand class; minimum requirements.

(a) Inhalation resistance shall not exceed 50 millimeters (2 inches) of water at an air flow of 115 liters (4 cubic feet) per minute.

(b) The exhalation resistance to a flow of air at a rate of 85 liters (3 cubic feet) per minute shall not exceed 25 millimeters (1 inch) of water.

§ 11.124-14 Airflow resistance test; Type C supplied-air respirator, pressure-demand class; minimum requirements.

(a) The static pressure in the facepiece shall not exceed 38 mm. (1.5 inches) of water-column height.

(b) The pressure in the facepiece shall not fall below atmospheric at inhalation airflows less than 115 liters (4 cubic feet) per minute.

(c) The exhalation resistance to a flow of air at a rate of 85 liters (3 cubic feet) per minute shall not exceed the static pressure in the facepiece by more than 51 mm. (2 inches) of water-column height.

§ 11.124-15 Exhalation valve leakage test.

(a) Dry exhalation valves and valve seats will be subjected to a suction of 25 mm. water-column height while in a normal operating position.

(b) Leakage between the valve and valve seat shall not exceed 30 milliliters per minute.

§ 11.124-16 Man tests for gases and vapors; supplied-air respirators; general performance requirements.

(a) Wearers will enter a chamber containing a gas or vapor as prescribed in §§ 11.124-17, 11.124-18, 11.124.19, and 11.124-20.

(b) Each wearer will spend 10 minutes in work to provide observations on freedom of the device from leakage. The

freedom and comfort allowed the wearer will also be considered.

(c) Time during the test period will be divided as follows:

(1) *Five minutes.* Walking, turning head, dipping chin; and

(2) *Five minutes.* Pumping air with a tire pump into a 28-liter (1 cubic foot) container, or equivalent work.

(d) No odor of the test gas or vapor shall be detected by the wearer in the air breathed during any such test, and the wearer shall not be subjected to any undue discomfort or encumbrance because of the fit, air delivery, or other features of the respirator during the testing period.

§ 11.124-17 Man test for gases and vapors; Type A and Type AE respirators; test requirements.

(a) The completely assembled respirator will be worn in a chamber containing 0.1 ± 0.025 percent isoamyl acetate vapor, and the blower, the intake of the hose, and not more than 25 percent of the hose length will be located in isoamyl acetate-free air.

(b) The man in the isoamyl acetate atmosphere will draw his inspired air through the hose, connections, and all parts of the air device by means of his lungs alone (blower not operating).

(c) The 10-minute work test will be repeated with the blower in operation at any practical speed up to 50 revolutions of the crank per minute.

§ 11.124-18 Man test for gases and vapors; Type B and Type BE respirators; test requirements.

(a) The completely assembled respirator will be worn in a chamber containing 0.1 ± 0.025 percent isoamyl acetate vapor, and the intake of the hose, and not more than 25 percent of the hose length will be located in isoamyl acetate-free air.

(b) The man in the isoamyl acetate atmosphere will draw his inspired air through the hose and connections by means of his lungs alone.

§ 11.124-19 Man test for gases and vapors; Type C respirators, continuous-flow class and Type CE supplied-air respirators; test requirements.

(a) The completely assembled respirator will be worn in a chamber containing 0.1 ± 0.025 percent isoamyl acetate vapor, the intake of the hose will be

connected to a suitable source of respirable air, and not more than 25 percent of the hose length will be located in isoamyl acetate-free air.

(b) The minimum flow of air required to maintain a positive pressure in the respiratory-inlet covering throughout the entire breathing cycle will be supplied to the wearer, provided however, that airflow shall not be less than 115 liters per minute for tight-fitting and not less than 170 liters per minute for loose-fitting respiratory inlet-coverings.

(c) The test will be repeated with the maximum rate of flow attainable within specified operating pressures.

§ 11.124-20 Man test for gases and vapors; Type C supplied-air respirators, demand and pressure-demand classes; test requirements.

(a) The completely assembled respirator will be worn in a chamber containing 0.1 ± 0.025 percent isoamyl acetate vapor, the intake of the hose will be connected to a suitable source of respirable air, and not more than 25 percent of the hose length will be located in isoamyl acetate free air.

(b) The test will be conducted at the minimum pressure with the maximum hose length and will be repeated at the maximum pressure with the minimum hose length.

§ 11.124-21 Tests for protection during abrasive blasting; Type AE, Type BE, and Type CE supplied-air respirators; general performance requirements.

(a) Tests will be made under conditions of typical abrasive blasting operation.

(b) The tests prescribed in §§ 11.124-22, 11.124-23, and 11.124-24 will be conducted under the following conditions:

(1) A suction-feed abrasive blasting outfit will be used by the wearer;

(2) The diameter of the air jet shall be 5 mm. ($\frac{3}{16}$ inch);

(3) Air pressure will be 276-483 kN/m.² (40-70 pounds per square inch);

(4) The abrasive used will contain a composition of 99+ percent free silica (SiO₂);

(5) The size properties of the abrasive used will be a mixture of 90 percent by weight of essentially No. 1 sandblast sand and 10 percent air-floated fines; and

(6) The No. 1 sand used will meet a size specification of not more than 10 percent on a 20-mesh sieve and not more than 10 percent through a 35-mesh sieve;

99+ percent of the fines will be able to pass through a 270-mesh sieve. All size determinations will be made by standard-mesh sieves.

(c) Tests will be conducted for 30 minutes continuously.

(d) (1) The person wearing the respirator will sandblast the inside surface of a common iron kettle of approximate hemispherical shape (about 76 cm. (30 inches) in diameter, and 113.6 liters (30 gallons) capacity).

(2) The kettle will be placed with the plane of the opening inclined 45° from a vertical position and with the lowest point of the rim at about the height of the person's hips.

(3) The wearer will stand at one position in front of the kettle and lean over until the upper part of the body is inclined to parallel the face of the kettle.

(4) The wearer will blast the entire inner surface of the kettle with the blast at all times directed approximately at right angles to the surface with the nozzle of the gun approximately 15 cm. (6 inches) from the surface, and with his head approximately 46 cm. (18 inches) from the nozzle.

(5) The wearer will move his head forward, backward, and sideways during each blasting operation.

(e) (1) Air will be withdrawn continuously during the test at the rate of 32 liters (1.13 cubic feet) per minute from the respiratory-inlet covering at a point as near as convenient to the wearer's nostrils.

(2) Simultaneously air will be drawn at the same rate from the source of intake air to the respirator.

(f) Respirators tested in accordance with §§ 11.124-22, 11.124-23, and 11.124-24 shall meet the following minimum requirements:

(1) The amount of particulate matter in the air withdrawn from the respiratory-inlet covering shall not exceed the amount of particulate matter supplied to the respirator by more than 0.5 mg. for the 30-minute test period;

(2) The wearer of the respirator in this test shall not experience undue encumbrance and discomfort because of the fit, air delivery, or other features of the respirator; and,

(3) The head and shoulder covering shall adequately protect the wearer from discomfort or injury due to impact or abrasion from the rebounding material during the test.

§ 11.124-22 Test for protection during abrasive blasting; Type AE supplied-air respirator; test requirements.

(a) The respirator will be arranged as prescribed in § 11.124-17(a), and the tests prescribed in § 11.124-21 will be performed.

(b) The wearer will draw his inspired air through the hose, connections, and all parts of the air device by means of his lungs alone (blower not operating).

(c) The test will be repeated with the blower in operation at any practical speed up to 50 revolutions per minute of the crank.

§ 11.124-23 Test for protection during abrasive blasting; Type BE supplied-air respirator; test requirements.

(a) The respirator will be arranged as prescribed in § 11.124-18(a), and the tests prescribing in § 11.124-21 will be performed.

(b) The wearer will draw his inspired air through the hose, connections, and all parts of the air device by means of his lungs alone.

§ 11.124-24 Test for protection during abrasive blasting; Type CE supplied-air respirator; test requirements.

(a) The respirator will be arranged as prescribed in § 11.124-19(a), and the tests prescribed in § 11.124-21 will be performed.

Subpart K—Dust, Fume, and Mist Respirators

§ 11.130 Dust, fume, and mist respirators; description.

Dust, fume, and mist respirators, including all completely assembled respirators designed for use as respiratory protection during entry into and escape from hazardous particulate atmospheres which contain adequate oxygen to support life, are described as follows:

(a) Respirators, either with replaceable or reusable filters, designed as respiratory protection against dusts (1) having an air contamination level not less than 0.05 milligram per cubic meter of air, including but not limited to coal, arsenic, cadmium, chromium, lead, and manganese; or (2) dusts having an air contamination level not less than 2 million particles per cubic foot of air, including but not limited to aluminum, flour, iron ore, and free silica, resulting

principally from the disintegration of a solid, e.g., dust clouds produced in mining, quarrying, and tunneling, and in dusts produced during industrial operations, such as grinding, crushing, and the general processing of minerals and other materials.

(b) Respirators, with replaceable filters, designed as respiratory protection against fumes of various metals having an air contamination level not less than 0.05 milligram per cubic meter, including but not limited to aluminum, antimony, arsenic, cadmium, chromium, copper, iron, lead, magnesium, manganese, mercury (except mercury vapor), and zinc, which result from the sublimation or condensation of their respective vapors, or from the chemical reaction between their respective vapors and gases.

(c) Respirators, with replaceable filters, designed as respiratory protection against mists of materials having an air contamination level not less than 0.05 milligram per cubic meter or 2 million particles per cubic foot, e.g., mists produced by spray coating with vitreous enamels, chromic acid mist produced during chromium plating, and other mists of materials whose liquid vehicle does not produce harmful gases or vapors.

(d) Respirators, with replaceable filters, designed as respiratory protection against dusts, fumes, and mists having an air contamination level less than 0.05 milligram per cubic meter, including but not limited to lithium hydride and beryllium, and against radionuclides.

(e) Respirators, with replaceable filters, designed as respiratory protection against radon daughters, and radon daughters attached to dusts, fumes, and mists.

(f) Respirators, with replaceable filters, designed as respiratory protection against asbestos-containing dusts and mists.

(g) Respirators, with replaceable filters, designed as protection against various combinations of particulate matter.

(h) Single-use dust respirators designed as respiratory protection against pneumoconiosis- and fibrosis-producing dusts, or dusts and mists, including but not limited to aluminum, asbestos, coal, flour, iron ore, and free silica.

(i) The types of dust, fume, and mist respirators in paragraphs (a) through

(g) of this section may also be classified according to their design as follows:

- (1) Air-purifying respirators; and
- (2) Powered air-purifying respirators.

§ 11.131 Dust, fume and mist respirators; required components.

(a) Each dust, fume, and mist respirator described in § 11.130 shall where its design requires, contain the following component parts:

- (1) Facepiece, mouthpiece with noseclip, hood, or helmet;
- (2) Filter unit;
- (3) Harness;
- (4) Attached blower; and
- (5) Breathing tube.

(b) The components of each dust, fume, and mist respirator shall meet the minimum construction requirements set forth in Subpart G of this part.

§ 11.132 Breathing tubes; minimum requirements.

(a) Flexible breathing tubes used in conjunction with respirators shall be designed and constructed to prevent:

- (1) Restriction of free head movement;
- (2) Disturbance of the fit of facepieces, mouthpieces, hoods, or helmets;
- (3) Interference with the wearer's activities; and
- (4) Shutoff of airflow due to kinking, or from chin or arm pressure.

§ 11.133 Harnesses; installation and construction; minimum requirements.

(a) Each respirator shall, where necessary, be equipped with a suitable harness designed and constructed to hold the components of the respirator in position against the wearer's body.

(b) Harnesses shall be designed and constructed to permit easy removal and replacement of respirator parts, and, where applicable, provide for holding a full facepiece in the ready position when not in use.

§ 11.134 Respirator containers; minimum requirements.

(a) Except as provided in paragraph (b) of this section each respirator shall be equipped with a substantial, durable container bearing markings which show the applicant's name, the type of respirator is contains, and all appropriate approval labels.

(b) Containers for single-use respirators may provide for storage of more

than one respirator, however, such containers shall be designed and constructed to prevent contamination of respirators which are not removed, and to prevent damage to respirators during transit.

§ 11.135 Half-mask facepieces, full facepieces, hoods, helmets, and mouthpieces; fit; minimum requirements.

(a) Half-mask facepieces and full facepieces shall be designed and constructed to fit persons with various facial shapes and sizes either: (1) By providing more than one facepiece size, or (2) by providing one facepiece size which will fit varying facial shapes and sizes.

(b) Full facepieces shall provide for optional use of corrective spectacles or lenses, which shall not reduce the respirator protective qualities of the respirator.

(c) Hoods and helmets shall be designed and constructed to fit persons with various head sizes, provide for the optional use of corrective spectacles or lenses, and insure against any restriction of movement by the wearer.

(d) Mouthpieces shall be equipped with noseclips which are securely attached to the mouthpiece or respirator and provide an airtight seal.

(e) Facepieces, hoods, and helmets shall be designed to prevent eyepiece fogging.

(f) Half-mask facepieces shall not interfere with the fit of common industrial safety corrective spectacles, as determined by the Institute's facepiece tests in §§ 11.140-1 and 11.140-2.

[37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6993, Mar. 15, 1973]

§ 11.136 Facepieces, hoods, and helmets; eyepieces; minimum requirements.

Facepieces, hoods, and helmets shall be designed and constructed to provide adequate vision which is not distorted by the eyepieces.

§ 11.137 Inhalation and exhalation valves; minimum requirements.

(a) Inhalation and exhalation valves shall be protected against distortion.

(b) Inhalation valves shall be designed and constructed and provided where necessary to prevent excessive exhaled air from adversely affecting filters, except where filters are specifically designed to

resist moisture as prescribed in § 11.140-5.

(c) Exhalation valves shall be: (1) Provided where necessary; (2) protected against damage and external influence; and (3) designed and constructed to prevent inward leakage of contaminated air.

§ 11.138 Head harnesses; minimum requirements.

(a) All facepieces shall be equipped with head harnesses designed and constructed to provide adequate tension during use and an even distribution of pressure over the entire area in contact with the face.

(b) Facepiece head harnesses, except those employed on single-use respirators, shall be adjustable and replaceable.

(c) Mouthpieces shall be equipped, where applicable, with adjustable and replaceable harnesses, designed and constructed to hold the mouthpiece in place.

§ 11.139 Air velocity and noise levels; hoods and helmets; minimum requirements.

Noise levels generated by the respirator will be measured inside the hood or helmet at maximum airflow obtainable and shall not exceed 80 dBA.

§ 11.140 Dust, fume, and mist respirators; performance requirements; general.

Dust, fume, and mist respirators and the individual components of each such device shall, as appropriate, meet the requirements for performance and protection specified in the tests described in §§ 11.140-1 through 11.140-12 and prescribed in Tables 9 and 10.

§ 11.140-1 Isoamyl acetate tightness test; dust, fume, and mist respirators designed for respiratory protection against fumes of various metals having an air contamination level not less than 0.05 milligram per cubic meter; minimum requirements.

(a) The respirator will be modified in such a manner that all of the air that normally would be inhaled through the inhalation port(s) is drawn through an efficient activated charcoal-filled canister, or cartridge(s), without interference with the face-contacting portion of the facepiece.

(b) The modified respirator will be worn by persons for at least 2 minutes each in a test chamber containing 100 parts (by volume) of isoamyl-acetate vapor per million parts of air.

(c) The odor of isoamyl-acetate shall not be detected by the wearers of the modified respirator while in the test atmosphere.

§ 11.140-2 Isoamyl acetate tightness test; respirators designed for respiratory protection against dusts, fumes, and mists having an air contamination level less than 0.05 milligram per cubic meter, or against radio-nuclides; minimum requirements.

(a) The applicant shall provide a charcoal-filled canister or cartridge of a size and resistance similar to the filter unit with connectors which can be attached to the facepiece in the same manner as the filter unit.

(b) (1) The canister or cartridge will be used in place of the filter unit, and persons will each wear a modified half-mask facepiece for 5 minutes in a test chamber containing 100 parts (by volume) of isoamyl-acetate vapor per million parts of air.

(2) The following work schedule will be performed by each wearer in the test chamber:

(i) Two minutes walking, nodding, and shaking head in normal movements; and

(ii) Three minutes exercising and running in place.

(3) The facepiece shall be capable of adjustment, according to the applicant's instructions, to each wearer's face, and the odor of isoamyl-acetate shall not be detectable by any wearer during the test.

(c) Where the respirator is equipped with a full facepiece, hood, helmet, or mouthpiece, the canister or cartridge will be used in place of the filter unit, and persons will each wear the modified respiratory-inlet covering for 5 minutes in a test chamber containing 1,000 parts (by volume) of isoamyl-acetate vapor per million parts of air, performing the work schedule specified in paragraph (b) (2) of this section.

§ 11.140-3 Air-purifying filter tests; performance requirements; general.

Dust, fume, and mist respirators will be tested in accordance with the schedule set forth in Table 10 to determine their effectiveness as protection against the particulate hazards specified therein.

§ 11.140-4 Silica dust test; single-use or reusable filters; minimum requirements.

(a) Three respirators with single-use filters will be tested for periods of 90 minutes each at a continuous airflow

rate of 32 liters per minute for air-purifying respirators, and for periods of 4 hours each at a flowrate not less than 115 liters per minute to tight-fitting facepieces, and not less than 170 liters per minute to loose-fitting hoods and helmets for powered air-purifying respirators.

(b) The relative humidity in the test chamber will be 20–80 percent, and the room temperature approximately 25° C.

(c) The test suspension in the chamber will not be less than 50 nor more than 60 milligrams of flint (99+ percent free silica) per cubic meter of air.

(d) The flint in suspension will be ground to pass 99+ percent through a 270-mesh sieve.

(e) The particle-size distribution of the test suspension will have a geometric mean of 0.4 to 0.6 micrometer, and the standard geometric deviation will not exceed 2.

(f) The total amount of unretained test suspension in samples taken during testing shall not exceed 1.5 milligrams for an air-purifying respirator, 14.4 milligrams for a powered air-purifying respirator with tight-fitting facepiece, and 21.3 milligrams for a powered air-purifying respirator with loose-fitting hood or helmet.

(g) Three respirators with reusable filters will be tested and shall meet the requirements specified in paragraphs (a) through (f) of this section; each filter shall be tested three times: Once as received; once after cleaning; and once after recleaning. The applicant's instructions shall be followed for each cleaning.

§ 11.140-5 Silica-dust test; single-use dust respirators; minimum requirements.

(a) Three respirators will be tested.

(b) As described in § 11.140-4, airflow will be cycled through the respirator by a breathing machine at the rate of 24 respirations per minute with a minute volume of 40 liters; a breathing machine cam with a work rate of 622 kg.-m./minute shall be used.

(c) Air exhaled through the respirator will be 35° ± 2° C. (95° ± 3° F.) with 94 ± 3 percent relative humidity.

(d) Air inhaled through the respirator will be sampled and analyzed for respirator leakage.

(e) The total amount of unretained test suspension, after drying, in samples taken during testing, shall not exceed 1.8 milligrams for any single test.

§ 11.140-6 Lead fume test; minimum requirements.

(a) Three respirators will be tested for a period of 312 minutes each at a continuous airflow rate of 32 liters per minute for air-purifying respirators, and for periods of 4 hours each at a flow rate not less than 115 liters per minute to tight-fitting facepieces, and not less than 170 liters per minute to loose-fitting hoods and helmets for powered air-purifying respirators.

(b) The relative humidity in the test chamber will be 20–80 percent, and the room temperature approximately 25° C.

(c) The test suspension in the test chamber will not be less than 15 nor more than 20 milligrams of freshly generated lead-oxide fume, calculated as lead (Pb), per cubic meter of air.

(d) The fume will be generated by impinging an oxygen-gas flame on molten lead.

(e) Samples of the test suspension will be taken during each test period for analysis.

(f) The total amount of unretained test suspension in the samples taken during testing, which is analyzed and calculated as lead (Pb), shall not exceed 1.5 milligrams of lead for an air-purifying respirator, 4.2 milligrams of lead for a powered air-purifying respirator with tight-fitting facepiece, and 6.2 milligrams of lead for a powered air-purifying respirator with loose-fitting hood or helmet.

§ 11.140-7 Silica mist test; minimum requirements.

(a) Three respirators will be tested for a period of 312 minutes each at a continuous airflow rate of 32 liters per minute for air-purifying respirators, and for periods of 4 hours each at a flow rate not less than 115 liters per minute to tight-fitting facepieces, and not less than 170 liters per minute to loose-fitting hoods and helmets for powered air-purifying respirators.

(b) The room temperature in the test chamber will be approximately 25° C.

(c) The test suspension in the test chamber will not be less than 20 nor more than 25 milligrams of silica mist, weighed as silica dust, per cubic meter of air.

(d) Mist will be produced by spraying an aqueous suspension of flint (99+ percent free silica), and the flint shall be ground to pass 99+ percent through a 270-mesh sieve.

(e) Samples of the test suspension will be taken during each test period for analysis.

(f) The total amount of silica mist unretained in the samples taken during testing, weighed as silica dust, shall not exceed 2.5 milligrams for an air-purifying respirator, 6.9 milligrams for a powered air-purifying respirator with tight-fitting facepiece, and 10.2 milligrams for a powered air-purifying respirator with loose-fitting hood or helmet.

§ 11.140-8 Tests for respirators designed for respiratory protection against more than one type of dispersoid; minimum requirements.

Respirators designed as respiratory protection against more than one particulate hazard (dust, fume, or mist) shall comply with all the requirements of this part, with respect to each of the specific hazards involved.

§ 11.140-9 Airflow resistance tests; all dust, fume, and mist respirators; minimum requirements.

(a) Resistance to airflow will be measured in the facepiece, mouthpiece, hood, or helmet of a dust, fume, or mist respirator mounted on a test fixture with air flowing at a continuous rate of 85 liters per minute, both before and after each test conducted in accordance with §§ 11.140-4 through 11.140-7.

(b) The maximum allowable resistance requirements for dust, fume, and mist respirators are as follows:

MAXIMUM RESISTANCE
(mm. water-column height)

| Type of respirator | Initial Inhalation | Final Inhalation | Exhalation |
|--|--------------------|------------------|------------|
| Single-use..... | 12 | 15 | 15 |
| Dust, fume, and mist, with single-use filter.... | 30 | 50 | 20 |
| Dust, fume, and mist, with reusable filter..... | 20 | 40 | 20 |
| Radon daughter..... | 18 | 25 | 15 |
| Asbestos dust and mist.... | 18 | 25 | 15 |

¹ Measured after silica dust test described in § 11.140-4.

§ 11.140-10 Exhalation valve leakage test; minimum requirements.

(a) Dry exhalation valves and valve seats will be subjected to a suction of 25 mm. water-column height while in a normal operating position.

(b) Leakage between the valve and valve seat shall not exceed 30 milliliters per minute.

§ 11.140-11 DOP filter test; respirators designed as respiratory protection against dusts, fumes, and mists having an air contamination level less than 0.05 milligram per cubic meter and against radionuclides; minimum requirements.

(a) All single air-purifying respirator filter units will be tested in an atmosphere concentration of 100 micrograms of DOP per liter of air at continuous flow rates of 32 and 85 liters per minute for a period of 5 to 10 seconds.

(b) Where filters are to be used in pairs, the flow rates will be 16 and 42.5 liters per minute, respectively, through each filter.

(c) The filter will be mounted on a connector in the same manner as used on the respirator, and the total leakage for the connector and filter shall not exceed 0.03 percent of the ambient DOP concentration at either flow rate.

§ 11.140-12 Silica dust loading test; respirators designed as protection against dusts, fumes, and mists having an air contamination level less than 0.05 milligram per cubic meter and against radionuclides; minimum requirements.

Three respirators will be tested in accordance with the provisions of § 11.140-4 and shall meet the minimum requirements of §§ 11.140-4 and 11.140.9.

TABLE 9.—FACEPIECE TEST REQUIREMENTS

(30 CFR Part 11, Subpart K, § 11.140-1, et seq.)

| Respirator types | Pressure tightness test ¹ | Isoamyl acetate test | |
|--|--------------------------------------|----------------------|----------|
| | | 11.140-1 | 11.140-2 |
| Dusts: Air Contamination Level not less than 0.05 mg/M ³ or 2 mppcf..... | X | ----- | ----- |
| Fumes: Air Contamination Level not less than 0.05 mg/M ³ | X | X | ----- |
| Mists: Air Contamination Level not less than 0.05 mg/M ³ or 2 mppcf.. | X | ----- | ----- |
| Dusts, Fumes, and Mists: Air Contamination Level less than 0.05 mg/M ³ or 2 mppcf, and radionuclides..... | X | ----- | X |
| Radon daughters..... | X | X | ----- |
| Asbestos-containing dusts and mists..... | X | ----- | ----- |

¹ Test is required only where applicable.

TABLE 10—AIR-PURIFYING AND POWERED AIR-PURIFYING RESPIRATOR FILTER TESTS REQUIRED FOR APPROVAL
(30 CFR Part 11, Subpart K, §11.140-4, et seq.)

| Respirator types | Silica dust tests | | | Lead fume test 11. 140-6 | Silica mist test 11. 140-7 | DOP test 11. 140-11 |
|--|-------------------|----------------|------------|-----------------------------------|-------------------------------------|---------------------------|
| | 11. 140-4 | 11. 140-5 | 11. 140-12 | | | |
| Dusts: Air Contamination Level not less than 0.05 mg/M ³ or 2 mppcf. | X | ----- | ----- | ----- | ----- | ----- |
| Fumes: Air Contamination Level not less than 0.05 mg/M ³ . | ----- | ----- | ----- | X | ----- | ----- |
| Mists: Air Contamination Level not less than 0.05 mg/M ³ or 2 mppcf. | ----- | ----- | ----- | ----- | X | ----- |
| Dusts, Fumes, and Mists: Air Contamination Level less than 0.05 mg/M ³ or 2 mppcf, and radionuclides. | ----- | ----- | X | ----- | ----- | X |
| Radon daughters | X ¹ | ----- | ----- | X ² | ----- | ----- |
| Asbestos-containing dusts and mists | X ³ | ----- | ----- | ----- | X ³ | ----- |
| Single-use dust and mist respirators | ----- | X ³ | ----- | ----- | X ³ | ----- |

¹ For resistance only.
² For penetration only.
³ Test required only where applicable.

Subpart L—Chemical Cartridge Respirators

§ 11.150 Chemical cartridge respirators; description.

Chemical cartridge respirators including all completely assembled respirators which are designed for use as respiratory protection during entry into or escape from atmospheres not immediately dangerous to life and health, are described according to the specific gases or vapors against which they are designed to provide respiratory protection, as follows:

| Type of chemical cartridge respirator: | Maximum use concentration, parts per million |
|--|--|
| Ammonia ----- | 300 |
| Chlorine ----- | 10 |
| Hydrogen chloride ----- | 50 |
| Methyl amine ----- | 100 |
| Organic vapor ¹ ----- | * 1, 000 |
| Sulfur dioxide ----- | 50 |

¹ Not for use against organic vapors with poor warning properties or those which generate high heats of reaction with sorbent material in the cartridge.

* Maximum use concentrations are lower for organic vapors which produce atmospheres immediately hazardous to life or health at concentrations equal to or lower than this concentration.

NOTE: Chemical cartridge respirators for respiratory protection against gases or vapors, which are not specifically listed with their maximum use concentration except pesticides, may be approved if the applicant sub-

mits a request for such approval, in writing, to the Institute. The Bureau and the Institute shall consider each such application and accept or reject the application after a review of the effects on the wearer's health and safety and in the light of any field experience in use of chemical cartridge respirators as protection against such hazards.

[37 FR 6242, Mar. 25, 1972, as amended at 38 FR 6993, Mar. 15, 1973]

§ 11.151 Chemical cartridge respirators; required components.

(a) Each chemical cartridge respirator described in § 11.150 shall, where its design requires, contain the following component parts:

- (1) Facepiece, mouthpiece, and nose-clip, hood, or helmet;
- (2) Cartridge;
- (3) Cartridge with filter;
- (4) Harness;
- (5) Breathing tube; and
- (6) Attached blower.

(b) The components of each chemical cartridge respirator shall meet the minimum construction requirements set forth in Subpart G of this part.

§ 11.152 Cartridges in parallel; resistance requirements.

Where two or more cartridges are used in parallel, their resistance to airflow shall be essentially equal.

§ 11.153 Cartridges; color and markings; requirements.

The color and markings of all cartridges or labels shall conform with the

requirements of the American National Standard for Identification of Gas Mask Canisters, K13.1, obtainable from American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.

§ 11.154 Filters used with chemical cartridges; location; replacement

(a) Particulate matter filters used in conjunction with a chemical cartridge shall be located on the inlet side of the cartridge.

(b) Filters shall be incorporated in or firmly attached to the cartridge and each filter assembly shall, where applicable, be designed to permit its easy removal from and replacement on the cartridge.

§ 11.155 Breathing tubes; minimum requirements.

(a) Flexible breathing tubes used in conjunction with respirators shall be designed and constructed to prevent:

- (1) Restriction of free head movement;
- (2) Disturbance of the fit of facepieces, mouthpieces, hoods, or helmets;
- (3) Interference with the wearer's activities; and
- (4) Shutoff of airflow due to kinking, or from chin or arm pressure.

§ 11.156 Harnesses; installation and construction; minimum requirements.

(a) Each respirator shall, where necessary, be equipped with a suitable harness designed and constructed to hold the components of the respirator in position against the wearer's body.

(b) Harnesses shall be designed and constructed to permit easy removal and replacement of respirator parts and, where applicable, provide for holding a full facepiece in the ready position when not in use.

§ 11.157 Respirator containers; minimum requirements.

Respirators shall be equipped with a substantial, durable container bearing markings which show the applicant's name, the type and commercial designation of the respirator it contains and all appropriate approval labels.

§ 11.158 Half-mask facepieces, full facepieces, mouthpieces, hoods, and helmets; fit; minimum requirements.

(a) Half-mask facepieces and full facepieces shall be designed and constructed to fit persons with various facial shapes and sizes either: (1) By provid-

ing more than one facepiece size, or (2) by providing one facepiece size which will fit varying facial shapes and sizes.

(b) Hoods and helmets shall be designed and constructed to fit persons with various head sizes, provide for the optional use of corrective spectacles or lenses, and insure against any restriction of movement by the wearer.

(c) Mouthpieces shall be equipped with noseclips which are securely attached to the mouthpiece or respirator and provide an airtight fit.

(d) Full facepieces shall provide for optional use of corrective spectacles or lenses which shall not reduce the respiratory protective qualities of the respirator.

(e) Facepieces, hoods, and helmets shall be designed to prevent eye-piece fogging.

§ 11.158-1 Facepieces, hoods, and helmets; eyepieces; minimum requirements.

Facepieces, hoods, and helmets shall be designed and constructed to provide adequate vision which is not distorted by the eyepieces.

§ 11.159 Inhalation and exhalation valves; minimum requirements.

(a) Inhalation and exhalation valves shall be provided where necessary and protected against distortion.

(b) Inhalation valves shall be designed and constructed to prevent excessive exhaled air from entering cartridges or adversely affecting canisters.

(c) Exhalation valves shall be: (1) Protected against damage and external influence, and (2) designed and constructed to prevent inward leakage of contaminated air.

§ 11.160 Head harnesses; minimum requirements.

(a) Facepieces shall be equipped with adjustable and replaceable head harnesses designed and constructed to provide adequate tension during use and an even distribution of pressure over the entire area in contact with the face.

(b) Mouthpieces shall be equipped where applicable, with an adjustable and replaceable harness designed and constructed to hold the mouthpiece in place.

§ 11.161 Air velocity and noise levels; hoods and helmets; minimum requirements.

Noise levels generated by the respirator will be measured inside the hood or

helmet at maximum airflow obtainable and shall not exceed 80 dBA.

§ 11.162 Chemical cartridge respirators; performance requirements; general.

Chemical cartridge respirators and the individual components of each such device shall, as appropriate, meet the minimum requirements for performance and protection specified in the tests described in §§ 11.162-1 through 11.162-8.

§ 11.162-1 Breathing resistance test; minimum requirements.

(a) Resistance to airflow will be measured in the facepiece, mouthpiece, hood, or helmet of a chemical cartridge respirator mounted on a test fixture with air flowing at a continuous rate of 85 liters per minute, both before and after each test conducted in accordance with §§ 11.162-5 through 11.162-8.

(b) The maximum allowable resistance requirements for chemical cartridge respirators are as follows:

MAXIMUM RESISTANCE
(mm. water-column height)

| Type of chemical cartridge respirator | Inhalation | | Exhalation |
|---|------------|--------------------|------------|
| | Initial | Final ¹ | |
| For gases, vapors, or gases and vapors..... | 40 | 45 | 20 |
| For gases, vapors, or gases and vapors, and dusts, fumes, and mists..... | 50 | 70 | 20 |
| For gases, vapors, or gases and vapors, and mists of paints, lacquers, and enamels..... | 50 | 70 | 20 |

¹ Measured at end of service life specified in Table 11

§ 11.162-2 Exhalation valve leakage test; minimum requirements.

(a) Dry exhalation valves and valve seats will be subjected to a suction of 25 mm. water-column height while in a normal operating position.

(b) Leakage between the valve and valve seat shall not exceed 30 milliliters per minute.

§ 11.162-3 Facepiece test; minimum requirements.

(a) The complete chemical cartridge respirator will be fitted to the faces of persons having varying facial shapes and sizes.

(b) Where the applicant specifies a facepiece size or sizes for the respirator together with the approximate measurement of faces they are designed to fit, the

Institute will provide test subjects to suit such facial measurements.

(c) Any chemical cartridge respirator part which must be removed to perform the facepiece or mouthpiece fit test shall be replaceable without special tools and without disturbing facepiece or mouthpiece fit.

(d) The facepiece or mouthpiece fit test using the positive or negative pressure recommended by the applicant and described in his instructions will be used before each test.

(e) (1) Each wearer will enter a chamber containing 100 p.p.m. isoamyl acetate vapor for half-mask facepieces, and 1,000 p.p.m. for full facepieces, mouthpieces, hoods, and helmets.

(2) The facepiece or mouthpiece may be adjusted, if necessary, in the test chamber before starting the test.

(3) Each wearer will remain in the chamber for 8 minutes while performing the following activities:

(i) Two minutes, nodding and turning head;

(ii) Two minutes, calisthenic arm movements;

(iii) Two minutes, running in place; and

(iv) Two minutes, pumping with a tire pump into a 28-liter (1 cubic-foot) container.

(4) Each wearer shall not detect the odor of isoamyl-acetate vapor during the test.

[37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6993, Mar. 15, 1973]

§ 11.162-4 Lacquer and enamel mist tests; respirators with filters; minimum requirements; general.

(a) Three respirators with cartridges containing or having attached to them, filters for protection against mists of paints, lacquers, and enamels shall be tested in accordance with the provisions of § 11.162-8.

(b) In addition to the test requirements set forth in paragraph (a) of this section, three such respirators will be tested against each aerosol in accordance with the provisions of §§ 11.162-5 and 11.162-6.

§ 11.162-5 Lacquer mist test; minimum requirements.

(a) Temperature in the test chamber will be approximately 25° C.

(b) Continuous airflow through the respirator will be 32 liters per minute for air-purifying respirators, and not less

than 115 liters per minute to tight fitting facepieces and 170 liters per minute to loose-fitting hoods and helmets of powered air-purifying respirators.

(c) Airflow through the chamber will be 20–25 air changes per minute.

(d) The atomizer employed will be a No. 64–5 nozzle with setup 3, or equivalent, operating at 69 kN/m². (10 pounds per square inch gage).

(e) The test aerosol will be prepared by atomizing a mixture of one volume of clear cellulose nitrate lacquer and one volume of lacquer thinner.

(f) The lacquer used will conform essentially to Federal Specification TT-L-31, October 7, 1953.

(g) The concentration of cellulose nitrate in the test aerosol will be 95–125 milligrams per cubic meter.

(h) The test aerosol will be drawn to each respirator for a total of 156 minutes for air-purifying respirators and 240 minutes for powered air-purifying respirators.

(i) The total amount of unretained mist in the samples taken during testing, weighed as cellulose nitrate, shall not exceed 5 milligrams for an air-purifying respirator, 28 milligrams for a powered air-purifying respirator with tight-fitting facepiece, and 41 milligrams for a powered air-purifying respirator with loose-fitting hood or helmet.

§ 11.162-6 Enamel mist test; minimum requirements.

(a) Temperature in the test chamber will be approximately 25° C.

(b) Continuous airflow through the respirator will be 32 liters per minute for air-purifying respirators, and not less than 115 liters per minute to tight-fitting facepieces and 170 liters per minute to loose-fitting hoods and helmets of powered air-purifying respirators.

(c) Airflow through the chamber will be 20–25 air changes per minute.

(d) The atomizer employed will be a No. 64 nozzle with setup 1A, or equivalent, operating at 69 kN/m². (10 pounds per square inch gage).

(e) The test aerosol will be prepared by atomizing a mixture of 1 volume of white enamel and 1 volume of turpentine.

(f) The enamel used will conform essentially to Federal Specification TT-E-489b, May 12, 1953 (an enamel having a phthalic alkyd resin vehicle and a titanium dioxide pigment).

(g) The concentration of pigment in the test aerosol, weighed as ash, will be 95–125 milligrams per cubic meter.

(h) The test aerosol will be drawn to each respirator for a total of 156 minutes for air-purifying respirators and 240 minutes for power air-purifying respirators.

(i) The total amount of unretained mist in the samples taken during testing, weighed as ash, shall not exceed 1.5 milligrams for any air-purifying respirator, 8.3 milligrams for a powered air-purifying respirator with tight-fitting facepiece, and 12.3 milligrams for a powered air-purifying respirator with loose-fitting hood or helmet.

§ 11.162-7 Dust, fume, and mist tests; respirators with filters; minimum requirements; general.

(a) Three respirators with cartridges containing, or having attached to them, filters for protection against dusts, fumes, and mists, except the mists of paints, lacquers, and enamels, will be tested in accordance with the provisions of § 11.162-8.

(b) In addition to the test requirements set forth in paragraph (a) of this section, three such respirators will be tested, as appropriate, in accordance with the provisions of §§ 11.140-1 through 11.140-14. However, the maximum allowable resistance of complete dust, fume, and mist, and gas, vapor, or gas and vapor chemical cartridge respirators shall not exceed the maximum allowable limits set forth in § 11.162-1.

§ 11.162-8 Bench tests; gas and vapor tests; minimum requirements; general.

(a) Bench tests will be made on an apparatus that allows the test atmosphere at 50 ± 5 percent relative humidity and room temperature, approximately 25° C., to enter the cartridges continuously at predetermined concentrations and rates of flow, and that has means for determining the test life of the cartridges.

(b) Where two cartridges are used in parallel on a chemical cartridge respirator, the bench test will be performed with the cartridges arranged in parallel, and the test requirements will apply to the combination rather than to the individual cartridges.

(c) Three cartridges or pairs of cartridges will be removed from containers and tested as received from the applicant.

(d) Two cartridges or pairs of cartridges will be equilibrated at room temperature by passing 25 percent relative humidity air through them at the following flow rates (expressed in liters per minute (l.p.m.)) for 6 hours:

| Type of cartridge: | Airflow rate, l.p.m. |
|--|----------------------|
| Air purifying..... | 25 |
| Powered air purifying with tight-fitting facepiece..... | 115 |
| Powered air purifying with loose-fitting hood or helmet..... | 170 |

(e) Two cartridges or pairs of cartridges will be equilibrated by passing 85 percent relative humidity air through them at the flow rates stated in paragraph (d) of this section.

(f) All cartridges will be resealed, kept in an upright position, at room temperatures, and tested within 18 hours.

(g) Cartridges will be tested and shall meet the minimum requirements set forth in Table 11.

TABLE 11.—CARTRIDGE BENCH TESTS AND REQUIREMENTS
(30 CFR Part 11, Subpart L, § 11.162-8)

| Cartridge | Test condition | Test atmosphere | | Flowrate (l.p.m.) | Number of tests | Pene- tration ¹ (p.p.m.) | Minimum life ² (min.) |
|------------------------|-------------------|---------------------------------|--------------------------|-------------------|-----------------|-------------------------------------|----------------------------------|
| | | Gas or vapor | Concentra- tion (p.p.m.) | | | | |
| Ammonia..... | As received..... | NH ₃ | 1000 | 64 | 3 | 50 | 50 |
| Ammonia..... | Equilibrated..... | NH ₃ | 1000 | 32 | 4 | 50 | 50 |
| Chlorine..... | As received..... | Cl ₂ | 500 | 64 | 3 | 5 | 25 |
| Chlorine..... | Equilibrated..... | Cl ₂ | 500 | 32 | 4 | 5 | 25 |
| Hydrogen chloride..... | As received..... | HCl | 500 | 64 | 3 | 5 | 50 |
| Hydrogen chloride..... | Equilibrated..... | HCl | 500 | 32 | 4 | 5 | 50 |
| Methyl amine..... | As received..... | CH ₃ NH ₂ | 1000 | 64 | 3 | 10 | 25 |
| Methyl amine..... | Equilibrated..... | CH ₃ NH ₂ | 1000 | 32 | 4 | 10 | 25 |
| Organic vapors..... | As received..... | CCl ₄ | 1000 | 64 | 3 | 5 | 50 |
| Organic vapors..... | Equilibrated..... | CCl ₄ | 1000 | 32 | 4 | 5 | 50 |
| Sulfur dioxide..... | As received..... | SO ₂ | 500 | 64 | 3 | 5 | 30 |
| Sulfur dioxide..... | Equilibrated..... | SO ₂ | 500 | 32 | 4 | 5 | 30 |

¹ Minimum life will be determined at the indicated penetration.

² Where a respirator is designed for respiratory protection against more than one type of gas or vapor, as for use in ammonia and in chlorine, the minimum life shall be one-half that shown for each type of gas or vapor. Where a respirator is designed for respiratory protection against more than one gas of a type, as for use in chlorine and sulfur dioxide, the stated minimal life shall apply.

Subpart M—Pesticide Respirators

§ 11.170 Pesticide respirators; description.

Pesticide respirators, including all completely assembled respirators which are designed for use as respiratory protection during entry into and escape from atmospheres which contain pesticide hazards, are described according to their construction as follows:

- (a) Front-mounted or back-mounted gas masks;
- (b) Chin-style gas mask;
- (c) Chemical cartridge;
- (d) Air-purifying respirator with attached blower; and,
- (e) Other devices, including combination respirators.

§ 11.171 Pesticide respirators; required components.

(a) Each pesticide respirator described in § 11.170 shall, where its design re-

quires, contain the following component parts:

- (1) Facepiece, mouthpiece, and nose-clip, helmet, or hood;
- (2) Canister with filter;
- (3) Cartridge with filter;
- (4) Harness;
- (5) Attached blower; and,
- (6) Breathing tube.

(b) The components of each pesticide respirator shall meet the minimum construction requirements set forth in Subpart G of this part.

§ 11.172 Canisters and cartridges in parallel; resistance requirements.

Where two or more canisters or cartridges are used in parallel, their resistance to airflow shall be essentially equal.

§ 11.173 Canisters and cartridges; color and markings; requirements.

The color and markings of all canisters and cartridges or labels shall conform with the requirements of the

American National Standard for Identification of Gas Mask Canisters, K13.1.

§ 11.174 Filters used with canisters and cartridges; location; replacement.

(a) Particulate matter filters used in conjunction with a canister or cartridge shall be located on the inlet side of the canister or cartridge.

(b) Filters shall be incorporated into or firmly attached to the canister or cartridge and each filter assembly shall, where applicable, be designed to permit its easy removal from and replacement on the canister or cartridge.

§ 11.175 Breathing tubes; minimum requirements.

(a) Flexible breathing tubes used in conjunction with respirators shall be designed and constructed to prevent:

(1) Restriction of free head movement;

(2) Disturbance of the fit of facepieces, mouthpieces, hoods, or helmets;

(3) Interference with the wearer's activities; and,

(4) Shutoff of airflow due to kinking, or from chin or arm pressure.

§ 11.176 Harnesses; installation and construction; minimum requirements.

(a) Each respirator shall, where necessary, be equipped with a suitable harness designed and constructed to hold the components of the respirator in position against the wearer's body.

(b) Harnesses shall be designed and constructed to permit easy removal and replacement of respirator parts, and, where applicable, provide for holding a full facepiece in the ready position when not in use.

§ 11.177 Respirator containers; minimum requirements.

(a) Respirators shall be equipped with a substantial, durable, container bearing markings which show the applicant's name, type, and commercial designation of the respirator it contains, and all appropriate approval labels.

(b) Containers for gas masks shall be designed and constructed to permit easy removal of the mask.

§ 11.178 Half-mask facepieces, full facepieces, hoods and helmets, and mouthpieces; fit; minimum requirements.

(a) Half-mask facepieces and full facepieces shall be designed and con-

structed to fit persons with various facial shapes and sizes either: (1) By providing more than one facepiece size, or (2) by providing one facepiece size which will fit varying facial shapes and sizes.

(b) Full facepieces shall provide for optional use of corrective spectacles or lenses, which shall not reduce the respiratory protective quality of the respirator.

(c) Hoods and helmets shall be designed and constructed to fit persons with various head sizes, permit optional use of corrective spectacles without reducing the respiratory protective qualities of the respirator, and insure against any restriction of movement by the wearer.

(d) Pesticide respirators with mouthpieces shall be equipped with noseclips which are securely attached to the mouthpiece or respirator and provide an airtight seal.

(e) Facepieces, hoods, and helmets shall be designed to prevent eyepiece fogging.

(f) Half-mask facepieces shall not interfere with the fit of common industrial safety corrective spectacles as determined by the facepiece tests in § 11.183-3.

§ 11.179 Facepieces, hoods, and helmets; eyepieces; minimum requirements.

(a) Facepieces, hoods, and helmets shall be designed and constructed to provide adequate vision which is not distorted by the eyepiece.

(b) All eyepieces of gas masks shall be designed and constructed to meet the impact and penetration requirements specified in Federal Specification, Mask, Air line: and Respirator, Air Filtering, Industrial, GGG-M-125d, October 11, 1965.

§ 11.180 Inhalation and exhalation valves; minimum requirements.

(a) Inhalation and exhalation valves shall be protected against distortion.

(b) Inhalation valves shall be designed and constructed and provided where necessary to prevent excessive exhaled air from adversely affecting cartridges, canisters, and filters.

(c) Exhalation valves shall be:

(1) Provided where necessary;

(2) Protected against damage and external influence; and,

(3) Designed and constructed to prevent inward leakage of contaminated air.

§ 11.181 Head harnesses; minimum requirements.

(a) Facepieces shall be equipped with adjustable and replaceable head harnesses designed and constructed to provide adequate tension during use and an even distribution of pressure over the entire area in contact with the face.

(b) Mouthpieces shall be equipped, where applicable, with adjustable and replaceable harnesses designed and constructed to hold the mouthpiece in place.

§ 11.182 Air velocity and noise levels; hoods and helmets; minimum requirements.

Noise levels generated by the respirator will be measured inside the hood or helmet at maximum obtainable airflow and shall not exceed 80 dBA.

§ 11.183 Pesticide respirators; performance requirements; general.

Pesticide respirators and the individual components of each such device shall, as appropriate, meet the requirements for performance and protection specified in the tests described in §§ 11.183-1 through 11.183-7.

§ 11.183-1 Breathing resistance test; minimum requirements.

(a) Airflow resistance will be measured in the facepiece, mouthpiece, hood, or helmet of a pesticide respirator mounted on a test fixture with air flowing at a continuous rate of 85 liters per minute, both before and after each test conducted in accordance with §§ 11.183-4 and 11.183-7.

(b) The maximum allowable resistance requirements for pesticide respirators are as follows:

MAXIMUM RESISTANCE
(mm. water-column height)

| Type of pesticide respirator | Inhalation | | Exhalation |
|---------------------------------|------------|--------------------|------------|
| | Initial | Final ¹ | |
| Front- or back-mounted gas mask | 70 | 85 | 20 |
| Chin-style gas mask | 65 | 80 | 20 |
| Powered air-purifying | 50 | 70 | 20 |
| Chemical cartridge | 50 | 70 | 20 |

¹ Measured at end of the service life specified in Table 12.

² Resistance of filter(s), cartridge(s), and breathing tube(s) only with blower not operating.

§ 11.183-2 Exhalation valve leakage test; minimum requirements.

(a) Dry exhalation valves and valve seats will be subjected to a suction of 25

mm. Water-column height while in a normal operating position.

(b) Leakage between the valve and valve seat shall not exceed 30 milliliters per minute.

§ 11.183-3 Facepiece test; minimum requirements.

(a) The complete pesticide respirator will be fitted to the faces of persons having varying facial shapes and sizes.

(b) Where the applicant specifies a facepiece size or sizes for his respirator together with the approximate measurements of faces they are designed to fit, the Institute will provide test subjects to suit such facial measurements.

(c) Any pesticide respirator part which must be removed to perform the facepiece fit test shall be replaceable without special tools and without disturbing facepiece fit.

(d) The facepiece or mouthpiece fit test using positive or negative pressure recommended by the applicant and described in his instructions will be used during each test.

(e) (1) Each wearer will enter a chamber containing 1,000 p.p.m. isoamyl-acetate vapor for a respirator equipped with a full facepiece, mouthpiece, hood, or helmet and 100 p.p.m. isoamyl-acetate vapor for a respirator equipped with a half-mask facepiece.

(2) The facepiece, mouthpiece, hood, or helmet may be adjusted, if necessary, in the test chamber before starting the test.

(3) Each wearer will remain in the chamber while performing the following activities:

- (i) Two minutes, nodding and turning head;
- (ii) Two minutes, calisthenic arm movements;
- (iii) Two minutes, running in place; and,
- (iv) Two minutes, pumping with a tire pump into a 28-liter (1 cubic foot) container.

(4) Each wearer shall not detect the odor of isoamyl-acetate during the test. [37 FR 6244, Mar. 25, 1972, as amended at 38 FR 6993, Mar. 15, 1973]

§ 11.183-4 Silica dust test; minimum requirements.

Three completely assembled pesticide respirators will be tested with a

mechanical-testing apparatus as follows:

(a) Temperature in the test chamber will be approximately 25° C.

(b) Continuous airflow through the respirator will be 32 liters per minute for front-mounted, back-mounted, and chin-style gas mask pesticide respirators and chemical cartridge pesticide respirators, and not less than 115 (4 cubic feet) liters per minute to tight-fitting facepieces and 170 liters (6 cubic feet) per minute to loose-fitting hoods and helmets of powered air-purifying respirators.

(c) The test aerosol will contain 50-60 milligrams of 99+ percent free silica per cubic meter of air.

(d) The particle size distribution of the test suspension will have a geometric mean diameter of 0.4 to 0.6 micrometer, with a standard geometric deviation less than 2.

(e) Front-mounted, back-mounted, and chin-style gas mask pesticide respirators and chemical cartridge pesticide respirators will be tested for 90 minutes and powered air-purifying respirators will be tested for 4 hours.

§ 11.183-5 Lead fume test; minimum requirements.

Three completely assembled pesticide respirators will be tested with a mechanical-testing apparatus as follows:

(a) Continuous airflow through the respirator will be 32 liters per minute for front-mounted, back-mounted, and chin-style gas mask pesticide respirators and chemical cartridge pesticide respirators and not less than 115 liters (4 cubic feet) per minute, for powered air-purifying respirators with tight-fitting facepieces, and not less than 170 liters (6 cubic feet) per minute for powered air-purifying respirators with loose-fitting hoods and helmets.

(b) The test aerosol will contain 15-20 milligrams of freshly generated lead-oxide fume, calculated as lead, per cubic meter of air.

(c) The fume will be generated by impinging an oxygen-gas flame on molten lead.

(d) Front-mounted, back-mounted, and chin-style gas mask pesticide respirators and chemical cartridge pesticide respirators will be tested for 90 minutes

and powered air-purifying pesticide respirators will be tested for 4 hours.

(e) The total amount of unretained test suspension, which is analyzed and calculated as lead, shall not exceed: (1) 0.43 milligram for any 90-minute test; (2) 4.8 milligrams for any 4-hour test made at 115 liters (4 cubic feet) per minute; or (3) 6.2 milligrams for any 4-hour test made at 170 liters (6 cubic feet) per minute.

§ 11.183-6 Dioctyl-phthalate test; minimum requirements.

(a) All canisters submitted for use with front-mounted and back-mounted gas mask pesticide respirators will be tested in an atmospheric concentration of 100 micrograms of dioctyl-phthalate per liter of air at continuous flow rates of 32 and 85 liters per minute for a test period of 5 to 10 seconds.

(b) The DOP leakage through the canister shall not exceed 0.03 percent of the ambient DOP concentration.

§ 11.183-7 Bench tests; minimum requirements.

(a) (1) Bench tests will be made on an apparatus that allows the test atmosphere at 50±5 percent relative humidity and at room temperature (25°±2.5° C.) to enter the canister or cartridge at predetermined concentrations and rates of flow, and that has a means for determining the test life of the canister or cartridge against carbon tetrachloride.

(2) Canisters and cartridges will be tested as they are used on each pesticide respirator, either singly or in pairs.

(3) Three canisters or cartridges or pairs of cartridges will be removed from containers and tested as received from the applicant.

(4) Two canisters, cartridges, or pairs of cartridges will be equilibrated at room temperature by passing 25 percent relative humidity air through them at the following flow rates (expressed as liters per minute (l.p.m.)) for 6 hours:

| <i>Type of canister or cartridge</i> | <i>Airflow rate, l.p.m.</i> |
|--|-------------------------------------|
| Air-purifying canister..... | 64 |
| Air-purifying cartridge..... | 25 |
| Powered air-purifying with tight- fitting facepiece..... | 115 |
| Powered air-purifying with loose- fitting hood or helmet..... | 170 |

(5) Two canisters, cartridges, or pairs of cartridges will be equilibrated at room temperature by passing 85 percent relative humidity air through them at the flow rates stated in subparagraph (4) of this paragraph for 6 hours.

(6) The equilibrated canisters or car-

tridges will be resealed, kept in an upright position at room temperature, and tested within 18 hours.

(b) Canisters and cartridges tested in accordance with the provisions of this section shall meet the requirements specified in Table 12.

TABLE 12.—CARBON TETRACHLORIDE BENCH TESTS AND REQUIREMENTS FOR CANISTERS AND CARTRIDGES
(30 CFR Part 11, Subpart M, § 11.183-7)

| Type of pesticide respirator | Test concentrations, p.p.m. CCl ₄ | Flow rate l.p.m. | Number of tests | Minimum life minutes ¹ |
|--|--|------------------|-----------------|-----------------------------------|
| Chest-mounted or back-mounted gas mask (as received)..... | 20,000 | 64 | 3 | 12 |
| Chest-mounted or back-mounted gas mask (equilibrated)..... | 20,000 | 32 | 4 | 12 |
| Chin-style gas mask (as received)..... | 5,000 | 64 | 3 | 9 |
| Chin-style gas mask (equilibrated)..... | 5,000 | 32 | 4 | 9 |
| Chemical-cartridge respirator (as received)..... | 1,000 | 64 | 3 | 50 |
| Chemical-cartridge respirator (equilibrated)..... | 1,000 | 32 | 4 | 50 |
| Powered air-purifying respirator (tight-fitting facemask, as received)..... | 1,000 | ² 115 | 3 | 50 |
| Powered air-purifying respirator (tight-fitting facemask, equilibrated)..... | 1,000 | ² 115 | 4 | 5 |
| Powered air-purifying respirator (loose-fitting hood or helmet as received)..... | 1,000 | ² 170 | 3 | 2 |
| Powered air-purifying respirator (loose-fitting hood or helmet, equilibrated)..... | 1,000 | ² 170 | 4 | 50 |
| | | | | 25 |

¹ Minimum life will be determined at 5 p.p.m. leakage.

² The flow rate shall be the effective flow rate of the device, but shall be not less than 115 l.p.m.

³ The flow rate shall be the effective flow rate of the device, but shall be not less than 170 l.p.m.

SUBCHAPTER C—EXPLOSIVES AND RELATED ARTICLES; TESTS FOR PERMISSIBILITY AND SUITABILITY

PART 15—EXPLOSIVES AND RELATED ARTICLES

- Sec. 15.1 Purpose.
- 15.2 Definitions.
- 15.3 Application for tests.
- 15.4 Fees.
- 15.5 Shipment, quantities, and sizes of explosives.
- 15.6 Conditions under which tests leading to issuance of a certificate of approval will be made.
- 15.7 Place of investigation.
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- 15.9 Observers at formal investigations and demonstrations.
- 15.10 Chemical and physical tests.
- 15.11 Establishment of basic specifications.
- 15.12 Requirements for approval as a permissible explosive.
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- 15.15 Changes after certification.
- 15.16 Withdrawal of certification.
- 15.17 Release of test data.
- 15.18 Lists of permissible explosives.
- 15.19 Use of permissible explosives.
- 15.20 Field testing.

- Sec. 15.21 Tolerances and requirements as applied to field samples.
- 15.22 Field sample failures.
- 15.23 Variances from prescribed tolerances.
- 15.24 Miscellaneous tests on explosives and other hazardous materials.

AUTHORITY: The provisions of this Part 15 issued under secs. 2, 3, 5, 36 Stat. 370, as amended; 30 U.S.C. 3, 5, 7.

SOURCE: The provisions of this Part 15 appear at 35 F.R. 5335, Mar. 31, 1970, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 39 FR 23998, June 28, 1974.

§ 15.1 Purpose.

The regulations in this part state the requirements for certification of explosives as permissible for use in underground coal mines; provides standards for the examination of explosives previously certified to check conformance to their basic specifications; and provide for miscellaneous tests not leading to certification.

§ 15.2 Definitions.

As used in this part, the following terms are defined:

(a) "Explosive" means any chemical compound, mixture or device, the primary or common purpose of which is to function by explosion, i.e., with substantially instantaneous release of gas and heat. This definition does not include blasting devices as defined in Part 17 of this subchapter.

(b) "Certificate of approval" means a formal document issued by MESA stating that an explosive has met the specifications and requirements in this part, and authorizing the use of markings signifying this fact, as provided hereafter.

(c) "Applicant" means an individual, partnership, company, corporation, association, or other organization that compounds, manufactures, or controls the production of an explosive and that seeks a certificate of approval for permissibility.

(d) "Basic specifications" for an explosive that is submitted for certification means those chemical and physical properties which characterize it. They will be stated in the certificate of approval.

(e) "Poisonous gases" shall mean those gases, such as carbon monoxide, hydrogen sulfide, and oxides of nitrogen, which may have deleterious physiological effects even when present in the atmosphere in relatively low concentrations.

(f) "Ingredients" are substances specified or found to be present in any given sample of an explosive.

(g) "Test detonator" is a detonator containing a base charge of 0.25±0.02 gram of pentaerythritol tetranitrate (PETN).

(h) "Bureau" means the United States Department of the Interior, Bureau of Mines.

(i) "MESA" means the United States Department of the Interior, Mining Enforcement and Safety Administration. [35 FR 5335, Mar. 31, 1970, as amended at 39 FR 23998, June 28, 1974]

§ 15.3 Application for tests.

Before an applicant may obtain any tests by MESA on an explosive, the applicant must file a written request, in duplicate (no application form is provided by MESA), with a statement as to the nature of the explosive to be tested, including the composition. This

request should be addressed to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pennsylvania 15213. MESA will review the application to determine whether the request is within the scope of this part. If the application is approved, an application number will be assigned and instructions given regarding the fees required and method of shipment of materials. Upon receipt of this information, the applicant shall transmit to the address given in this section a check, bank draft, or money order made payable to MESA, to cover all fees for the tests requested.

§ 15.4 Fees.

(a) The fee for complete tests leading to approval of an explosive as permissible is \$1,320. If the applicant withdraws an explosive, or if the explosive fails to pass any of the tests prescribed in this part, MESA will charge for the tests actually performed, with a minimum charge of \$100 according to the charges stated in paragraph (b) of this section. The balance of the fees will be returned to the applicant.

(b) The fees covering individual and complete (total) tests are revised to read as follows:

| | Individual test | Total |
|--------------------------------------|-----------------|---------|
| 1. Complete permissibility test..... | | \$1,320 |
| (i) Friction..... | \$22 | 22 |
| (ii) Physical examination..... | 22 | 77 |
| (iii) Chemical analysis..... | 110 | 110 |
| (iv) Gap..... | 22 | 22 |
| (v) Ballistic mortar..... | 44 | 44 |
| (vi) Gallery test 4..... | 33 | 330 |
| (vii) Gallery test 7..... | 550 | 550 |
| (viii) Rate of detonation..... | 55 | 55 |
| (ix) Gaseous products..... | 110 | 110 |

(x) For other tests or additional work, the costs as determined by MESA based on an estimate of the actual cost of the test. The Bureau will notify the applicant accordingly, and the fee shall be paid before such tests are begun.

(c) If no experimental tests are required, the fee for issuance of a revised certificate of approval will be \$25.

§ 15.5 Shipment, quantities, and sizes of explosives.

Samples of explosives to be tested shall be shipped only after MESA has furnished instructions regarding the quantities of materials required, mode of shipment of the materials, and destina-

tion. Shipments shall be properly labeled and shall comply with the Interstate Commerce Commission regulations. The minimum quantities and sizes required for complete official tests are as follows:

(a) One hundred pounds of each explosive in 1¼ by 8-inch cartridges, but if the cartridge count per 50-pound case is less than 150 cartridges, then 300 cartridges is the minimum quantity required.

(b) Fifty cartridges of 8-inch length of each explosive in the smallest diameter (not less than 1 inch) in which it is desired the explosive shall be certified as permissible, except when this smallest diameter is 1¼ inches.

(c) Ten cartridges of 8-inch length of each explosive in any diameter other than those described in paragraphs (a) and (b) of this section, for which application is made to determine the permissibility of the explosive.

(d) Should the applicant later desire to market cartridges of other diameters, MESA will, upon application, establish the basic specifications for grams of wrapper and apparent specific gravity of these diameters. A fee (§ 15.4(b)(2)) will be charged for each cartridge diameter. If the cartridge diameter is smaller than the smallest diameter previously approved as permissible, a propagation test (rate of detonation) will also be required and a fee charged for such test (§ 15.4(b)(8)). No test will be made on cartridges of a diameter smaller than ones along which detonation has failed to propagate, nor will a retest be made on same-diameter cartridges of a formulation for which detonation has failed to propagate in any one trial.

§ 15.6 Conditions under which tests leading to issuance of a certificate of approval will be made.

(a) The explosive will be stored in a Bureau magazine for at least 30 days before the gallery tests are made.

(b) Explosives containing incompatibles (that is substances that will react when mixed); or those containing either chlorites, chlorates, or perchlorates; or other explosives that are chemically unstable; or show leakage of explosive oil, or are in such condition that exudation of the explosive oil would occur in handling or transporting, will not be tested.

(c) Tests will be limited to samples of explosives which are produced under the control of the applicant.

(d) Explosives with cartridge diameters of less than 1 inch will not be tested for certification.

(e) No report on the results of tests made by MESA, or any part thereof, may be published without prior written consent of MESA.

§ 15.7 Place of investigation.

Tests on explosives will be made at the Bureau's facilities at Bruceton, Pa., in order of receipt of the explosives, provided an application is on file.

§ 15.8 Consultation.

Any potential applicant (or accredited representative thereof) may visit Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pennsylvania 15213, to discuss, without charge, explosives proposed to be submitted for investigation by MESA. Should preliminary tests be desirable before submitting the explosive for formal investigation, MESA may conduct such tests for the applicant after payment of the fees prescribed in § 15.4. The results from such preliminary tests may not be used to reduce the requirements of the formal investigation.

§ 15.9 Observers at formal investigations and demonstrations.

No one shall be present during any part of the formal investigation for permissibility conducted by MESA except the necessary Government personnel, representatives of the applicant, and such other persons as may be mutually agreed upon by the applicant and by MESA. After the issuance of a certificate of approval, MESA may conduct such public demonstrations and tests of the approved explosive as it sees fit. Those who attend any part of the investigation, or any public demonstration, shall be present solely as observers; the conduct of the investigation and of any public demonstration shall be controlled by MESA. Results of chemical analysis for ingredients and all information contained in the drawings, specifications, and instructions shall be deemed proprietary and their disclosure will be appropriately safeguarded by MESA.

[39 FR 23998, June 28, 1974]

§ 15.10 Chemical and physical tests.

(a) *Chemical tests.* The following chemical tests will be made:

(1) Chemical analysis for ingredients.
 (2) Gaseous products of detonation will be determined using the Bichel gage for carbon monoxide and Crawshaw-Jones method for oxides of nitrogen.

(b) *Physical tests.* The following physical tests will be made:

(1) *Physical examination.* The physical examination of an explosive is made on several cartridges of each size taken at random from the shipment of explosives. It shall consist of determination of apparent specific gravity and wrapper-to-explosive ratio.

(2) *Ballistic mortar test.* The strength of an explosive will be determined by the ballistic mortar.

(3) *Gallery test 4.* Ten trials, each with a 1½-pound tamped charge of explosive, are made. Each charge is fired, without stemming, into a mixture of natural gas and air containing 4.0 ± 0.2 percent of Pittsburgh natural gas (Bruceton property), or its equivalent, and 8 pounds of bituminous coal dust placed on shelves in the gallery, at $25^\circ \pm 5^\circ$ C.

(4) *Gallery test 7.* The W_{50} (weight for 50 percent probability of ignition) will be determined using the Bruceton up-and-down method and firing a minimum of 20 tamped charges of varying weights, stemmed with one pound of dry-milled plastic fireclay, from a steel cannon into a mixture of natural gas and air containing 8.0 ± 0.3 percent of Pittsburgh natural gas, at a temperature of $25^\circ \pm 5^\circ$ C.

(5) *Rate of detonation.* The rate of detonation is determined on a 50-inch column of 1¼-inch diameter cartridges and for the smallest diameter submitted for testing, provided that this diameter is less than 1¼ inches. Nongelatinous explosives are initiated with the Bureau's test detonator only, while gelatinous explosives are initiated with the Bureau's test detonator and a 60-gram tetryl-pellet booster.

(6) *Pendulum friction test.* Ten trials are made with the steel shoe released from a height of 1.5 meters (59 in.) and if evidence of sensitivity is obtained, the test is repeated with the hard-fiber-faced shoe.

(7) *Explosion-by-influence test.* The air-gap sensitivity is determined by the halved-cartridge method on 1¼-inch diameter cartridges.

§ 15.11 Establishment of basic specifications.

The composition of the explosive as furnished by the applicant, will form a part of the basic specifications provided that the requirements of §§ 15.12(a) and 15.21(b) are met. Such physical properties of the explosive as may be furnished by the applicant will form a part of the basic specifications, provided that the requirements of § 15.21 are met with the exception of the air-gap sensitivity, in which case the requirement of § 15.12(c) must be met; otherwise the basic specifications will be those obtained by MESA tests.

§ 15.12 Requirements for approval as a permissible explosive.

(a) The chemical composition as determined by MESA's analysis must correspond, within tolerances specified in § 15.21(b), to the composition as furnished by the applicant.

(b) The explosive must not fail to propagate completely in any of the tests involving detonation, except as provided in paragraph (g) of this section.

(c) In the explosion-by-influence test, the air-gap sensitivity of the explosive in 1¼-inch diameter cartridges must be at least 3 inches.

(d) The explosive must yield in gallery test 7, a W_{50} value equal to or greater than 450 grams to 95 percent confidence.

(e) The explosive must pass without a single ignition, gallery test 4.

(f) The volume of poisonous gases produced by the explosive must not exceed 2.5 cubic feet per pound of explosive (71 liters per 454 grams).

(g) If an explosive fails to propagate completely in the rate of detonation test (§ 15.10(b)(5)), it will not be approved for cartridges having a diameter equal to or smaller than that of the cartridge that failed the test.

(h) In the pendulum friction test, an explosive must not show, in any trial with the hard fiber-faced shoe, a result more unfavorable than an almost indistinguishable local crackling.

§ 15.13 Notification to applicant.

After MESA has completed the investigation of an explosive, a written report summarizing the results of the investigation and including a statement of either approval or disapproval of the explosive as permissible will be sent to the applicant.

§ 15.14 Approved markings.

(a) Upon certification of an explosive as permissible, it shall be marketed only under a brand or trade name which shall have been furnished to MESA, and the certification shall apply only to the explosive as so designated.

(b) The wrapper of each cartridge must be clearly and legibly labeled:

(Insert brand or trade name of explosive)
Permissible Explosive, Approved by the U.S. Department of the Interior, MESA. A reasonable abbreviation of "by the U.S. Department of the Interior, MESA" is acceptable.

(c) The brand or trade name and the words "Permissible Explosive" must be included in the case marking.

(d) The applicant must warn the user by means of a case-insert that the explosive is permissible only when used in conformance with MESA's requirements (§ 15.19).

(e) After obtaining certification, the applicant who places approved markings on his permissible explosives must use all reasonable precautions to assure that his explosives are manufactured to conform with the basic specifications within specified tolerances.

§ 15.15 Changes after certification.

No change in the basic specifications may be made by the applicant without prior written approval from MESA. To obtain this approval, application shall be made in writing giving complete information on the nature of the proposed change(s). MESA will determine what tests, if any, will be required. A fee will be charged for such tests. Once a change in basic specifications involving composition has been approved, the brand name may only be used for the new composition, and the former composition may not be manufactured as a permissible explosive until it has been reapproved under the provisions of this part.

§ 15.16 Withdrawal of certification.

MESA reserves the right to rescind for cause, at any time, any certification granted under this part. Upon such withdrawal, the certification shall lose all force and effect, and explosives to which it relates shall not be marketed as permissible.

§ 15.17 Release of test data.

MESA may publish test results in such manner as will not identify the data, except cartridge weight, count, and detonation velocity, of an individual applicant.

§ 15.18 Lists of permissible explosives.

(a) *Active list.* MESA will maintain a list of active permissible explosives which will be published from time to time so that interested parties may have information regarding available explosives which have passed the tests leading to approval. In order to be retained on the active list, any explosive must be produced in a total quantity of not less than 50,000 pounds in any period of 3 calendar years. This requirement shall become effective on January 1 following the publication of these regulations in the FEDERAL REGISTER. The applicant will be notified of MESA's intent to remove any brand from the active list. An applicant may request that a permissible explosive be placed on the inactive list, or be deleted entirely.

(b) *Inactive list.* MESA will maintain an unpublished file of inactive permissible explosives. These explosives will be retained on the inactive list for a period not to exceed 5 years and will be returned to the active list during this period only after approval by MESA on specific written request of the applicant. An explosive may be deleted from the inactive list upon written request of the applicant. An explosive may not be manufactured for sale as a permissible explosive while on the inactive list.

§ 15.19 Use of permissible explosives.

An explosive certified as permissible under this part is permissible in use only so long as it meets the following requirements:

(a) Conforms with the basic specifications within limits of tolerances pre-

scribed herein, and the cartridges are of diameters that have been approved.

(b) Is stored in surface magazines under conditions that tend to maintain original product character, and is used within 48 hours after being taken underground.

(c) Remains in its original cartridge wrapper throughout storage and use, without admixture with other substances.

(d) Is initiated with a copper or copper-based-alloy shell, commercial electric detonator (not cap and fuse) of not less than No. 6 strength.

(e) Is in all other respects used in conformance with the regulations specified in the most recent edition of the applicable Federal Mine Safety Code.

§ 15.20 Field testing.

MESA will periodically collect and examine samples of permissible explosives in order to determine whether they continue to conform to the basic specifications.

§ 15.21 Tolerances and requirements as applied to field samples.

Tolerances which provide for reasonable limits of variation in the results of analyses and tests of field samples of permissible explosives were established July 1, 1915, subsequently amended November 15, 1920, February 26, 1921, and March 24, 1955, and are further modified in this section. The tolerances and requirements as enumerated below supersede all previous tolerances.

(a) Requirements for tests that directly affect permissibility.

(1) *Gallery test 7.* The sample must yield in gallery test 7, as a W_{50} value equal to or greater than 450 grams to 95 percent confidence. (For exception see § 15.22(a)).

(2) *Gallery test 1.* Field samples failing Gallery test 7 but excepted under § 15.22(a) will be subjected to Gallery test 1. In this test, 10 trials, each with a 220-gram tamped charge of the explosive, are made. Each charge, stemmed with 1 pound of dry-milled plastic fire-clay, is fired from a steel cannon into a mixture of natural gas and air containing 8.0 ± 0.3 percent of Pittsburgh natural gas, at a temperature of $25^\circ \pm 5^\circ$ C. No ignitions must result.

(3) *Gallery test 4.* The sample must pass five shots with a tamped unstemmed charge of 680 grams (1½ pounds).

(4) *Pendulum friction test.* The sample must pass the pendulum friction test with a hard-fiber-faced shoe released from a height of 1.5 meters (59 inches).

(5) *Poisonous gases.* Poisonous gases produced must not exceed 2.5 cu. ft. per pound of the explosive (71 liters per 454 grams).

(6) *Propagation test.* Complete propagation of the explosive must be obtained in the rate of detonation test.

(b) Requirements for tests that do not directly affect permissibility.

(1) *Carbonaceous combustible material.* The tolerance shall be ± 3 percent of the total explosive.

(2) *Moisture and other ingredients.* The tolerances shall be in accordance with those shown in Table 1.

TABLE 1—LIMIT OF VARIATION (PERCENTAGE OF TOTAL EXPLOSIVE) FOR VARIOUS QUANTITIES OF INGREDIENT

| | Quantity of ingredient | | Limit of variation |
|-----------|------------------------|---------|--------------------|
| | From— | To— | |
| | Percent | Percent | Percent(±) |
| 0.0..... | | 5.0 | 1.2 |
| 5.1..... | | 10.0 | 1.5 |
| 10.1..... | | 20.0 | 1.7 |
| 20.1..... | | 30.0 | 2.0 |
| 30.1..... | | 40.0 | 2.3 |
| 40.1..... | | 50.0 | 2.5 |
| 50.1..... | | 55.0 | 2.8 |
| 55.1..... | | 100.0 | 3.0 |

(3) *Rate of detonation.* The tolerance shall be ± 15 percent of that shown in the basic specifications.

(4) *Ballistic mortar.* The tolerance shall be ± 10 percent of that shown in the basic specifications.

(5) *Explosion by influence test.* The air-gap sensitivity, using 1¼-inch-diameter cartridges, must be not less than 2 inches.

(6) *Grams of wrapper.* The tolerance shall be ± 2 grams per 100 grams of explosives ingredient based on that shown in the basic specifications.

(7) *Apparent specific gravity.* The tolerance shall be ± 7.5 percent of that shown in the basic specifications.

§ 15.22 Field sample failures.

(a) Any field sample will be declared nonpermissible if when tested it fails to meet any of the requirements of § 15.21 (a): *Provided, however,* That, for a period of 5 years following the issuance

of this schedule, the requirement of § 15.21(a) (1) shall not apply to any field sample whose basic specifications were approved under prior schedules.

(b) MESA will immediately report any field sample failure to the applicant. The applicant must immediately remove from the market and the field any unused portions of the explosive bearing the same lot number as the sample tested. If a field sample of any particular brand of permissible explosive fails three times within a period of 5 years, the explosive will be declared non-permissible and removed from the lists of permissible explosives.

§ 15.23 Variances from prescribed tolerances.

Variances on field sample tests from tolerances as specified in § 15.21(b) do not directly affect permissibility of the explosive, but the applicant will be notified of such variances, and is then obligated to modify his formulation of future lots of the explosive to bring the explosive within the prescribed limits and to keep it within such limits.

§ 15.24 Miscellaneous tests on explosives and other hazardous materials.

(a) MESA conducts some tests not leading directly to approval of explosives as permissible for use in underground coal mines. Fees for these tests will be prescribed in § 15.4 and as prescribed below:

| | |
|---|------|
| (1) Impact test..... | \$33 |
| (2) Electrostatic spark test..... | 22 |
| (3) Thermal sensitivity test..... | 33 |
| (4) Suspended tests in the gallery (per shot) | 11 |
| (5) Gaseous products: | |
| i. Oxides of nitrogen only..... | 77 |
| ii. Complete analysis of gaseous products, including oxides of nitrogen | 110 |

(b) Application for miscellaneous tests shall follow the procedure prescribed in § 15.3. Applicants requesting tests shall follow the instructions under § 15.5. The applicant will be notified by MESA as to the quantity of material needed. No report on the results of tests made by MESA, or any part thereof, may be published without prior written consent of MESA.

Section 15.19 of Part 15 deals with the use of permissible explosives, and paragraph (e)

of that section incorporates the "regulations specified in the most recent edition of the applicable Federal Mine Safety Code." Except for provisions which impose requirements now expressly dealt with in, or which are inconsistent with, the Federal Coal Mine Health and Safety Act of 1969, these regulations are as follows:

BITUMINOUS COAL AND LIGNITE UNDERGROUND MINES

ARTICLE IV—EXPLOSIVES AND BLASTING

Sec. 5. *Blasting practices.*

3. Where the coal is cut, shots shall not be fired if the blast hole is drilled beyond the limits of the cut.

4. Boreholes shall be cleaned, and they shall be checked to see that they are placed properly and are of correct depth, in relation to the cut, before being charged.

5. All blasting charges in coal shall have a burden of at least 18 inches in all directions if the height of the coal permits.

6. Boreholes shall be stemmed with at least 24 inches of incombustible material, or at least one-half of the length of the hole shall be stemmed if the hole is less than 4 feet in depth unless other permissible stemming devices or methods are used.

9. Charges exceeding 1½ pounds, but not exceeding 3 pounds, shall be used only if boreholes are 6 feet or more in depth, the explosives are charged in a continuous train, with no cartridges deliberately deformed or crushed, with all cartridges in contact with each other and with the end cartridge touching the back of the hole and the stemming respectively, and Class A or Class B permissible explosives are used; provided, however, that the 3-pound limit does not apply to solid rock work.

10. Shots shall be fired by certified shot frers wherever State law requires such certification. In mines where certification of shot frers is not required by State law, the management shall designate competent persons to fire shots.

11. Boreholes shall not be charged while any other work is being done at the face, and the shot or shots shall be fired before any other work is done in the zone of danger from blasting except that which is necessary to safeguard the employees.

12. Only nonmetallic tamping bars shall be used for charging and tamping boreholes. This does not prohibit the use of a non-metallic tamping bar with a nonsparking metallic scraper on one end.

13. The leg wires of electric detonators shall be kept shunted until ready to connect to the firing cable.

14. Shots shall not be fired from the power or signal circuit while any men are in the mine.

15. The roof and ribs of working places shall be tested before and after firing each shot or group of multiple shots.

16. Ample warning shall be given before shots are fired, and care shall be taken to ascertain that all persons are in the clear. Men shall be removed from adjoining working places when there is danger of a shot blowing through.

17. Mixed types or brands of explosives shall not be charged or fired in any borehole.

• • • • •
Sec. 6. Blasting cables. a. Blasting cables shall be:

1. Well insulated and as long as may be necessary to permit the shot firer to get in a safe place around a corner.

2. Short-circuited at the battery end until ready to attach to the blasting unit.

3. Staggered as to length or the ends kept well separated when attached to the detonator leg wires.

4. Kept clear of power wires and all other possible sources of active or stray electric current.

Sec. 7. Misfires. a. Where misfires occur with electric detonators, a waiting period of at least 5 minutes shall elapse before anyone returns to the shot. After such failure, the blasting cable shall be disconnected from the source of power and the battery ends short-circuited before electric connections are examined.

b. Explosives shall be removed by firing a separate charge at least 2 feet away from, and parallel to, the misfired charge or by washing the stemming and the charge from the borehole with water, or by inserting and firing a new primer after the stemming has been washed out.

c. A very careful search of the working place, and, if necessary, of the coal after it reaches the tippie shall be made after blasting a misfired hole, to recover any undetonated explosive.

d. The handling of a misfired shot shall be under the direct supervision of the mine foreman or a competent person designated by him.

ANTHRACITE UNDERGROUND MINES

ARTICLE IV—EXPLOSIVES AND BLASTING

• • • • •
Sec. 4. Blasting practices. • • •

b. • • •

2. Boreholes shall be cleaned, and they shall be checked by the miner in charge to see that they are placed properly before being charged.

3. Boreholes shall be stemmed with at least 24 inches of material, or at least one-half of the length of the hole shall be stemmed if the hole is less than 4 feet in depth or suitable blasting plugs shall be used.

• • • • •

6. Shots shall be fired by certified persons in charge.

7. Boreholes shall not be charged while any other work is being done at the face, and the shot or shots shall be fired before any other work is done in the zone of danger from blasting except that which is necessary to safeguard the employees.

8. Only nonmetallic tamping bars shall be used for charging and tamping boreholes.

9. The leg wires of electric detonators shall be kept shunted until ready to connect to the firing cable.

10. Shots shall not be fired from any power or signal circuit while any men are in the section of the mine in which such shots are fired.

11. The roof and faces of working places shall be tested before and, where possible, after firing each shot or group of multiple shots.

12. Ample warning shall be given before shots are fired, and care shall be taken to ascertain that all persons are in the clear. Men shall be removed from adjoining working places when there is danger of a shot blowing through.

13. Mixed types of explosives shall not be charged or fired in any borehole, nor shall detonators made by different manufacturers be combined in the same blasting circuit.

• • • • •
 15. Workmen shall never go inside a battery to start the flow of material.

16. Power wires and cables that could contact blasting cables or leg wires shall be deenergized during charging and firing.

Sec. 5. Blasting cables. a. Blasting cables shall be:

1. Well insulated and as long as may be necessary to permit the person firing the blast to get in a safe place.

2. Short-circuited at the battery end until ready to attach to the blasting unit.

3. Staggered as to length or the ends kept well separated when attached to the detonator leg wires.

4. Kept clear of power wires and all other possible sources of active or stray electric currents.

Sec. 6. Misfires. a. Where misfires occur with electric detonators, a waiting period of at least 30 minutes shall elapse before anyone returns to the shot. After such failure, the blasting cable shall be disconnected from the source of power and the battery ends short-circuited before electric connections are examined.

b. Explosives shall be removed by firing a separate charge at least 2 feet away from, and parallel to, the misfired charge.

c. A very careful search of the working place, and, if necessary, of the coal after it reaches the tippie, shall be made after blasting a misfired hole to recover any undetonated explosive.

d. The handling of a misfired shot shall be under the direct supervision of the miner in charge.

PART 16—STEMMING DEVICES

- Sec.
- 16.1 Purpose.
- 16.2 Definitions.
- 16.3 Application for tests.
- 16.4 Fees.
- 16.5 Drawings and specifications.
- 16.6 Shipment of stemming device samples.
- 16.7 Place of investigation.
- 16.8 Consultation.
- 16.9 Observers at formal investigations and demonstrations.
- 16.10 Physical and chemical tests.
- 16.11 Requirements for approval of a stemming device.
- 16.12 Change in design.
- 16.13 Granting of approval; notification of approval or disapproval.
- 16.14 Approval label.
- 16.15 List of permissible stemming devices.
- 16.16 Conditions under which stemming devices are to be used.
- 16.17 Field sampling.
- 16.18 Rescission of approval.

AUTHORITY: The provisions of this Part 16 issued under secs. 3, 5, 36 Stat. 370, as amended, sec. 212, 66 Stat. 709; 30 U.S.C. 5, 7, 482.

SOURCE: The provisions of this Part 16 appear at 35 F.R. 5341, Mar. 31, 1970, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 39 FR 23998, June 28, 1974.

§ 16.1 Purpose.

The regulations in this part specify the safety standards and the requirements for approval by MESA, of stemming devices as permissible for use in coal mines. The use of stemming devices for confining permissible explosives when fired for underground blasting, involves consideration of several possible hazards including:

(a) Ignition of methane-air and/or coal dust-air mixtures when the explosive charge is detonated.

(b) Emission of toxic gases such as carbon monoxide, oxides of nitrogen, and hydrogen sulfide when the explosive charge is detonated.

(c) Other hazards associated with the firing of inadequately confined explosive charges.

§ 16.2 Definitions.

As used in this part, the following words are defined:

(a) "Stemming devices" means any flame resistant unit which has incorporated in its design positive means for providing adequate confinement to per-

missible explosives in boreholes when used as prescribed.

(b) "Approval" means written official notification by MESA that upon investigation the stemming device has met satisfactorily the requirements of this part for use in coal mines.

(c) "Permissible" means conforming in every respect to the provisions of the appropriate MESA test schedule.

(d) "Approval label" means an identifying mark indicating that the stemming device has been approved by MESA as a permissible stemming device.

(e) "Flame resistant" means incapable of supporting combustion under the test conditions hereinafter stated.

(f) "MESA" means the United States Department of the Interior, Mining Enforcement and Safety Administration.

[35 FR 5341, Mar. 31, 1970, as amended at 39 FR 23998, June 28, 1974]

§ 16.3 Application for tests.

Before MESA will make any tests on a stemming device or on any change in the design thereof, the manufacturer or user must file a written request (no application form is provided by MESA) with Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213. A statement as to the nature of the stemming device to be tested, the composition, and any other pertinent information relative to the stemming device must accompany the application. MESA will review the application and decide whether or not the tests will be undertaken. If the application is approved, an application number will be assigned and instructions given regarding the fees required and method of shipment of materials. Upon receipt of this information, the applicant must transmit, to the address given in this section, a check, banknote, or money order, made payable to MESA, to cover all fees for the tests; drawings and specifications of the stemming device must be transmitted at the same time.

§ 16.4 Fees.

- (a) Complete tests for approval..... \$1,225
- (b) Individual tests:
 - 1. Chemical 65
 - 2. Physical examination..... 25
 - 3. Gallery, per shot..... 18
 - 4. Rough handling..... 15
 - 5. Flammability 40
 - 6. Fee for tests not included in this list will be based on actual costs.

(c) Fee for tests required by changes in design will be determined by MESA; minimum fee----- 100

¹Fees for additional tests, described in paragraph (c) of § 16.10, will be determined by MESA and will be in addition to this fee. If the applicant withdraws the stemming device after testing has begun, or if the device fails to pass any of the required tests, MESA will charge a minimum of \$100 and will return to the applicant any part of the remaining fee not required to compensate MESA for its services.

§ 16.5 Drawings and specifications.

A set of drawings, bill of material, and specifications sufficient in number and detail to identify fully the parts of the stemming device must be furnished to MESA. Drawings should be numbered and dated to facilitate identification and reference in the records. The drawings and specifications for stemming devices shall include an assembly drawing, or drawings, clearly showing the over-all dimensions of the stemming device, tolerances, and the character, size, and relative arrangement of all parts. The nature of the materials used in the assembly shall be specified on the drawings.

§ 16.6 Shipment of stemming device samples.

Samples of the stemming device to be tested should be shipped to MESA only after MESA has furnished shipping instructions specifying the quantities, sizes, and mode of shipment of the samples.

§ 16.7 Place of investigation.

Tests on stemming devices will be made at the Bureau's Explosives Testing Station at Bruceton, Pa., in the order of receipt of applications.

§ 16.8 Consultation.

Any potential applicant (or accredited representative thereof) may visit the Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pennsylvania 15213 to discuss, without charge, stemming devices proposed to be submitted for investigation by MESA. Should preliminary tests appear advisable before submitting the stemming device for approval, MESA may conduct such tests for the applicant with fees as prescribed in § 16.4.

§ 16.9 Observers at formal investigations and demonstrations.

No one shall be present during any part of the formal investigation con-

ducted by MESA which leads to approval for permissibility except the necessary Government personnel, representatives of the applicant, and such other persons as may be mutually agreed upon by the applicant and MESA. Upon granting approval for permissibility, MESA will announce that such approval has been granted to the stemming device and may thereafter conduct, from time to time in its discretion, public demonstrations of the tests conducted on the approved stemming device. Those who attend any part of the investigation, or any public demonstration, shall be present solely as observers; the conduct of the investigation and of any public demonstration shall be controlled wholly by MESA. Results of chemical analyses of material and all information contained in the drawings, specifications, and instructions shall be deemed confidential and their disclosure will be appropriately safeguarded by MESA.

§ 16.10 Physical and chemical tests.

(a) *Compositional tests.* Such test will be made to verify the submitted specifications.

(b) *Physical tests.* The following physical tests will be made:

(1) *Physical examination.* An examination will be made to verify the submitted specifications, or to establish basic specifications on the composition, as are deemed necessary by MESA.

(2) *Gallery test.* Fifty trials, using two or more different permissible explosives selected by MESA, will be made with not more than 30 trials with any one permissible explosive, firing a 220-gram charge of the permissible explosive from a cannon stemmed with the stemming device under test, into a steel gallery charged with a mixture of natural gas and air containing 8.0 ± 0.3 percent of the Pittsburgh natural gas, at a temperature of $25 \pm 5^\circ$ C. In order to pass this test there must not be an ignition in any of the trials made.

(3) *Rough-handling test.* A specially designed box is used for making the rough-handling test. This box is approximately 6 feet in height and it is equipped with seven baffles each approximately 10 inches apart and sloping 30° from the horizontal. Ten samples of the stemming device to be tested will be introduced individually at the top and allowed to drop from baffle to baffle. Each stemming device will be subjected to 30 passes through the box and then

will be subjected to the gallery test prescribed in subparagraph (2) of this paragraph. Each stemming device must pass the gallery test in the physical condition existing at the end of the rough-handling test. These 10 gallery trials shall be in addition to the 50 trials described in subparagraph (2) of this paragraph.

(4) *Flammability test.* At least three specimens 2 inches in length, $\frac{1}{4}$ inch in width and $\frac{1}{16}$ -inch thick shall be cut or prepared from each major component of the device under test, excluding any wrapper material. If the total weight of any wrapper material exceeds 3 grams, it shall be tested separately. If the nature of the material to be tested precludes the preparation of specimens with the above dimensions, then the specimens shall have dimensions as near as possible to those specified. The specimen shall be clamped in a support at one end with its longitudinal axis horizontal and its transverse axis inclined at 45° to the horizontal. Under the test specimen, there shall be clamped a piece of 20-mesh Bunsen burner gauze about $1\frac{1}{2}$ inches square, in a horizontal position $\frac{1}{4}$ inch below the specimen with about $\frac{1}{2}$ inch of the specimen extending beyond one edge of the gauze. If the specimen is not rigid, it shall be allowed to bend and come to rest on the gauze. A Bunsen-type burner, with a flame 1 inch in height having a temperature of $950^\circ \pm 50^\circ$ C. when measured by means of a 20 B & S gauge, iron-constantan thermocouple, centered in the flame at the tip of the inner cone, shall be placed under the free end of the test specimen and adjusted so that the flame tip is just in contact with the specimen. The flame shall be removed when ignition of the specimen is observed or after an application time of not more than 30 seconds. If the specimen does not continue to burn with visible flame after the first application of flame, a second application of the burner flame shall be made immediately under the same conditions for a period not to exceed 30 seconds. If none of the specimens continue to burn with a visible flame for more than 5 seconds after removing the burner flame in any of the individual trials made, the material shall be considered flame resistant and acceptable for use in the stemming device.

(c) *Additional tests.* Additional tests will be made if it is determined by MESA that they are necessary to estab-

lish safety characteristics of the stemming device.

§ 16.11 Requirements for approval of a stemming device.

Approval will be given only for stemming devices which pass the tests prescribed in § 16.10. Approval will be based primarily on tests made on one standard size to be designated by MESA ($1\frac{3}{4}$ inch diameter unless otherwise specified). The applicant must, however, submit samples and specifications for all sizes for which approval is desired. No stemming device with diameter exceeding the length will be accepted for test. For sizes smaller than the standard size, the overall length must not be less than that for the standard size. For sizes having a diameter larger than the standard size, the ratio of the length to the diameter must not be less than that for the standard size. Specific approval must be obtained for each size before it can be labeled as approved. The amount of any combustible wrapper used must not exceed 3 grams.

§ 16.12 Change in design.

Any change in the design of an approved stemming device must first be approved by MESA before such modified stemming devices are offered to the trade under the approval label.

§ 16.13 Granting of approval; notification of approval or disapproval.

After MESA has completed the investigation of a stemming device, a written report covering approval or disapproval of the stemming device will be sent to the applicant. The report of approval will establish the tolerances that must be maintained in manufacture and all requirements for use as described in § 16.16.

§ 16.14 Approval label.

(a) Upon approval of the stemming device and before the stemming device is offered to the trade, the applicant must place an approval label on all containers of packages of such stemming devices which must be of the same characteristics as the stemming device approved by MESA. The approval label which shall be submitted to and approved by MESA shall bear the emblem of the Mining Enforcement and Safety Administration, and be inscribed as follows:

PERMISSIBLE STEMMING DEVICE

Approval Number ----- issued to -----

(b) When required by MESA, appropriate words of caution must be added.

(c) A manufacturer who places the approval label on the stemming device must use all reasonable precautions to manufacture the stemming device to conform with the specified tolerances of the stemming device as approved, and is obligated to warn the user that the stemming device is permissible only when employed as specified in § 16.16.

§ 16.15 List of permissible stemming devices.

MESA will maintain a list of permissible stemming devices which will be published from time to time.

§ 16.16 Conditions under which stemming devices are to be used.

An approved stemming device is permissible only when used under the following conditions:

(a) The stemming device must be completely within the borehole and in physical contact with the explosive charge before the shot is fired.

(b) The stemming device must be of such a size as to fill tightly the cross section of the borehole when it is properly put into place.

(c) The explosive being stemmed must be classed as "permissible" and it must be used in the manner prescribed by MESA in Part 15 of this subchapter.

(d) Other conditions, which will be set down by MESA as appropriate to the particular stemming device, must be observed.

§ 16.17 Field sampling.

MESA will, from time to time, collect and reexamine permissible stemming devices in order to determine whether they conform to the stemming device as approved. If the field sample fails to pass any of the tests described in § 16.10 or exceeds the established tolerances, the manufacturer will be so notified and required to take such steps as are necessary to make all future production conform to the approved specifications. In the event of failures of a nature deemed by MESA to present definite hazard in use of the stemming device, MESA may request that the manufacturer remove from the market and the field any unused stemming devices of similar faulty nature.

§ 16.18 Rescission of approval.

MESA reserves the right to rescind for cause at any time, any approval granted under this part. Upon such rescission the stemming device will be declared nonpermissible and will be removed from the list of permissible stemming devices.

PART 17—BLASTING DEVICES

| | |
|-------|---|
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AUTHORITY: The provisions of this Part 17 issued under secs. 3, 5, 36 Stat. 370, as amended, sec. 212, 66 Stat. 709; 30 U.S.C. 5, 7, 482.

SOURCE: The provisions of this Part 17 appear at 35 F.R. 5339, Mar. 31, 1970, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 39 FR 23998, June 28, 1974.

§ 17.1 Purpose.

The regulations in this part specify certain minimum safety standards and requirements for approval, by MESA, of blasting devices as permissible for use in coal mines. The use of blasting devices for dislodging coal in underground mines involves at least two possible hazards, namely:

(a) Ignition of methane-air and/or coal dust-air mixtures when the blasting device is operated.

(b) Emission of toxic gases, such as carbon monoxide, oxides of nitrogen, and hydrogen sulfide, when the blasting device is operated.

§ 17.2 Definitions.

As used in this part, the following terms are defined:

(a) "Blasting device" is a unit used for breaking down coal involving a high-pressure discharge from a metal shell but does not include blasting devices whose operations depend upon pressures developed wholly by mechanical means.

(b) "Approval" is a written official notification by MESA, that, upon investigation, the blasting device has met satisfactorily the requirements of this part for use in coal mines. Reports of tests other than the complete series required for the determination of permissibility are not approvals and should not be construed as such.

(c) "Permissible" means conforming, when completely assembled, in every respect with the blasting device approved by MESA for use in coal mines.

(d) "Approved marking" is an identifying mark indicating that the blasting device has been approved by MESA as a permissible blasting device.

(e) "MESA" means the United States Department of the Interior, Mining Enforcement and Safety Administration.

[35 FR 5339, Mar. 31, 1970, as amended at 39 FR 23999, June 28, 1974]

§ 17.3 Application for tests.

Before MESA will make any tests leading to the approval of a blasting device or for a subsequent change in its design, the applicant must file a written request (no application form is provided by MESA) with a statement as to the nature of the blasting device to be tested, the composition of the active components, and any other pertinent information relating to the blasting device. MESA's engineers will review the application and decide whether or not the tests will be undertaken. The request for the making of tests must be addressed to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213. Upon approval of the application, an application number will be assigned and instructions given regarding the fees required and method of shipment of materials. Upon receipt of this information the applicant should transmit to the address given in this section, a check, bank draft, or money order made payable to MESA to cover all fees for the tests.

§ 17.4 Fees.

| | |
|---|----------------------|
| (a) Complete tests for approval when electrical tests are not required ----- | ¹ \$1,210 |
| (b) Complete tests for approval when electrical tests are required ----- | ¹ 1,450 |
| (c) Individual tests: | |
| 1. Chemical ----- | 120 |
| 2. Physical examination ----- | 60 |
| 3. Gallery, per shot ----- | 15 |
| 4. Pendulum friction, per sample ----- | 30 |
| 5. Gaseous products, per sample ----- | 120 |
| 6. Shell temperature ----- | 100 |
| 7. Electrical ----- | 240 |
| 8. Fee for tests not included in this list will be based on actual costs. | |
| (d) Fee for tests required by changes in design will be determined by MESA; minimum fee ----- | 500 |

¹ If the applicant withdraws the blasting device after testing has begun, or if the device fails to pass any of the required tests, MESA will charge a minimum of \$500 and will return to the applicant any part of the remaining fee not required to compensate MESA for its services.

§ 17.5 Drawings and specifications.

A set of drawings, bill of materials, and specifications sufficient in number and detail to identify fully the parts of the blasting device must accompany the application. Drawings shall be numbered and dated to facilitate identification and reference in the records. The drawings and specifications for blasting devices shall include an assembly drawing or drawings, clearly showing the overall dimensions of the blasting device, tolerances, and character, size, and relative arrangement for all parts. The nature of the materials used in the assembly shall be specified on the drawings.

§ 17.6 Shipment of blasting device sample.

Samples of the blasting device to be tested and all equipment necessary for charging and firing the blasting device, shall be shipped prepaid to MESA only after MESA has furnished shipping instructions specifying the quantities and mode of shipment of the materials.

CROSS REFERENCE: For regulations with respect to shipment of samples of explosives and explosive articles, see 49 CFR 173.86.

§ 17.7 Place of investigation.

Tests on blasting devices will be made at the Bureau's Explosives Testing Station at Bruceton, Pa., in the order of receipt of the blasting device, provided an application is on file.

§ 17.8 Consultation.

Any potential applicant (or accredited representative thereof) may visit Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa., 15213, to discuss, without charge, blasting devices proposed to be submitted for investigation by MESA. Should preliminary tests appear advisable before submitting the blasting device for formal investigation, MESA may conduct such tests for the applicant with fees as prescribed in § 17.4.

§ 17.9 Observers at formal investigations and demonstrations.

No one shall be present during any part of the formal investigation conducted by MESA which leads to approval for permissibility except the necessary Government personnel, representatives of the applicant, and such other persons as may be mutually agreed upon by the applicant and MESA. Upon granting approval for permissibility, MESA will announce that such approval has been granted to the blasting device and may thereafter conduct, from time to time in its discretion, public demonstrations of the tests conducted on the approved blasting device. Those who attend any part of the investigation, or any public demonstration, shall be present solely as observers; the conduct of the investigation and of any public demonstration shall be controlled wholly by MESA's personnel. Results of chemical analyses of material and all information contained in the drawing, specifications, and instructions shall be deemed confidential and their disclosure will be appropriately safeguarded by MESA.

§ 17.10 Chemical and physical tests.

(a) *Chemical tests.* Chemical tests will be made on any components of the blasting device which may be necessary to establish basic data.

(b) *Physical examination.* A physical examination will be made on the components of the blasting device and all

dimensions will be checked against the submitted drawings and specifications.

(c) *Gallery tests*—(1) *Test 1.* Each assembly is discharged into a mixture of natural gas and air containing 8.0 ± 0.3 percent of Pittsburgh standard natural gas, at a temperature of $25 \pm 5^\circ \text{C}$.

(2) *Test 4.* Each assembly is discharged into a mixture of natural gas and air containing 4.0 ± 0.2 percent of Pittsburgh standard natural gas, at a temperature of $25 \pm 5^\circ \text{C}$, and there will also be 8 pounds of standard bituminous coal dust placed on shelves inside the gallery.

(d) *Pendulum friction test.* For any combustible components or mixtures used in the blasting device 10 trials are made with the steel shoe and, if necessary, with the hard fiber-faced shoe, dropped from a height of 1.5 meters (59 ins.) and with an added weight of 20 kilograms (44 lbs.).

(e) *Gaseous products.* The nature and quantity of gaseous products emitted by the assembled blasting device will be determined.

(f) *Shell temperature test.* The surface temperature of the blasting device will be determined after operating the blasting device under conditions which will produce a "hot shell", i.e., a shell in which the hot gases are trapped and not released.

(g) *Additional tests.* Additional tests will be made if it is determined by MESA that they are necessary to establish the safety of the blasting device.

§ 17.11 Requirements for approval of permissible blasting devices.

(a) *Gallery tests.* Each assembly of a blasting device must pass without a single ignition, test 1 (35 trials) and test 4 (15 trials) in the gallery.

(b) *Pendulum friction test.* All components thought to constitute an explosive hazard will be tested and such components tested must not show in any trial with the hard fiber-faced shoe on the pendulum friction device a result more unfavorable than an almost indistinguishable local crackling.

(c) *Gaseous products of explosion.* The volume of poisonous gases produced by a blasting device must not exceed 140 liters per shell as determined in the Crawshaw-Jones apparatus.

(d) *Shell temperature test.* The maximum surface temperature attained after

operating the blasting device as a "hot shell" shall not exceed 350° C.

(e) *Tests on electrical parts.* If the blasting device is so designed that it cannot be discharged except with a specially designed electric power supply unit made expressly for that purpose, that power supply unit must meet the applicable requirements of MESA set forth in Parts 18, 24, and 25 of this chapter.

(f) *Misfires.* Approval will not be granted if the blasting device fails to function or misfires in a manner which is deemed to be unsafe by MESA.

§ 17.12 Change in design.

Special authorization from MESA must be obtained before the manufacturer makes a change in the design or in the components of an approved blasting device.

§ 17.13 Notification of approval or disapproval.

After MESA has completed the investigation of a blasting device, a written report covering approval or disapproval of the blasting device will be sent to the applicant. Approval of the blasting device requires that it will be used in conformity with the conditions specified in § 17.16 and any other specific conditions required for handling the blasting device which may be stated in the report.

§ 17.14 Release of test data.

All test data regarding the chemical characteristics of any components of the blasting device are deemed confidential between MESA and the applicant and will not be publicly released.

§ 17.15 List of permissible blasting devices.

MESA will maintain a list of permissible blasting devices which will be published from time to time so that interested parties may have information regarding blasting devices which have passed the permissibility tests of MESA.

§ 17.16 Conditions under which a permissible blasting device is to be used.

A blasting device is permissible only when used under the following conditions:

(a) The blasting device must conform to the specifications for the model as originally approved.

(b) The blasting device must not be discharged in the presence of firedamp that can be detected with a permissible flame safety lamp.

(c) The electrical unit used to fire the blasting device must be suitable for the purpose and meet MESA's requirements applicable to that particular type of unit. The unit must also be used in a manner prescribed by MESA.

(d) The blasting device must not be fired until everyone is a safe distance from the shot and protected by adequate cover, having one and, if possible, two right angles between them and the blast.

(e) The coal to be blasted must be undercut or equivalently relieved; the length of shot holes must be at least 6 inches less than the depth of the undercut or equivalent relief; and the shot shall be at least 6 inches way from the side of undercut or equivalent relief.

(f) No blasting device shall be assembled or disassembled in a mine unless such permission is stated in the original approval.

(g) A misfired blasting device may not be opened in the mine unless an exception to this section is included as part of the approval for each specific blasting device. The conditions which constitute a misfire will be specified in the original approval.

(h) A waiting period of 15 minutes shall be required before any personnel is allowed to return to the face after a misfire has occurred.

(i) The blasting device must be used in conformance with all applicable regulations specified in the current edition of the Federal Mine Safety Code.

(j) Other conditions, which will be set down by MESA as appropriate to the particular blasting device tested, must be observed.

§ 17.17 Tolerances and requirements as applied to field samples.

MESA will periodically collect and re-examine permissible blasting devices in order to determine whether they conform to the specifications for the blasting device as originally approved and subject to the following tolerances:

(a) *Chemical analysis*—(1) *Moisture.* The tolerances for moisture shall be in

accordance with those shown in table 1 of this section.

TABLE 1—LIMIT OF VARIATION (PERCENTAGE OF TOTAL CHEMICAL COMPONENTS) FOR VARIOUS QUANTITIES OF MOISTURE

| Quantity of moisture | | Limit of variation |
|----------------------|----------------|--------------------|
| From— | To— | |
| <i>Percent</i> | <i>Percent</i> | <i>Percent (±)</i> |
| 0.0 | 1.0 | 1.8 |
| 1.1 | 2.0 | 2.0 |
| 2.1 | 3.0 | 2.2 |
| 3.1 | 4.0 | 2.4 |
| 4.1 | and up | 2.6 |

(2) *Carbonaceous combustible material.* The tolerance shall be ± 3 percent of total chemical components.

(3) *Other ingredients or their equivalents.* For ingredients in quantities of 55.1 percent or more, the tolerance shall be ± 3 percent of the total chemical components. For ingredients in quantities not exceeding 55 percent, the tolerance shall be in accordance with those shown in table 2 of this section.

TABLE 2—LIMIT OF VARIATION (PERCENTAGE OF TOTAL CHEMICAL COMPONENTS) FOR VARIOUS QUANTITIES OF INGREDIENT

| Quantity of ingredient | | Limit of variation |
|------------------------|----------------|--------------------|
| From— | To— | |
| <i>Percent</i> | <i>Percent</i> | <i>Percent (±)</i> |
| 0.0 | 5.0 | 1.2 |
| 5.1 | 10.0 | 1.5 |
| 10.1 | 20.0 | 1.7 |
| 20.1 | 30.0 | 2.0 |
| 30.1 | 40.0 | 2.3 |
| 40.1 | 50.0 | 2.5 |
| 50.1 | 55.0 | 2.8 |

(b) *Physical tests of field samples—*

(1) *Poisonous gases.* The volume of poisonous gases must not exceed 140 liters per shell.

(2) *Grams of wrapper.* For those blasting devices containing combustible materials as wrapper for any of the components, the tolerance shall be ± 2 grams per 100 grams of the component based on that shown for the approved design.

(3) *Weight of chemical components.* The weight of the chemical components in the blasting device shall be ± 10 percent of that shown by the basic sample weight.

(4) *Gallery test 1.* The blasting device must pass gallery test 1 (20 trials) using the normal charge.

(5) *Gallery test 4.* The blasting device must pass gallery test 4 (10 trials) using the normal charge.

(6) *Pendulum friction test.* Any chemical component must pass with the hard fiber-faced shoe falling from a height of 1.5 meters and with an added weight of 20 kilograms (44 lbs.).

(7) *Temperature.* The maximum temperature attained by a hot shell must not exceed 350° C.

(8) *Conformance with basic data.* The blasting device and all special equipment required for its use must conform to the basic data.

§ 17.18 Field sample failures.

If the blasting device fails to pass any retests specified in § 17.17(b) (1), (4), (5), (6), and (7) the manufacturer will be so notified. As soon as he has been so notified the manufacturer (a) shall promptly withdraw from the market all components specified by MESA and (b) shall manufacture components in conformity with the basic specifications.

§ 17.19 Variances from prescribed tolerance.

Variance on field sample tests from tolerances specified in § 17.17 (a) and (b) (2) and (3) do not directly affect permissibility of the blasting device, but the manufacturer will be notified; he is then obligated to modify his formulation of future blasting devices to bring the blasting device within the prescribed limits and to keep it within such limits.

§ 17.20 Rescission of approval.

MESA reserves the right to rescind for cause, at any time, any approval granted under this part. Upon such rescission the blasting device will be declared non-permissible and will be removed from the list of permissible blasting devices.

Section 17.16 of Part 17 deals with the use of permissible blasting devices, and paragraph (1) of that section provides that "The blasting device must be used in conformance with all applicable regulations specified in the current edition of the Federal Mine Safety Code." Except for provisions which

impose requirements now expressly dealt with in, or which are inconsistent with, the Federal Coal Mine Health and Safety Act of 1969, these regulations are as follows:

BITUMINOUS COAL AND LIGNITE UNDERGROUND MINES

ARTICLE IV—EXPLOSIVES AND ELASTING

SEC. 8. Cardox. . . .

(c) Where Cardox is used for blasting, the following shall apply:

(1) When Cardox is fired all persons in the vicinity, including the shot firer, shall be around a second corner or in an equally safe place.

(2) Blasting cables shall be as long as may be necessary to assure the safety of the shot firer, attached only after the charge has been placed in the borehole, and maintained in good repair.

(3) Blasting cables shall be kept clear of power wires and all other possible sources of active or stray electric currents.

(4) The charge shall be detonated with a permissible shot-firing unit.

(5) Cardox shall not be shot off the solid, over heavy rock binders or shale, or in a "tight" shot.

(6) Cardox misfires shall not be approached until after the elapse of 15 minutes and shall be handled under the supervision of a competent person.

(7) Misfired shells shall be bled off before complete removal from the hole and marked conspicuously upon such removal.

(8) All protruding wires shall be removed from misfired shells before the shells are removed from the face.

(11) Cardox shells shall not be heated. This does not apply to heat generated when the shell is discharged.

SUBCHAPTER D—ELECTRICAL EQUIPMENT, LAMPS, METHANE DETECTORS; TESTS FOR PERMISSIBILITY; FEES

PART 18—ELECTRIC MOTOR-DRIVEN MINE EQUIPMENT AND ACCESSORIES

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- 18.99 Notice of approval or disapproval; letters of approval and approval plates.

AUTHORITY: The provisions of this Part 18 issued under sec. 5, 36 Stat. 370 (30 U.S.C. 7) as amended, and sec. 212(a), 66 Stat. 709 (30 U.S.C. 482(a)). Interpret or apply secs. 2, 3, 36 Stat. 370 (30 U.S.C. 3, 5) as amended, and secs. 201, 209, 66 Stat. 692, 703 (30 U.S.C. 471, 479), except as otherwise noted.

SOURCE: The provisions of this Part 18 appear at 33 F.R. 4660, Mar. 19, 1968, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 39 FR 23990, June 28, 1974.

Subpart A—General Provisions

§ 18.1 Purpose.

The regulations in this part set forth the requirements to obtain MESA: (a) Approval of electrically operated machines and accessories intended for use in gassy mines or tunnels, (b) cer-

tification of components intended for use on or with approved machines, (c) permission to modify the design of an approved machine or certified component, (d) acceptance of flame-resistant cables, hoses, and conveyor belts, (e) sanction for use of experimental machines and accessories in gassy mines or tunnels; also, procedures for applying for such approval, certification, acceptance for listing; and fees.

§ 18.2 Definitions.

As used in this part—

“Acceptance” means written notification by MESA that a cable, hose, or conveyor belt has met the applicable requirements of this part and will be listed by MESA as acceptable flame-resistant auxiliary equipment.

“Acceptance marking” means an identifying marking indicating that the cable, hose, or conveyor belt has been accepted by MESA for listing as flame resistant.

“Accessory” means associated electrical equipment, such as a distribution or splice box, that is not an integral part of an approved (permissible) machine.

“Administrator” means the Administrator, Mining Enforcement and Safety Administration.

“Afterburning” means the combustion of a flammable mixture that is drawn into a machine compartment after an internal explosion in the compartment.

“Applicant” means an individual, partnership, company, corporation, organization, or association that designs, manufactures, assembles, or controls the assembly of an electrical machine or accessory and seeks approval, certification, or permit, or MESA acceptance for listing of flame-resistant cable, hose, or conveyor belt.

“Approval” means a formal document issued by MESA which states that a completely assembled electrical machine or accessory has met the applicable requirements of this part and which authorizes the attachment of an approval plate so indicating.

“Approval plate” means a metal plate, the design of which meets MESA’s requirements, for attachment to an approved machine or accessory, identifying it as permissible for use in gassy mines or tunnels.

“Branch circuit” means an electrical circuit connected to the main circuit, the conductors of which are of smaller size than the main circuit.

“Bureau” means the U.S. Bureau of Mines.

“Certification” means a formal written notification, issued by MESA, which states that an electrical component complies with the applicable requirements of this part and, therefore, is suitable for incorporation in approved (permissible) equipment.

“Certification label” means a plate, label, or marking, the design of which meets MESA’s requirements, for attachment to a certified component identifying the component as having met the MESA’s requirements for incorporation in a machine to be submitted for approval.

“Component” means an integral part of an electrical machine or accessory that is essential to the functioning of the machine or accessory.

“Connection box” (also known as conduit or terminal box) means an enclosure mounted on an electrical machine or accessory to facilitate wiring, without the use of external splices. (Such boxes may have a joint common with an explosion-proof enclosure provided the adjoining surfaces conform to the requirements of Subpart B of this part.)

“Cylindrical joint” means a joint comprised of two contiguous, concentric, cylindrical surfaces.

“Distribution box” means an enclosure through which one or more portable cables may be connected to a source of electrical energy, and which contains a short-circuit protective device for each outgoing cable.

“Experimental equipment” means any electrical machine or accessory that an applicant or MESA may desire to operate experimentally for a limited time in a gassy mine or tunnel. (For example, this might include a machine constructed at a mine, an imported machine, or a machine or device designed and developed by MESA.)

“Explosion-proof enclosure” means an enclosure that complies with the applicable design requirements in Subpart B of this part and is so constructed that it will withstand internal explosions of methane-air mixtures: (1) Without damage to or excessive distortion of its walls or cover(s), and (2) without ignition of surrounding methane-air mixtures or discharge of flame from inside to outside the enclosure.

“Fire-resistant” as applied to conveyor belts means belting that will pass the flame tests hereafter specified.

“Flame-arresting path” means two or more adjoining or adjacent surfaces between which the escape of flame is prevented.

“Flame resistant” as applied to cable, hose, and insulating materials means material that will burn when held in a flame but will cease burning when the flame is removed.

“Flammable mixture” means a mixture of methane or natural gas and air that when ignited will propagate flame. Natural gas containing a high percentage of methane is a satisfactory substitute for pure methane in most tests.

“Gassy mine” means a coal mine classed as “gassy” by MESA or by the State in which the mine is situated.

“Incendive arc or spark” means an arc or spark releasing enough electrical or thermal energy to ignite a flammable mixture of the most easily ignitable composition.

“Intrinsically safe” means incapable of releasing enough electrical or thermal energy under normal or abnormal conditions to cause ignition of a flammable mixture of methane or natural gas and air of the most easily ignitable composition.

“MESA” means the United States Department of the Interior, Mining Enforcement and Safety Administration.

“Mobile equipment” means equipment that is self-propelled.

“Normal operation” means the regular performance of those functions for which a machine or accessory was designed.

“Permissible equipment” means a completely assembled electrical machine or accessory for which a formal approval has been issued, as authorized by the Administrator, Mining Enforcement and Safety Administration under the Federal Coal Mine Health and Safety Act of 1969 (Pub. L. 91-173, 30 U.S.C. 801).

“Permit” means a formal document, signed by the Administrator, authorizing the operation of specific experimental equipment in a gassy mine or tunnel under prescribed conditions.

“Plane joint” means two adjoining surfaces in parallel planes.

“Portable cable”, or “trailing cable” means a flame-resistant, flexible cable or cord through which electrical energy is transmitted to a permissible machine or accessory. (A portable cable is that portion of the power-supply system between the last short-circuit protective device, acceptable to MESA, in the system and

the machine or accessory to which it transmits electrical energy.)

"Portable equipment" means equipment that may be moved frequently and is constructed or mounted to facilitate such movement.

"Potted component" means a component that is entirely embedded in a solidified insulating material within an enclosure.

"Pressure piling" means the development of abnormal pressure as a result of accelerated rate of burning of a gas-air mixture. (Frequently caused by restricted configurations within enclosures.)

"Qualified representative" means a person authorized by MESA to determine whether the applicable requirements of this part have been complied with in the original manufacture, rebuilding, or repairing of equipment for which approval, certification, or a permit is sought.

"Splice box" means a portable enclosure in which electrical conductors may be joined.

"Step (rabbet) joint" means a joint comprised of two adjoining surfaces with a change(s) in direction between its inner and outer edges. (A step joint may be composed of a cylindrical portion and a plane portion or of two or more plane portions.)

"Threaded joint" means a joint consisting of a male- and a female-threaded member, both of which are of the same type and gage.

[33 FR 4660, Mar. 19, 1968, as amended at 39 FR 23999, June 28, 1974]

§ 18.3 Consultation.

By appointment, applicants or their representatives may visit Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213, to discuss a proposed design to be submitted for approval, certification, or acceptance for listing. No charge is made for such consultation and no written report thereof will be made to the applicant.

§ 18.4 Equipment for which approval will be issued.

An approval will be issued only for a complete electrical machine or accessory. Assemblies that include one or more nonexplosion-proof components will not be considered for approval unless such component(s) contains intrinsically safe circuits or is constructed in accordance with paragraph (b), § 18.31.

§ 18.5 Equipment for which certification will be issued.

Certification will be issued for a component or subassembly suitable to incorporate in an approved machine. Certification may be issued for such components as explosion-proof enclosures, battery trays, and connectors.

§ 18.6 Applications.

(a) Investigation leading to approval, certification, extension thereof, or acceptance of cables, hose, or conveyor belt, will be undertaken by MESA only pursuant to a written application, in duplicate, accompanied by a check, bank draft, or money order, payable to Mining Enforcement and Safety Administration to cover the fees. The application shall be accompanied by all necessary drawings, specifications, descriptions, and related materials, as hereinafter provided. The application, all related matters, and all correspondence concerning it shall be addressed to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213.

(b) Applications for acceptance of cable and cord as flame resistant shall include the following information: Number and gage of conductors, type of material and identifying compound numbers for conductor insulation, fillers, and jackets. The applicant shall provide other description or specifications as may be subsequently required.

(c) Applications for acceptance of a conveyor belt as fire resistant shall include the following information: Trade name of the conveyor belt, thickness of covers, friction and skim coats, number of plies, type and weight of ply material, and designation of breaker strip or floated ply. The applicant shall provide other description or specifications as may be subsequently required.

(d) Applications for acceptance of hose as flame resistant shall include the following information: Trade name of hose, identification of materials used, including compound numbers, thickness of cover, thickness of tube, and number and weight of plies. The applicant shall provide other description or specifications as may be subsequently required.

(e) Drawings, drawing lists, specifications, wiring diagram, and descriptions shall be adequate in number and detail to identify fully the complete assembly, component parts, and subassemblies. Drawings shall be titled, numbered,

dated and shall show the latest revision. Each drawing shall include a warning statement that changes in design must be authorized by MESA before they are applied to approved equipment. When intrinsically safe circuits are incorporated in a machine or accessory, the wiring diagram shall include a warning statement that any change(s) in the intrinsically safe circuitry or components may result in an unsafe condition. The specifications shall include an assembly drawing(s) (see Figure 1 in Appendix II) showing the overall dimensions of the machine and the identity of each component part which may be listed thereon or separately, as in a bill of material (see Figure 2 in Appendix II). MESA may accept photographs (minimum size 8" x 10½") in lieu of assembly drawing(s). Purchased parts shall be identified by the manufacturer's name, catalog number(s), and rating(s). In the case of standard hardware and miscellaneous parts, such as insulating pieces, size and kind of material shall be specified. All drawings of component parts submitted to MESA shall be identical to those used in the manufacture of the parts. Dimensions of parts designed to prevent the passage of flame shall specify allowable tolerances. A notation "Do Not Drill Through" or equivalent should appear on drawings with the specifications for all "blind" holes.

(f) MESA reserves the right to require the applicant to furnish supplementary drawings showing sections through complex flame-arresting paths, such as labyrinths used in conjunction with ball or roller bearings, and also drawings containing dimensions not indicated on other drawings submitted to MESA.

(g) The applicant may ship his equipment to MESA for investigation at the time of filing his application and payment of the required fees. Shipping charges shall be prepaid by the applicant.

(h) For a complete investigation leading to approval or certification the applicant shall furnish MESA with the components necessary for inspection and testing. Expendable components shall be supplied by the applicant to permit continuous operation of the equipment while being tested. If special tools are necessary to assemble or disassemble any component for inspection or test, the applicant shall furnish them with the equipment to be tested.

(i) For investigation of a cable, hose, or conveyor belt, the applicant shall furnish samples as follows:

Cable—a sample having a minimum length of 12 feet;

Hose—a sample having a minimum length of 2 feet;

Conveyor belt—a sample of each type 8 inches long cut across the entire width of the belt.

(j) The applicant shall submit a sample caution statement (see figure 3 in appendix II) specifying the conditions for maintaining permissibility of the equipment.

(k) The applicant shall submit a factory-inspection form (see figure 4 in appendix II) used to maintain quality control at the place of manufacture or assembly to insure that component parts are made and assembled in strict accordance with the drawings and specifications covering a design submitted to MESA for approval or certification.

(l) MESA will accept an application for an approval, a letter of certification, or an acceptance for listing of a product that is manufactured in a country other than the United States provided: (1) All correspondence, specifications, lettering on drawings (metric-system dimensions acceptable), instructions, and related information are in English; and (2) all other requirements of this part are met the same as for a domestic applicant.

§ 18.7 Fees.

(a) Detailed inspection of each explosion-proof enclosure..... \$105

NOTE: When 20 or less explosion tests are required, the inspection fee shall be \$60.

(b) Explosion tests of each explosion-proof enclosure..... 70

NOTE: When 20 or less explosion tests are required, the fee shall be \$35.

(c) Each field inspection of a completely assembled machine or accessory 80

(d) Adequacy tests of potting material 50

(e) Test to determine adequacy of ventilation (battery enclosure) - 50

(f) Intrinsic-safety investigation and test 105

(g) High-potential test..... 50

(h) Surface-temperature test..... 50

(i) 1. Flame test of cable..... 80

2. Development flame tests shall

be charged at the rate of \$10 per specimen. The minimum charge is \$25.

- (j) 1. Flame test of conveyor belt or hose conduit..... 25
- 2. Development flame tests shall be charged at the rate of \$5 per specimen. The minimum charge is \$15.
- (k) Impact test each window or lens... 25
- (l) Thermal shock test each window or lens..... 25
- (m) No charge will be made for inspection or tests made solely for MESA's information.
- (n) Examining and recording drawings and specifications preparatory to issuing:
 - 1. Approval 110
 - 2. Certification 55
 - 3. Extension of approval..... 70
 - 4. Extension of certification..... 40

NOTE: When investigation, inspection, or testing is required to be performed at locations other than MESA's premises, the applicant shall reimburse MESA for traveling, subsistence and incidental expenses of its representative(s) in accordance with Standardized Government Travel Regulations. Such reimbursement shall be in addition to the fee charged for investigation, inspection, or testing.

Any funds deposited with MESA that exceed the fees required in accordance with the above charges will be refunded at the completion of the work or applied to future work, as directed by the applicant.

§ 18.8 Date for conducting investigation and tests.

The date of receipt of an application will determine the order of precedence for investigation and testing. If an electrical machine component or accessory fails to meet any of the requirements, it shall lose its order of precedence. If an application is submitted to resume investigation and testing after correction of the cause of failure, it will be treated as a new application and the order of precedence for investigation and testing will be so determined.

§ 18.9 Conduct of investigations and tests.

(a) Prior to the issuance of an approval, certification, or acceptance of a cable, hose, or conveyor belt, only MESA personnel, representative(s) of the applicant, and such other person(s) as may be mutually agreed upon may observe any part of the investigation or tests. The MESA will hold as confidential and will

not disclose principles or patentable features; nor will it disclose to persons other than the applicant the results of tests, chemical analysis of materials or any details of the applicant's drawings, specifications, instructions, and related material.

(b) Unless notified to the contrary by MESA, the applicant shall provide assistance in disassembling parts for inspection, preparing parts for testing, and preparing equipment for return shipment. Explosion-proof enclosures shall be drilled and tapped for pipe connections in accordance with instructions supplied by MESA.

(c) MESA reserves the right to inspect a complete machine, component part, or accessory at a place other than the Bureau's premises, such as the assembly plant or other location acceptable to MESA, at the applicant's expense.

(d) Applicants shall be responsible for their representatives present during tests and for observers admitted at their request and shall save the Government harmless in the event of damage to applicant's property or injury to applicant's representatives or to observers admitted at their request.

[33 F.R. 4660, Mar. 19, 1968; 33 F.R. 6345, Apr. 26, 1968]

§ 18.10 Notice of approval or disapproval.

(a) Upon completing investigation of a complete assembly of an electrical machine or accessory, MESA will issue to the applicant either a written notice of approval or a written notice of disapproval, as the case may require. No informal notification of approval will be issued. If a notice of disapproval is issued, it will be accompanied by details of the defects, with recommendations for possible correction. MESA will not disclose, except to the applicant, any information upon which a notice of disapproval has been issued.

(b) A formal notice of approval will be accompanied by a list of drawings, specifications, and related material, covering the details of design and construction of the equipment upon which the approval is based. Applicants shall keep exact duplicates of the drawings, specifications, and descriptions that relate to equipment for which an approval has been issued, and the drawings and

specifications shall be adhered to exactly in production of the approved equipment.

(c) An applicant shall not advertise or otherwise represent his equipment as approved (permissible) until he has received MESA's formal notice of approval.

§ 18.11 Approval plate.

(a) (1) The notice of approval will be accompanied by a photograph of an approval plate, bearing the emblem of Mining Enforcement and Safety Administration, the name of the complete assembly, the name of the applicant, and spaces for the approval number, serial number, and the type or model of machine.

(2) An extension of approval will not affect the original approval number except that the extension number shall be added to the original approval number on the approval plate. (Example: Original approval No. 2G-3000; seventh extension No. 2G-3000-7.)

(b) The applicant shall reproduce the design on a separate plate, which shall be attached in a suitable place, on each complete assembly to which it relates. The size, type, location, and method of attaching an approval plate are subject to MESA's concurrence. The method for affixing the approval plate shall not impair any explosion-proof feature of the equipment.

(c) The approval plate identifies as permissible the machine or accessory to which it is attached, and use of the approval plate obligates the applicant to whom the approval was issued to maintain in his plant the quality of each complete assembly and guarantees that the equipment is manufactured and assembled according to the drawings, specifications, and descriptions upon which the approval and subsequent extension(s) of approval were based.

(d) A completely assembled approved machine with an integral dust collector shall bear an approval plate indicating that the requirements of Part 33 of this chapter (Bureau of Mines Schedule 25B), have been complied with. Approval numbers will be assigned under each part of such joint approvals.

§ 18.12 Letter of certification.

(a) A letter of certification may be issued by MESA for a component intended for incorporation in a complete

machine or accessory for which an approval may be subsequently issued. A letter of certification will be issued to an applicant when a component has met all the applicable requirements of this part. Included in the letter of certification will be an assigned MESA certification number that will identify the certified component.

(b) A letter of certification will be accompanied by a list of drawings, specifications, and related material covering the details of design and construction of a component upon which the letter of certification is based. Applicants shall keep exact duplicates of the drawings, specifications, and descriptions that relate to the component for which a letter of certification has been issued; and the drawings and specifications shall be adhered to exactly in production of the certified component.

(c) A component shall not be represented as certified until the applicant has received MESA's letter of certification for the component. Certified components are not to be represented as "approved" or "permissible" because such terms apply only to completely assembled machines or accessories.

§ 18.13 Certification plate.

Each certified component shall be identified by a certification plate attached to the component in a manner acceptable to MESA. The method of attachment shall not impair any explosion-proof characteristics of the component. The plate shall be of serviceable material, acceptable to MESA, and shall contain the following:

Certified as complying with the applicable requirements of 30 CFR part -----
Certification No. -----

The blank spaces shall be filled with appropriate designations. Inclusion of the information on a company name plate will be permitted provided the plate is made of material acceptable to MESA.

§ 18.14 Identification of tested noncertified explosion-proof enclosures.

An enclosure that meets all applicable requirements of this part, but has not been certified by MESA, shall be identified by a permanent marking on it in a conspicuous location. The design of such marking shall consist of capital letters USMESA not less than ¼ inch in

height, enclosed in a circle not less than 1 inch in diameter.

§ 18.15 Changes after approval or certification.

If an applicant desires to change any feature of approved equipment or a certified component, he shall first obtain MESA's concurrence pursuant to the following procedure:

(a) Application shall be made as for an original approval or letter of certification requesting that the existing approval or certification be extended to cover the proposed change(s) and shall be accompanied by drawings, specifications, and related information, showing the change(s) in detail.

(b) The application will be examined by MESA to determine whether inspection or testing will be required. Testing will be required if there is a possibility that the change(s) may adversely affect safety.

(c) If the change(s) meets the requirements of this part, a formal extension of approval or certification will be issued, accompanied by a list of new or revised drawings, specifications, and related information to be added to those already on file for the original approval or certification.

(d) Revisions in drawings or specifications that do not involve actual change in the explosion-proof features of equipment may be handled informally, without fee.

§ 18.16 Withdrawal of approval, certification, or acceptance.

MESA reserves the right to rescind, for cause, any approval, certification, acceptance, or extension thereof, issued under this part.

Subpart B—Construction and Design Requirements

§ 18.20 Quality of material, workmanship, and design.

(a) Electrically operated equipment intended for use in coal mines shall be rugged in construction and shall be designed to facilitate inspection and maintenance.

(b) MESA will test only electrical equipment that in the opinion of its qualified representatives is constructed of suitable materials, is of good quality workmanship, based on sound engineering principles, and is safe for its intended use. Since all possible designs, circuits, arrangements, or combinations of com-

ponents and materials cannot be foreseen, MESA reserves the right to modify design, construction, and test requirements to obtain the same degree of protection as provided by the tests described in Subpart C of this part.

(c) Moving parts, such as rotating saws, gears, and chain drives, shall be guarded to prevent personal injury.

(d) Flange joints and lead entrances shall be accessible for field inspection, where practicable.

(e) An audible warning device shall be provided on each mobile machine that travels at a speed greater than 2.5 miles per hour.

(f) Brakes shall be provided for each wheel-mounted machine, unless design of the driving mechanism will preclude accidental movement of the machine when parked.

(g) A headlight and red light-reflecting material shall be provided on both front and rear of each mobile transportation unit that travels at a speed greater than 2.5 miles per hour. Red light-reflecting material should be provided on each end of other mobile machines.

§ 18.21 Machines equipped with powered dust collectors.

Powered dust collectors on machines submitted for approval shall meet the applicable requirements of Part 33 of this chapter (Bureau of Mines Schedule 25B), and shall bear the approval number assigned by MESA.

§ 18.22 Boring-type machines equipped for auxiliary face ventilation.

Each boring-type continuous-mining machine that is submitted for approval shall be constructed with an unobstructed continuous space(s) of not less than 200 square inches total cross-sectional area on or within the machine to which flexible tubing may be attached to facilitate auxiliary face ventilation.

§ 18.23 Limitation of external surface temperatures.

The temperature of the external surfaces of mechanical or electrical components shall not exceed 150° C. (302° F.) under normal operating conditions.

§ 18.24 Electrical clearances.

The clearance between live parts and casings shall be sufficient to minimize the possibility of arcs striking the casings. Where space is limited, the casing shall be lined with adequate insulation.

§ 18.25 Combustible gases from insulating material.

(a) Insulating materials that give off flammable or explosive gases when decomposed electrically shall not be used within enclosures where the materials are subjected to destructive electrical action.

(b) Parts coated or impregnated with insulating materials shall be heat-treated to remove any combustible solvent(s) before assembly in an explosion-proof enclosure. Air-drying insulating materials are excepted.

§ 18.26 Static electricity.

Nonmetallic rotating parts, such as belts and fans, shall be provided with a means to prevent an accumulation of static electricity.

§ 18.27 Gaskets.

A gasket(s) shall not be used between any two surfaces forming a flame-arresting path except as follows:

(a) A gasket of lead, elastomer, or equivalent will be acceptable provided the gasket does not interfere with an acceptable metal-to-metal joint.

(b) A lead gasket(s) or equivalent will be acceptable between glass and a hard metal to form all or a part of a flame-arresting path.

§ 18.28 Devices for pressure relief, ventilation, or drainage.

(a) Devices for installation on explosion-proof enclosures to relieve pressure, ventilate, or drain will be acceptable provided the length of the flame-arresting path and the clearances or size of holes in perforated metal will prevent discharge of flame in explosion tests.

(b) Devices for pressure relief, ventilation, or drainage shall be constructed of materials that resist corrosion and distortion, and be so designed that they can be cleaned readily. Provision shall be made for secure attachment of such devices.

(c) Devices for pressure relief, ventilation, or drainage will be acceptable for application only on enclosures with which they are explosion tested.

§ 18.29 Access openings and covers, including unused lead-entrance holes.

(a) Access openings in explosion-proof enclosures will be permitted only where necessary for maintenance of internal parts such as motor brushes and fuses.

(b) Covers for access openings shall

meet the same requirements as any other part of an enclosure except that threaded covers shall be secured against loosening, preferably with screws having heads requiring a special tool. (See figure 1 in Appendix II.)

(c) Holes in enclosures that are provided for lead entrances but which are not in use shall be closed with metal plugs secured by spot welding, brazing, or equivalent. (See Figure 10 in Appendix II.)

§ 18.30 Windows and lenses.

(a) MESA may waive testing of materials for windows or lenses except headlight lenses. When tested, material for windows or lenses shall meet the test requirements prescribed in § 18.66 and shall be sealed in place or provided with flange joints in accordance with § 18.31.

(b) Windows or lenses shall be protected from mechanical damage by structural design, location, or guarding. Windows or lenses, other than headlight lenses, having an exposed area greater than 8 square inches, shall be provided with guarding or equivalent.

§ 18.31 Enclosures—joints and fastenings.

(a) Explosion-proof enclosures:

(1) Cast or welded enclosures shall be designed to withstand a minimum internal pressure of 150 pounds per square inch (gage). Castings shall be free from blowholes.

(2) Welded joints forming an enclosure shall have continuous gas-tight welds. All welds shall be made in accordance with American Welding Society standards.

(3) External rotating parts shall not be constructed of aluminum alloys containing more than 0.5 percent magnesium.

(4) MESA reserves the right to require the applicant to conduct static-pressure tests on each enclosure when MESA determines that the particular design will not permit complete visual inspection or when the joint(s) forming an enclosure is welded on one side only (see § 18.67).

(5) Threaded covers shall be designed with Class 1 (coarse, loose fitting) threads. The flame-arresting path of threaded joints shall conform to the requirements of subparagraph (6) of this paragraph.

(6) Enclosures shall meet the following requirements based on the internal volumes of the empty enclosure.

| | Volume of empty enclosure— | | |
|--|------------------------------|------------------------------|------------------------------|
| | Less than 45 cu. in. | 45 to 124 cu. in., inclusive | More than 124 cu. in. |
| Minimum thickness of material for walls..... | $\frac{1}{8}$ " | $\frac{3}{16}$ " | $\frac{1}{4}$ " |
| Minimum thickness of material for flanges..... | $\frac{3}{8}$ " ¹ | $\frac{3}{8}$ " | $\frac{1}{2}$ " ² |
| Minimum thickness of material for cover..... | $\frac{3}{8}$ " ¹ | $\frac{3}{8}$ " | $\frac{1}{2}$ " ² |
| Minimum width of joint—all in one plane..... | $\frac{3}{8}$ " | $\frac{3}{8}$ " | 1" |
| Maximum clearance—joint all in one plane..... | 0.002" | 0.003" | 0.004" |
| Minimum width of joint, portions of which are in different planes—cylinders or equivalent. | $\frac{3}{8}$ " ³ | $\frac{3}{8}$ " | $\frac{3}{4}$ " ³ |
| Maximum clearances—joint in two or more planes, cylinders or equivalent: | | | |
| (a) Portion perpendicular to plane..... | 0.008" ⁴ | 0.008" ⁴ | 0.008" ⁴ |
| (b) Plane portion..... | 0.006" | 0.006" | 0.006" |
| Maximum bolt ⁵ spacing—joints all in one plane..... | 6" with minimum of 4 bolts. | 6" with minimum of 4 bolts. | 6" |
| Maximum bolt spacing—joints, portions of which are in different planes. | (9) | (9) | (9) |
| Minimum diameter of bolt (without regard to type of joint). | $\frac{1}{4}$ " | $\frac{1}{4}$ " | $\frac{3}{8}$ " |
| Minimum thread engagement ⁷ | $\frac{1}{4}$ " | $\frac{1}{4}$ " | $\frac{3}{8}$ " |
| Maximum diametrical clearance between bolt body and unthreaded holes through which it passes. ⁸ | $\frac{1}{64}$ " | $\frac{1}{32}$ " | $\frac{1}{16}$ " |
| Minimum distance from interior of enclosure to the edge of a bolt hole: | | | |
| Joint—minimum width ¹ | $\frac{1}{4}$ " | $\frac{1}{4}$ " | $\frac{3}{8}$ " ⁹ |
| Joint—less than 1" wide..... | $\frac{1}{4}$ " | $\frac{3}{16}$ " | $\frac{3}{8}$ " |

CYLINDRICAL JOINTS

| | | | |
|--|-----------------|-----------------|--------|
| Shafts centered by ball or roller bearings: | | | |
| Minimum length of flame-arresting path..... | $\frac{1}{4}$ " | $\frac{3}{4}$ " | 1" |
| Maximum radial clearance..... | 0.010" | 0.0125" | 0.015" |
| Shafts through journal bearings: ¹⁰ | | | |
| Minimum length of flame-arresting path..... | $\frac{1}{4}$ " | $\frac{3}{4}$ " | 1" |
| Maximum radial clearance..... | 0.003" | 0.004" | 0.005" |
| Other than shafts: | | | |
| Minimum length of flame-arresting path..... | $\frac{1}{4}$ " | $\frac{3}{4}$ " | 1" |
| Maximum radial clearance..... | 0.0015" | 0.002" | 0.003" |

¹ $\frac{1}{8}$ -inch less is allowable for machining rolled plate.

² $\frac{1}{8}$ -inch less is allowable for machining rolled plate.

³ If only two planes are involved, neither portion of a joint shall be less than $\frac{1}{8}$ -inch wide, unless the wider portion conforms to the same requirements as those for a joint that is all in one plane. If more than two planes are involved (as in labyrinths or tongue-and-groove joints) the combined lengths of those portions having prescribed clearances will be considered.

⁴ The allowable diametrical clearance is 0.008 inch when the portion perpendicular to the plane portion is $\frac{1}{4}$ inch or greater in length. If the perpendicular portion is more than $\frac{1}{4}$ inch but less than $\frac{1}{2}$ inch wide, the diametrical clearance shall not exceed 0.006 inch.

⁵ Where the term "bolt" is used, it refers to a machine bolt or a cap screw, and for either of these studs may be substituted provided the studs bottom in blind holes, are completely welded in place, or the bottom of the hole is closed with a secured plug. Bolts shall be provided at all corners.

⁶ Adequacy of bolt spacing will be judged on basis of size and configuration of the enclosure, strength of materials, and explosion test results.

⁷ In general, minimum thread engagement shall be equal to or greater than the diameter of the bolt specified.

⁸ Threaded holes for fastening bolts shall be machined to remove burrs or projections that affect planarity of a surface forming a flame-arresting path.

⁹ Less than $\frac{1}{16}$ -inch ($\frac{1}{4}$ -inch minimum) will be acceptable provided the diametrical clearance for fastening bolts does not exceed $\frac{1}{32}$ inch.

¹⁰ Shafts or operating rods through journal bearings shall be not less than $\frac{1}{4}$ -inch in diameter. The length of fit shall not be reduced when a pushbutton is depressed. Operating rods shall have a shoulder or head on the portion inside the enclosure. Essential parts riveted or bolted to the inside portion will be acceptable in lieu of a head or shoulder, but cotter pins and similar devices will not be acceptable.

(b) Enclosures for potted components: Enclosures shall be rugged and constructed with materials having 75 percent, or greater, of the thickness and flange width specified in paragraph (a) of this section. These enclosures shall be provided with means for attaching hose conduit, unless energy carried by the cable is intrinsically safe.

(c) No assembly will be approved that requires the opening of an explosion-proof enclosure to operate a switch,

rheostat, or other device during normal operation of a machine.

\$ 18.32 Fastenings—additional requirements.

(a) Bolts, screws, or studs shall be used for fastening adjoining parts to prevent the escape of flame from an enclosure. Hinge pins or clamps will be acceptable for this purpose provided MESA determines them to be equally effective.

(b) Lockwashers shall be provided for all bolts, screws, and studs that secure parts of explosion-proof enclosures. Special fastenings designed to prevent loosening will be acceptable in lieu of lockwashers, provided MESA determines them to be equally effective.

(c) Fastenings shall be as uniform in size as practicable to preclude improper assembly.

(d) Holes for fastenings shall not penetrate to the interior of an explosion-proof enclosure, except as provided in paragraph (a) (9) of § 18.34, and shall be threaded to insure that a specified bolt or screw will not bottom even if its lockwasher is omitted.

(e) A minimum of $\frac{1}{8}$ inch of stock shall be left at the center of the bottom of each hole drilled for fastenings.

(f) Fastenings used for joints on explosion-proof enclosures shall not be used for attaching nonessential parts or for making electrical connections.

(g) The acceptable sizes for and spacings of fastenings shall be determined by the size of the enclosure, as indicated in § 18.31.

(h) MESA reserves the right to conduct explosion tests with standard bolts, nuts, cap screws, or studs substituted for any special high-tensile strength fastening(s) specified by the applicant.

§ 18.33 Finish of surface joints.

Flat surfaces between bolt holes that form any part of a flame-arresting path shall be plane to within a maximum deviation of one-half the maximum clearance specified in § 18.31(a) (6). All metal surfaces shall be finished in manufacture to not more than 250 microinches. A thin film of nonhardening preparation to inhibit rusting may be applied to finished steel surfaces.

§ 18.34 Motors.

(a) *General.* (1) Motors shall have explosion-proof enclosures.

(2) Motors submitted to MESA for test shall be equipped with unshielded bearings regardless of whether that type of bearing is specified.

(3) MESA reserves the right to test motors with the maximum clearance specified between the shaft and the mating part which forms the required flame-arresting path. Also reserved is the right to remachine these parts, at the applicant's expense, to specified dimensions to provide the maximum clearance.

NOTE: For example, a shaft with a diameter greater than 2 inches at the flame-arresting portion might require such machining.

(4) Ball and roller bearings and oil seals will not be acceptable as flame-arresting paths; therefore, a separate path shall be provided between the shaft and another part, preferably in by the bearing. The length and clearances of such flame-arresting path shall conform to the requirements of § 18.31.

(5) Labyrinths or other arrangements that provide change(s) in direction of escaping gases will be acceptable but the use of small detachable pieces shall not be permitted unless structurally unavoidable. The lengths of flame-arresting path(s) and clearance(s) shall conform to the requirements of § 18.31.

(6) The widths of oil grooves and grooves for holding oil seals will be deducted in measuring the widths of flame-arresting paths.

NOTE: Oil seals will be removed from motors prior to explosion tests and therefore may be omitted from motors submitted for investigation.

(7) Openings for filling and draining bearing lubricants shall be so located as to prevent escape of flame through them.

(8) An outer bearing cap will not be considered as forming any part of a flame-arresting path unless the cap is used as a bearing cartridge.

NOTE: The outer bearing cap will be omitted during explosion tests unless it houses the bearing.

(9) If unavoidable, holes may be made through motor casings for bolts, studs, or screws to hold essential parts such as pole pieces, brush rigging, and bearing cartridges. Such parts shall be attached to the casing by at least two fastenings. The threaded holes in these parts shall be blind, unless the fastenings are inserted from the inside, in which case the fastenings shall not be accessible with the armature of the motor in place.

(b) *Direct-current motors.* For direct-current motors with narrow interpoles, the distance from the edge of the pole piece to any bolt hole in the frame shall be not less than $\frac{1}{8}$ inch. If the distance is $\frac{1}{8}$ to $\frac{1}{4}$ inch, the diametrical clearance for the pole bolt shall not exceed $\frac{1}{16}$ inch for not less than $\frac{1}{2}$ inch through the frame. Furthermore, the pole piece shall have the same radius as the inner surface of the frame. Pole pieces may be shimmed as necessary.

(c) *Alternating-current motors.* Stator laminations that form a part of an ex-

plosion-proof enclosure will be acceptable provided: (1) The laminations and their end rings are fastened together under pressure; (2) the joint between the end rings and the laminations is not less than ¼ inch, but preferably as close to 1 inch as possible; and (3) it shall be impossible to insert a 0.0015-inch thickness gage to a depth exceeding ½ inch between adjacent laminations or between end rings and laminations.

(d) *Small motors (alternating- and direct-current)*. Motors having internal free volume not exceeding 350 cubic inches and joints not exceeding 32 inches in outer circumference will be acceptable for investigation if provided with rabbet joints between the stator frame and the end bracket having the following dimensions:

DIMENSIONS OF RABBIT JOINTS—INCHES

| Minimum total width | Minimum width of clamped radial portion | Maximum clearance of radial portion | Maximum diametrical clearance at axial portion |
|---------------------|---|-------------------------------------|--|
| 1/4 | 3/4 | 0.0015 | 0.003 |
| 1/2 | 3/4 | .002 | .003 |
| 3/4 | 3/4 | .002 | .004 |

§ 18.35 Portable (trailing) cables and cords.

(a) Portable cables and cords used to conduct electrical energy to face equipment shall conform to the following:

(1) Have each conductor of a current-carrying capacity consistent with the Insulated Power Cable Engineers Association (IPCEA) standards. (See Tables 1 and 2 in Appendix I.)

(2) Have current-carrying conductors not smaller than No. 14 (AWG). Cords with sizes 14 to 10 (AWG) conductors shall be constructed with heavy jackets, the diameters of which are given in Table 6 in Appendix I.

(3) Have flame-resistant properties. (See § 18.64.)

(4) Have short-circuit protection at the outby (circuit-connecting) end of ungrounded conductors. (See Table 8 in Appendix I.) The fuse rating or trip setting shall be included in the assembler's specifications.

(5) Ordinarily the length of a portable (trailing) cable shall not exceed 500 feet. Where the method of mining requires the length of a portable (trailing) cable to be more than 500 feet, such length of cable shall be permitted only under the following prescribed conditions:

(1) The lengths of portable (trailing) cables shall not exceed those specified in Table 9, Appendix I, titled "Specifications for Portable Cables Longer Than 500 Feet."

(ii) Short-circuit protection shall be provided by a protective device with an instantaneous trip setting as near as practicable to the maximum starting-current-inrush value, but the setting shall not exceed the trip value specified in MESA approval for the equipment for which the portable (trailing) cable furnishes electric power.

(6) Have nominal outside dimensions consistent with IPCEA standards. (See Tables 4, 5, 6, and 7 in Appendix I.)

(7) Have conductors of No. 4 (AWG) minimum for direct-current mobile haulage units or No. 6 (AWG) minimum for alternating-current mobile haulage units.

(8) Have not more than five well-made temporary splices in a single length of portable cable.

(b) Sectionalized portable cables will be acceptable provided the connectors used inby the last open crosscut in a gassy mine meet the requirements of § 18.41.

(c) A portable cable having conductors smaller than No. 6 (AWG), when used with a trolley tap and a rail clamp, shall have well insulated single conductors not smaller than No. 6 (AWG) spliced to the outby end of each conductor. All splices shall be made in a workmanlike manner to insure good electrical conductivity, insulation, and mechanical strength.

(d) Suitable provisions shall be made to facilitate disconnection of portable cable quickly and conveniently for replacement.

[33 F.R. 4660, Mar. 19, 1968; 33 F.R. 6343, Apr. 26, 1968]

§ 18.36 Cables between machine components.

(a) Cables between machine components shall have: (1) Adequate current-carrying capacity for the loads involved, (2) short-circuit protection, (3) insulation compatible with the impressed voltage, and (4) flame-resistant properties unless totally enclosed within a flame-resistant hose conduit or other flame-resistant material.

(b) Cables between machine components shall be: (1) Clamped in place to prevent undue movement, (2) protected from mechanical damage by position, flame-resistant hose conduit,

metal tubing, or troughs (flexible or threaded rigid metal conduit will not be acceptable), (3) isolated from hydraulic lines, and (4) protected from abrasion by removing all sharp edges which they might contact.

(c) Cables (cords) for remote-control circuits extending from permissible equipment will be exempted from the requirements of conduit enclosure provided the total electrical energy carried is intrinsically safe or that the cables are constructed with heavy jackets, the sizes of which are stated in Table 6 of Appendix I. Cables (cords) provided with hose-conduit protection shall have a tensile strength not less than No. 16 (AWG) three-conductor, type SO cord. (Reference: 7.7.7 IPCEA Pub. No. S-19-81, Fourth Edition.) Cables (cords) constructed with heavy jackets shall consist of conductors not smaller than No. 14 (AWG) regardless of the number of conductors.

§ 18.37 Lead entrances.

(a) Insulated cable(s), which must extend through an outside wall of an explosion-proof enclosure, shall pass through a stuffing-box lead entrance. All sharp edges that might damage insulation shall be removed from stuffing boxes and packing nuts.

(b) Stuffing boxes shall be so designed, and the amount of packing used shall be such, that with the packing properly compressed, the gland nut still has a clearance distance of $\frac{1}{8}$ inch or more to travel without meeting interference by parts other than packing. (See Figures 8, 9, and 10 in Appendix II.)

(c) Packing nuts and stuffing boxes shall be secured against loosening.

(d) Compressed packing material shall be in contact with the cable jacket for a length of not less than $\frac{1}{2}$ inch.

(e) Special requirements for glands in which asbestos-packing material is specified are:

(1) Asbestos-packing material shall be untreated, not less than $\frac{3}{16}$ -inch diameter if round, or not less than $\frac{3}{16}$ by $\frac{3}{16}$ inch if square. The width of the space for packing material shall not exceed by more than 50 percent the diameter or width of the uncompressed packing material.

(2) The allowable diametrical clearance between the cable and the holes in the stuffing box and packing nut shall not exceed 75 percent of the nominal diameter or width of the packing material.

(f) Special requirements for glands in which a compressible material (example—synthetic elastomers) other than asbestos is specified, are:

(1) The packing material shall be flame resistant.

(2) The radial clearance between the cable jacket and the nominal inside diameter of the packing material shall not exceed $\frac{1}{32}$ inch, based on the nominal specified diameter of the cable.

(3) The radial clearance between the nominal outside diameter of the packing material and the inside wall of the stuffing box (that portion into which the packing material fits) shall not exceed $\frac{1}{32}$ inch.

§ 18.38 Leads through common walls.

(a) Insulated studs will be acceptable for use in a common wall between two explosion-proof enclosures.

(b) When insulated wires or cables are extended through a common wall between two explosion-proof enclosures in insulating bushings, such bushings shall be not less than 1-inch long and the diametrical clearance between the wire or cable insulation and the holes in the bushings shall not exceed $\frac{1}{16}$ inch (based on the nominal specified diameter of the cable). The insulating bushings shall be secured in the metal wall.

(c) Insulated wires or cables conducted from one explosion-proof enclosure to another through conduit, tubing, piping, or other solid-wall passageways will be acceptable provided one end of the passageway is plugged, thus isolating one enclosure from the other. Glands of secured bushings with close-fitting holes through which the wires or cables are conducted will be acceptable for plugging. The tubing or duct specified for the passageway shall be brazed or welded into the walls of both explosion-proof enclosures with continuous gas-tight welds.

(d) If wires and cables are taken through openings closed with sealing compounds, the design of the opening and characteristics of the compounds shall be such as to hold the sealing material in place without tendency of the material to crack or flow out of its place. The material also must withstand explosion tests without cracking or loosening.

(e) Openings through common walls between explosion-proof enclosures not provided with bushings or sealing compound, shall be large enough to prevent pressure piling.

§ 18.39 **Hose conduit.**

Hose conduit shall be provided for mechanical protection of all machine cables that are exposed to damage. Hose conduit shall be flame resistant and have a minimum wall thickness of $\frac{3}{16}$ inch. The flame resistance of hose conduit will be determined in accordance with the requirements of § 18.65.

§ 18.40 **Cable clamps and grips.**

Insulated clamps shall be provided for all portable (trailing) cables to prevent strain on the cable terminals of a machine. Also insulated clamps shall be provided to prevent strain on both ends of each cable or cord leading from a machine to a detached or separately mounted component. Cable grips anchored to the cable may be used in lieu of insulated strain clamps. Supporting clamps for cables used for wiring around machines shall be provided in a manner acceptable to MESA.

§ 18.41 **Plug and receptacle-type connectors.**

(a) Plug and receptacle-type connectors for use in by the last open crosscut in a gassy mine shall be so designed that insertion or withdrawal of a plug cannot cause incendive arcing or sparking. Also, connectors shall be so designed that no live terminals, except as hereinafter provided, are exposed upon withdrawal of a plug. The following types will be acceptable:

(1) Connectors in which the mating or separation of the male and female electrodes is accomplished within an explosion-proof enclosure.

(2) Connectors that are mechanically or electrically interlocked with an automatic circuit-interrupting device.

(i) *Mechanically interlocked connectors.* If a mechanical interlock is provided the design shall be such that the plug cannot be withdrawn before the circuit has been interrupted and the circuit cannot be established with the plug partially withdrawn.

(ii) *Electrically interlocked connectors.* If an electrical interlock is provided, the total load shall be removed before the plug can be withdrawn and the electrical energy in the interlocking pilot circuit shall be intrinsically safe, unless the pilot circuit is opened within an explosion-proof enclosure.

(3) Single-pole connectors for individual conductors of a circuit used at terminal points shall be so designed that

all plugs must be completely inserted before the control circuit of the machine can be energized.

(b) Plug and receptacle-type connectors used for sectionalizing the cables outby the last open crosscut in a gassy mine need not be explosion-proof or electrically interlocked provided such connectors are designed and constructed to prevent accidental separation.

(c) Conductors shall be securely attached to the electrodes in a plug or receptacle and the connections shall be totally enclosed.

(d) Molded-elastomer connectors will be acceptable provided:

(1) Any free space within the plug or receptacle is isolated from the exterior of the plug.

(2) Joints between the elastomer and metal parts are not less than 1 inch wide and the elastomer is either bonded to or fits tightly with metal parts.

(e) The contacts of all line-side connectors shall be shielded or recessed adequately.

(f) For a mobile battery-powered machine, a plug padlocked to the receptacle will be acceptable in lieu of an interlock provided the plug is held in place by a threaded ring or equivalent mechanical fastening in addition to the padlock. A connector within a padlocked enclosure will be acceptable.

§ 18.42 **Explosion-proof distribution boxes.**

(a) A cable passing through an outside wall(s) of a distribution box shall be conducted either through a packing gland or an interlocked plug and receptacle.

(b) Short-circuit protection shall be provided for each branch circuit connected to a distribution box. The current-carrying capacity of the specified connector shall be compatible with the automatic circuit-interrupting device.

(c) Each branch receptacle shall be plainly and permanently marked to indicate its current-carrying capacity and each receptacle shall be such that it will accommodate only an appropriate plug.

(d) Provision shall be made to relieve mechanical strain on all connectors to distribution boxes.

§ 18.43 **Explosion-proof splice boxes.**

Internal connections shall be rigidly held and adequately insulated. Strain clamps shall be provided for all cables entering a splice box.

§ 18.44 Battery boxes and batteries (exceeding 12 volts).

(a) A battery box (tray), including the cover, shall be made of steel the thickness of which is to be based on the total weight of the battery and tray, as follows:

| Weight | Thickness |
|-------------------|------------------|
| 2,000 lb. maximum | $\frac{3}{16}$ " |
| 2,001-4,500 lb. | $\frac{1}{4}$ " |
| Over 4,500 lb. | $\frac{5}{16}$ " |

Materials other than steel that provide equivalent strength will be considered.

(b) Battery-box covers shall be lined with a flame-resistant insulating material, preferably bonded to the inside of the cover, unless equivalent protection is provided.

(c) Battery-box covers shall be provided with a means for securing them in closed position.

(d) Battery boxes shall be adequately ventilated. The size and locations of openings for ventilation shall prevent access to cell terminals.

(e) Battery cells shall be insulated from the battery-box walls and supported on insulating material. Insulating materials that may be subject to chemical reaction with electrolyte shall be treated to resist such action.

(f) Drainage holes shall be provided in the bottom of each battery box.

(g) Cell terminals shall be "burned" on. Bolted connectors (two-bolt type) may be accepted on end terminals.

(h) Battery connections shall be so designed that battery potential will be minimized between adjacent cells, and total battery potential shall not be available between adjacent cells.

(i) Cables within a battery box shall be protected against abrasion of the insulation.

(j) Each wire or cable leaving a battery box on storage-battery-operated equipment shall have short-circuit protection in an explosion-proof enclosure as close as practicable to the battery terminals. A protective device installed within a nearby explosion-proof enclosure will be acceptable provided the exposed portion of the cable from the battery box to the enclosure does not exceed approximately 36 inches in length; in addition, special care shall be taken to protect each wire or cable from damage.

(k) A diagram showing the battery connections between cells and between trays shall be submitted. The number, type, rating, and manufacturer of the

battery cells shall be included in specifications.

§ 18.45 Cable reels.

(a) A self-propelled machine, that receives electrical energy through a portable cable and is designed to travel at speeds exceeding 2.5 miles per hour, shall have a mechanically, hydraulically, or electrically driven reel upon which to wind the portable cable.

(b) The enclosure for moving contacts or slip rings of a cable reel shall be explosion-proof.

(c) Cable-reel bearings shall not constitute an integral part of a circuit for transmitting electrical energy.

(d) Cable reels for shuttle cars and locomotives shall maintain positive tension on the portable cable during reeling and unreeling. Such tension shall only be high enough to prevent a machine from running over its own cable(s).

(e) Cable reels and spooling devices shall be insulated with flame-resistant material.

(f) The maximum speed of travel of a machine when receiving power through a portable (trailing) cable shall not exceed 6 miles per hour.

(g) Diameters of cable reel drums and sheaves should be large enough to prevent undue bending strain on cables.

§ 18.46 Headlights.

(a) Headlights shall be constructed as explosion-proof enclosures.

(b) Headlights shall be mounted to provide illumination where it will be most effective. They shall be protected from damage by guarding or location.

(c) Lenses for headlights shall be glass or other suitable material with physical characteristics equivalent to $\frac{1}{2}$ -inch thick tempered glass, such as "Pyrex." Lenses shall meet the requirements of the tests prescribed in § 18.66.

(d) Lenses permanently fixed in a ring with lead, epoxy, or equivalent will be acceptable provided only lens assemblies meeting the original manufacturer's specifications are used as replacements.

(e) If a single lead gasket is used, the contact surface of the opposite side of the lens shall be plane within a maximum deviation of 0.002 inch.

§ 18.47 Voltage limitation.

(a) A tool or switch held in the operator's hand or supported against his body will not be approved with a nameplate rating exceeding 300 volts direct current or alternating current.

(b) A battery-powered machine shall not have a nameplate rating exceeding 240 volts, nominal (120 lead-acid cells or equivalent).

(c) Other direct-current machines shall not have a nameplate rating exceeding 550 volts.

(d) An alternating-current machine shall not have a nameplate rating exceeding 660 volts, except that a machine may have a nameplate rating greater than 660 volts but not exceeding 4,160 volts when the following conditions are complied with:

(1) Adequate clearances and insulation for the particular voltage(s) are provided in the design and construction of the equipment, its wiring, and accessories.

(2) A continuously monitored, fail-safe grounding system is provided that will maintain the frame of the equipment and the frames of all accessory equipment at ground potential. Also, the equipment, including its controls and portable (trailing) cable, will be deenergized automatically upon the occurrence of an incipient ground fault. The ground-fault-tripping current shall be limited by grounding resistor(s) to that necessary for dependable relaying. The maximum ground-fault-tripping current shall not exceed 25 amperes.

(3) All high voltage switch gear and control for equipment having a nameplate rating exceeding 1,000 volts are located remotely and operated by remote control at the main equipment. Potential for remote control shall not exceed 120 volts.

(4) Portable (trailing) cable for equipment with nameplate ratings from 661 volts through 1,000 volts shall include grounding conductors, a ground check conductor, and grounded metallic shields around each power conductor or a grounded metallic shield over the assembly; except that on machines employing cable reels, cables without shields may be used if the insulation is rated 2,000 volts or more.

(5) Portable (trailing) cable for equipment with nameplate ratings from 1,001 volts through 4,160 volts shall include grounding conductors, a ground check conductor, and grounded metallic shields around each power conductor.

(6) MESA reserves the right to require additional safeguards for high-voltage equipment, or modify the requirements to recognize improved technology.

§ 18.48 Circuit-interrupting devices.

(a) Each machine shall be equipped with a circuit-interrupting device by means of which all power conductors can be deenergized at the machine. A manually operated controller will not be acceptable as a service switch.

(b) When impracticable to mount the main-circuit-interrupting device on a machine, a remote enclosure will be acceptable. When contacts are used as a main-circuit-interrupting device, a means for opening the circuit shall be provided at the machine and at the remote contactors.

(c) Separate two-pole switches shall be provided to deenergize power conductors for headlights or floodlights.

(d) Each handheld tool shall be provided with a two-pole switch of the "dead-man-control" type that must be held closed by hand and will open when hand pressure is released.

(e) A machine designed to operate from both trolley wire and portable cable shall be provided with a transfer switch, or equivalent, which prevents energizing one from the other. Such a switch shall be designed to prevent electrical connection to the machine frame when the cable is energized.

(f) Belt conveyors shall be equipped with control switches to automatically stop the driving motor in the event the belt is stopped, or abnormally slowed down.

NOTE: Short transfer-type conveyors will be exempted from this requirement when attended.

§ 18.49 Connection boxes on machines.

Connection boxes used to facilitate replacement of cables or machine components shall be explosion-proof. Portable-cable terminals on cable reels need not be in explosion-proof enclosures provided that connections are well made, adequately insulated, protected from damage by location, and securely clamped to prevent mechanical strain on the connections.

§ 18.50 Protection against external arcs and sparks.

Provision shall be made for maintaining the frames of all off-track machines and the enclosures of related detached components at safe voltages by using one or a combination of the following:

(a) A separate conductor(s) in the portable cable in addition to the power conductors by which the machine frame

can be connected to an acceptable grounding medium, and a separate conductor in all cables connecting related components not on a common chassis. The cross-sectional area of the additional conductor(s) shall not be less than 50 percent of that of one power conductor unless a ground-fault tripping relay is used, in which case the minimum size may be No. 8 (AWG). Cables smaller than No. 6 (AWG) shall have an additional conductor(s) of the same size as one power conductor.

(b) A means of actuating a circuit-interrupting device, preferably at the outby end of the portable cable.

NOTE: The frame to ground potential shall not exceed 40 volts.

(c) A device(s) such as a diode(s) of adequate peak inverse voltage rating and current-carrying capacity to conduct possible fault current through the grounded power conductor. Diode installations shall include: (1) An overcurrent device in series with the diode, the contacts of which are in the machine's control circuit; and (2) a blocking diode in the control circuit to prevent operation of the machine with the polarity reversed.

§ 18.51 Electrical protection of circuits and equipment.

(a) An automatic circuit-interrupting device(s) shall be used to protect each ungrounded conductor of a branch circuit at the junction with the main circuit when the branch-circuit conductor(s) has a current carrying capacity less than 50 percent of the main circuit conductor(s), unless the protective device(s) in the main circuit will also provide adequate protection for the branch circuit. The setting of each device shall be specified. For headlight and control circuits, each conductor shall be protected by a fuse or equivalent. Any circuit that is entirely contained in an explosion-proof enclosure shall be exempt from these requirements.

(b) Each motor shall be protected by an automatic overcurrent device. One protective device will be acceptable when two motors of the same rating operate simultaneously and perform virtually the same duty.

(1) If the overcurrent-protective device in a direct-current circuit does not open both lines, particular attention shall be given to marking the polarity at the terminals or otherwise preventing the possibility of reversing connections which

would result in changing the circuit interrupter to the grounded line.

(2) Three-phase alternating-current motors shall have an overcurrent-protective device in at least two phases such that actuation of a device in one phase will cause the opening of all three phases.

(c) Circuit-interrupting devices shall be so designed that they can be reset without opening the compartment in which they are enclosed.

(d) All magnetic circuit-interrupting devices shall be mounted in a manner to preclude the possibility of their closing by gravity.

§ 18.52 Renewal of fuses.

Enclosure covers that provide access to fuses, other than headlight, control-circuit, and handheld-tool fuses, shall be interlocked with a circuit-interrupting device. Fuses shall be inserted on the load side of the circuit interrupter.

Subpart C—Inspections and Tests

§ 18.60 Detailed inspection of components.

An inspection of each electrical component shall include the following:

(a) A detailed check of parts against the drawings submitted by the applicant to determine that: (1) The parts and drawings coincide; and (2) the minimum requirements stated in this part have been met with respect to materials, dimensions, configuration, workmanship, and adequacy of drawings and specifications.

(b) Exact measurement of joints, journal bearings, and other flame-arresting paths.

(c) Examination for unnecessary through holes.

(d) Examination for adequacy of lead-entrance design and construction.

(e) Examination for adequacy of electrical insulation and clearances between live parts and between live parts and the enclosure.

(f) Examination for weaknesses in welds and flaws in castings.

(g) Examination for distortion of enclosures before tests.

(h) Examination for adequacy of fastenings, including size, spacing, security, and possibility of bottoming.

§ 18.61 Final inspection of complete machine.

(a) A completely assembled new machine or a substantially modified design of a previously approved one shall be inspected by a qualified representative(s)

of MESA. When such inspection discloses any unsafe condition or any feature not in strict conformance with the requirements of this part it shall be corrected before an approval of the machine will be issued. A final inspection will be conducted at the site of manufacture, rebuilding, or other locations at the option of MESA.

(b) Complete machines shall be inspected for:

(1) Compliance with the requirements of this part with respect to joints, lead entrances, and other pertinent features.

(2) Wiring between components, adequacy of mechanical protection for cables, adequacy of clamping of cables, positioning of cables, particularly with respect to proximity to hydraulic components.

(3) Adequacy of protection against damage to headlights, push buttons, and any other vulnerable component.

(4) Settings of overload- and short-circuit protective devices.

(5) Adequacy of means for connecting and protecting portable cable.

§ 18.62 Tests to determine explosion-proof characteristics.

(a) In testing for explosion-proof characteristics of an enclosure, it shall be filled and surrounded with various explosive mixtures of natural gas and air. The explosive mixture within the enclosure will be ignited electrically and the explosion pressure developed therefrom recorded. The point of ignition within the enclosure will be varied. Motor armatures and/or rotors will be stationary in some tests and revolving in others. Coal dust, produced by grinding coal from the Pittsburgh coal bed to a fineness of minus 200 mesh, will be added to the explosive gas-air mixtures in some tests. At MESA's discretion dummies may be substituted for internal electrical components during some of the tests. Not less than 16 explosion tests shall be conducted; however, the nature of the enclosure and the results obtained during the tests will determine whether additional tests shall be made.

(b) Explosion tests of an enclosure shall not result in:

(1) Discharge of flame.

(2) Ignition of an explosive mixture surrounding the enclosure.

(3) Development of afterburning.

(4) Rupture of any part of the enclosure or any panel or divider within the enclosure.

(5) Permanent distortion of the enclosure exceeding 0.040 inch per linear foot.

(c) When a pressure exceeding 125 pounds per square inch (gage) is developed during explosion tests, MESA reserves the right to reject an enclosure(s) unless (1) constructional changes are made that result in a reduction of pressure to 125 pounds per square inch (gage) or less, or (2) the enclosure withstands a dynamic pressure of twice the highest value recorded in the initial test.

§ 18.63 Tests of battery boxes.

Battery boxes will be tested at MESA's discretion to determine the adequacy of ventilation, electrical clearances, insulation, and suitability for the intended service. Such tests will be conducted at the site of manufacture or assembly, or on MESA's premises.

[33 F.R. 4660, Mar. 19, 1968; 33 F.R. 6345, Apr. 26, 1968]

§ 18.64 Tests for flame resistance of cables.

(a) *Size of test specimen.* Three specimens each 3 feet long with 5 inches of cable jacket and 2½ inches of conductor insulation removed from each conductor at both ends of each specimen.

(b) *Flame-test apparatus.* The principal parts of the apparatus within and/or appended to the 17-inch deep x 14½-inch high x 39-inch wide rectangular test gallery are:

(1) A source of electric current (either a.c. or d.c.) for loading the cable specimen with means for close regulation.

(2) A suitable ammeter to measure the electric current imposed on the cable specimen conductors.

(3) A suitable temperature measuring device to determine the conductor temperature.

(4) A rack for supporting the cable specimen. It shall have three (3) metal rods installed on the same level with spaces of 16 and 8 inches between rods from left to right. The rods shall be wrapped with asbestos tape to reduce the cooling effect. The height of the rack shall be sufficient to permit the tip of the inner cone of a Tirrell burner flame to touch the jacket of the cable specimen when the flame has been adjusted to proper height.

(5) An electric timer or stopwatch to measure the duration of the tests.

(6) A standard ¾-inch Tirrell burner for igniting the cable specimen.

(7) A ventilated hood or canopy that is substantially free from external air currents on the specimen.

(c) *Mounting of test specimen.* The test specimen shall be placed on the rack and connected to the electric current source. It shall be centered on the two outside supporting rods with approximately one inch of jacket extending beyond each rod. The thermocouple of the temperature measuring device shall be held in intimate contact with the conductor under a flap of jacket and insulation 26 inches from the left end of the specimen. The flap shall be held tightly, after insertion of the thermocouple, by tying with wire.

(d) *Procedure for flame tests of cables.*

(1) The specimen will be heated electrically until the conductor reaches a temperature of 400° F., using a current that is five times the conductor rating given in Tables 1, 2, and 3 in Appendix I.

(2) When the conductor has reached a temperature of 400° F., the flame of a Tirrell gas burner, adjusted to give an overall free flame height of 5 inches and a 3-inch inner cone with natural gas, will be applied directly beneath the specimen at a point 14 inches from its left end.

(3) After subjecting the specimen to external flame for 1 minute, the heating current and gas flame will be cut off simultaneously.

(e) *Test requirements.* The specimen will be considered as having failed the test if the length of the burned area exceeds 6 inches or if burning continues longer than 4 minutes after the gas flame has been cut off. Three specimens of cable will be subjected to the flame-resistance test. If two of the three specimens meet the test requirements, the cable will be accepted for listing by MESA as "flame resistant".

(f) *Acceptance marking.* Accepted cables shall be suitably marked with an identifying number assigned by MESA. Portable and remote-control cables shall have the marketing impressed in the jacket or as raised letters and figures on an impressed background at intervals not exceeding 12 feet. Other accepted cables shall be marked at intervals not exceeding 3 feet in the same manner or have durable marking printed on the surface of the jacket.

§ 18.65 Flame test of conveyor belting and hose.

(a) *Size of test specimen.* (1) Conveyor belting—four specimens each 6

inches long by ½-inch wide by belt thickness, two cut parallel to the warp and two parallel to the weft.

(2) Hose—four specimens each 6 inches long by ½-inch wide by thickness of the hose.

(b) *Flame-test apparatus.* The principal parts of the apparatus within and/or appended to a 21-inch cubical test gallery are:

(1) A support stand with a ring clamp and wire gauze.

(2) A Pittsburgh-Universal Bunsen-type burner (inside diameter of burner tube 11 mm.), or equivalent, mounted in a burner placement guide in such a manner that the burner may be placed beneath the test specimen, or pulled away from it by an external knob on the front panel of the test gallery.

(3) A variable-speed electric fan and an ASME flow nozzle (16–8½ inches reduction) to attain constant air velocities at any speed between 50–500 feet a minute.

(4) An electric timer or stopwatch to measure the duration of the tests.

(5) A mirror mounted inside the test gallery to permit a rear view of the test specimen through the viewing door.

(c) *Mounting of test specimen.* The specimen shall be clamped in a support with its free end centered 1 inch above the burner top. The longitudinal axis shall be horizontal and the transverse axis inclined at 45° to the horizontal. Under the test specimen shall be clamped a piece of 20-mesh iron-wire gauze, 5 inches square, in a horizontal position ¼ inch below the pulley cover edge of the specimen and with about ½ inch of the specimen extending beyond the edge of the gauze.

(d) *Procedure for flame tests.* (1) The Bunsen burner, retracted from the test position, shall be adjusted to give a blue flame 3 inches in height with natural gas.

(2) The observation door of the gallery shall be closed for the entire test.

(3) The burner flame shall be applied to the free end of the specimen for 1 minute in still air.

(4) At the end of 1 minute the burner flame shall be removed, the ventilating fan turned on to give an air current having a velocity of 300 feet per minute, and the duration of flame measured.

(5) After the test specimen ceases to flame, it shall remain in the air current for at least 3 minutes to determine the presence and duration of afterglow. If a glowing specimen exhibits flame within

3 minutes the duration of flame shall be added to the duration of flame obtained according to subparagraph (4) of this paragraph.

(e) *Test requirements.* The tests of the four specimens cut from any sample shall not result in either duration of flame exceeding an average of 1 minute after removal of the applied flame or afterglow exceeding an average of 3 minutes duration.

(f) *Acceptance markings.* (1) Conveyor belting—conveyor belts accepted by MESA as flame-resistant (fire-resistant) shall be marked as follows: Metal stencils furnished by the manufacturer shall be used during the vulcanizing process to produce letters depressed into the conveyor belt with the words "Fire-Resistant, USMESA No." This number will be assigned to the manufacturer after the sample has passed the tests. The letters and numbers shall be at least 1/2 inch high. The acceptance markings shall be placed approximately 1 inch from the edge of the carrying (top) cover of the conveyor belt and spaced at intervals not exceeding 30 feet for the entire length of the conveyor belt. The markings shall be so placed that they are alternately at opposite edges of the belt. Where cover thickness does not permit markings in accordance with the foregoing, other permanent markings may be accepted.

(2) Hose—hose conduit accepted by MESA as flame-resistant shall be marked as follows: Impressed letters, raised letters on depressed background, or printed letters with the words "Flame-Resistant, USMESA No." at intervals not exceeding 3 feet. This number will be assigned to the manufacturer after the sample has passed the tests. The letters and numbers shall be at least 1/4-inch high.

§ 18.66 Tests of windows and lenses.

(a) *Impact tests.* A 4-pound cylindrical weight with a 1-inch-diameter hemispherical striking surface shall be dropped (free fall) to strike the window or lens in its mounting, or the equivalent thereof, at or near the center. Three of four samples shall withstand without breakage the impact according to the following table:

| Lens diameter, (D), inches | Height of fall, inches |
|-------------------------------|---------------------------|
| D < 4 | 6 |
| 4 ≤ D < 5 | 9 |
| 5 ≤ D < 6 | 15 |
| 6 ≤ D | 24 |

Windows or lenses of smaller diameter than 1 inch may be tested by alternate methods at the discretion of MESA.

(b) *Thermal-shock tests.* Four samples of the window or lens will be heated in an oven for 15 minutes to a temperature of 150° C. (302° F.) and immediately upon withdrawal of the samples from the oven they will be immersed in water having a temperature between 15° C. (59° F) and 20° C. (68° F.). Three of the four samples shall show no defect or breakage from this thermal-shock test.

§ 18.67 Static-pressure tests.

Static-pressure tests shall be conducted by the applicant on each enclosure of a specific design when MESA determines that visual inspection will not reveal defects in castings or in single-seam welds. Such test procedure shall be submitted to MESA for approval and the specifications on file with MESA shall include a statement assuring that such tests will be conducted. The static pressure to be applied shall be 150 pounds per square inch (gage) or one and one-half times the maximum pressure recorded in MESA's explosion tests, whichever is greater.

§ 18.68 Tests for intrinsic safety.

(a) General:

(1) Tests for intrinsic safety will be conducted under the general concepts of "intrinsically safe" as defined in Subpart A of this part. Further tests or requirements may be added at any time if features of construction or use or both indicate them to be necessary. Some tests included in these requirements may be omitted on the basis of previous experience.

(2) Intrinsically safe circuits and/or components will be subjected to tests consisting of making and breaking the intrinsically safe circuit under conditions judged to simulate the most hazardous probable faults or malfunctions. Tests will be made in the most easily ignitable mixture of methane or natural gas and air. The method of making and breaking the circuit may be varied to meet a particular condition.

(3) Those components which affect intrinsic safety must meet the following requirements:

(i) Current limiting components shall consist of two equivalent devices each of which singly will provide intrinsic safety. They shall not be operated at more than 50 percent of their ratings.

(ii) Components of reliable construction shall be used and they shall be so mounted as to provide protection against shock and vibration in normal use.

(iii) Semiconductors shall be amply sized. Rectifiers and transistors shall be operated at not more than two-thirds of their rated current and permissible peak inverse voltage. Zener diodes shall be operated at not more than one-half of their rated current and shall short under abnormal conditions.

(iv) Electrolytic capacitors shall be operated at not more than two-thirds of their rated voltage. They shall be designed to withstand a test voltage of 1,500 volts.

(4) Intrinsically safe circuits shall be so designed that after failure of a single component, and subsequent failures resulting from this first failure, the circuit will remain intrinsically safe.

(5) The circuit will be considered as intrinsically safe if in the course of testing no ignitions occur.

(b) Complete intrinsically safe equipment powered by low energy batteries:

(1) Short-circuit tests shall be conducted on batteries at normal operating temperature. Tests may be made on batteries at elevated temperature if such tests are deemed necessary.

(2) Resistance devices for limiting short-circuit current shall be an integral part of the battery, or installed as close to the battery terminal as practicable.

(3) Transistors of battery-operated equipment may be subjected to thermal "run-away" tests to determine that they will not ignite an explosive atmosphere.

(4) A minimum of 1,000 make-break sparks will be produced in each test for direct current circuits with consideration given to reversed polarity.

(5) Tests on batteries shall include series and/or parallel combinations of twice the normal battery complement, and the effect of capacitance and inductance, added to that normally present in the circuit.

(6) No ignition shall occur when approximately $\frac{1}{2}$ inch of a single wire strand representative of the wire used in the equipment or device is shorted across the intrinsically safe circuit.

(7) Consideration shall be given to insure against accidental reversal of polarity.

(c) Line-powered equipment and devices:

(1) Line-powered equipment shall meet all applicable provisions specified

for battery-powered equipment.

(2) Nonintrinsically safe components supplying power for intrinsically safe circuits shall be housed in explosion-proof enclosures and be provided with energy limiting components in the enclosure.

(3) Wiring for nonintrinsically safe circuits shall not be intermingled with wiring for intrinsically safe circuits.

(4) Transformers that supply power for intrinsically safe circuits shall have the primary and secondary windings physically separated. They shall be designed to withstand a test voltage of 1,500 volts when rated 125 volts or less and 2,500 volts when rated more than 125 volts.

(5) The line voltage shall be increased to 120 percent of nominal rated voltage to cover power line voltage variations.

(6) In investigations of alternating current circuits a minimum of 5,000 make-break sparks will be produced in each test.

(d) The design of intrinsically safe circuits shall preclude extraneous voltages caused by insufficient isolation or inductive coupling. The investigation shall determine the effect of ground faults where applicable.

(e) Identification markings: Circuits and components of intrinsically safe equipment and devices shall be adequately identified by marking or labeling. Battery-powered equipment shall be marked to indicate the manufacturer, type designation, ratings, and size of batteries used.

§ 18.69 Adequacy tests.

MESA reserves the right to conduct appropriate test(s) to verify the adequacy of equipment for its intended service.

Subpart D—Machines Assembled With Certified or Explosion-Proof Components, Field Modifications of Approved Machines, and Permits To Use Experimental Equipment

§ 18.80 Approval of machines assembled with certified or explosion-proof components.

(a) A machine may be a new assembly, or a machine rebuilt to perform a service that is different from the original function, or a machine converted from nonpermissible to permissible status, or a machine converted from direct- to alternating-current power or vice versa.

Properly identified components that have been investigated and accepted for application on approved machines will be accepted in lieu of certified components.

(b) A single layout drawing (see Figure 1 in Appendix II) or photographs will be acceptable to identify a machine that was assembled with certified or explosion-proof components. The following information shall be furnished:

(1) Overall dimensions.

(2) Wiring diagram.

(3) List of all components (see Figure 2 in Appendix II) identifying each according to its certification number or the approval number of the machine of which the component was a part.

(4) Specifications for:

(i) Overcurrent protection of motors.

(ii) All wiring between components, including mechanical protection such as hose conduits and clamps.

(iii) Portable cable, including the type, length, outside diameter, and number and size of conductors.

(iv) Insulated strain clamp for machine end of portable cable.

(v) Short-circuit protection to be provided at outby end of portable cable.

(c) MESA reserves the right to inspect and to retest any component(s) that had been in previous service, as it deems appropriate.

(d) Fees for testing under this subpart shall be consistent with those stated in § 18.7.

(e) When MESA has determined that all applicable requirements of this part have been met, the applicant will be authorized to attach an approval plate to each machine that is built in strict accordance with the drawings and specifications filed with MESA and listed with MESA's formal approval. A design of the approval plate will accompany the notification of approval. (Refer to §§ 18.10 and 18.11.)

(f) Approvals are issued only by Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213.

§ 18.81 Field modification of approved (permissible) equipment; application for approval of modification; approval of plans for modification before modification.

(a) An owner of approved (permissible) equipment who desires to make modifications in such equipment shall apply in writing to make such modifications. The application, together with the

plans of modifications, shall be filed with Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213.

(b) Proposed modifications shall conform with the applicable requirements of Subpart B of this part, and shall not substantially alter the basic functional design that was originally approved for the equipment.

(c) Upon receipt of the application for modification, and after such examination and investigation as may be deemed necessary by MESA, MESA will notify the owner and the District office of the mine workers' organization having jurisdiction at the mine where such equipment is to be operated stating the modifications which are proposed to be made and MESA's action thereon.

§ 18.82 Permit to use experimental electric face equipment in a gassy mine or tunnel.

(a) *Application for permit.* An application for a permit to use experimental electric face equipment in a gassy mine or tunnel will be considered only when submitted by the user of the equipment. The user shall submit a written application to the Administrator of MESA, U.S. Department of the Interior, Washington, D.C. 20240, and send a copy to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213.

(b) *Fees.* The applicable fees for work to be done according to this subpart shall coincide with the fees stated in § 18.7.

(c) *Requirements—*(1) *Constructional.* (i) Experimental equipment shall be so constructed that it will not constitute a fire or explosion hazard.

(ii) Enclosures designed as explosion-proof, unless already certified, or components of previously approved (permissible) machines, shall be submitted to MESA for inspection and test and shall meet the applicable design requirements of Subpart B of this part. Components designed as intrinsically safe also shall be submitted to MESA for investigation.

(iii) MESA may, at its discretion, waive the requirements for detailed drawings of component parts, inspections, and tests provided satisfactory evidence is submitted that an enclosure has been certified, or otherwise accepted by a reputable testing agency whose standards are substantially equivalent to those set forth in Subpart B of this part.

(2) *Specifications.* The specifications for experimental equipment shall include a layout drawing (see Figure 1 in Appendix II) or photograph(s) with the components, including overcurrent-protective device(s) with setting(s) identified thereon or separately; a wiring diagram; and descriptive material necessary to insure safe operation of the equipment. Drawings already filed with MESA need not be duplicated by the applicant, but shall be properly identified.

(d) *Final inspection.* Unless equipment is delivered to MESA for investigation, the applicant shall notify Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213, when and where the experimental equipment will be ready for inspection by a representative of MESA before installing it on a trial basis. Such inspection shall be completed before a permit will be issued.

(e) *Issuance of permit.* When the inspection discloses full compliance with the applicable requirements of this subpart, the Administrator of MESA will issue a permit sanctioning the operation of a single unit in a gassy mine or tunnel, as designated in the application. If the applicant is not the assembler of the equipment, a copy of the permit also may be sent to the assembler.

(f) *Duration of permit.* A permit will be effective for a period of 6 months. For a valid reason, to be stated in a written application, the Administrator of MESA may grant an extension of a permit for an additional period, not exceeding 6 months. Further extension will be granted only where, after investigation, the Administrator finds that for reasons beyond the control of the user, it has not been possible to complete the experi-

ment within the period covered by the extended permit.

(g) *Permit label.* With the notification granting a permit, the applicant will receive a photographic copy of a permit label bearing the following:

- (1) Seal of the Bureau of Mines.
- (2) Permit number.
- (3) Expiration date of the permit.
- (4) Name of machine.
- (5) Name of the user and mine or tunnel.

The applicant shall attach the photographic copy of the permit label, or replica thereof, to the experimental equipment. If a photograph is used, a clear plastic covering shall be provided for it.

(h) *Withdrawal of permit.* The Administrator of MESA may rescind, for cause, any permit granted under this subpart.

APPENDIX I

LIST OF TABLES

| Table No. | Title |
|-----------|---|
| 1 | Portable power cable ampacities—600 volts. |
| 2 | Portable cord ampacities—600 volts. |
| 3 | Portable power cable ampacities—601 to 5,000 volts. |
| 4 | Normal diameter of round cables with tolerances in inches—600 volts. |
| 5 | Nominal dimension of flat cables with tolerances in inches—600 volts. |
| 6 | Nominal diameter of heavy jacketed cords with tolerances in inches—600 volts. |
| 7 | Nominal diameter of three-conductor portable power cables with tolerances in inches—601 to 5,000 volts. |
| 8 | Fuse ratings or instantaneous settings of circuit breakers for short-circuit protection of portable cables. |
| 9 | Specifications for portable cables longer than 500 feet. |

TABLE 1.—PORTABLE POWER CABLE AMPACITIES—600 VOLTS (AMPERES PER CONDUCTOR BASED ON 60° C. COPPER TEMPERATURE—40° C. AMBIENT)

| Conductor size—AWG or MCM | Single conductor | 2-conductor, round or flat | 3-conductor, round or flat | 4-conductor | 5-conductor | 6-conductor |
|---------------------------|------------------|----------------------------|----------------------------|-------------|-------------|-------------|
| 8..... | 45 | 40 | 35 | 30 | 25 | 20 |
| 6..... | 60 | 50 | 50 | 40 | 35 | 30 |
| 4..... | 85 | 70 | 65 | 55 | 45 | 35 |
| 3..... | 95 | 80 | 75 | 65 | 55 | 45 |
| 2..... | 110 | 95 | 90 | 75 | 65 | 55 |
| 1..... | 130 | 110 | 100 | 85 | 75 | 65 |
| 1/0..... | 150 | 130 | 120 | 100 | 90 | 80 |
| 2/0..... | 175 | 150 | 135 | 115 | 105 | 95 |
| 3/0..... | 205 | 175 | 155 | 130 | 120 | 110 |
| 4/0..... | 235 | 200 | 180 | 150 | 140 | 130 |
| 250..... | 275 | 220 | 200 | 160 | ..... | ..... |
| 300..... | 305 | 240 | 220 | 175 | ..... | ..... |
| 350..... | 345 | 260 | 235 | 190 | ..... | ..... |
| 400..... | 375 | 280 | 250 | 200 | ..... | ..... |
| 450..... | 400 | 300 | 270 | 215 | ..... | ..... |
| 500..... | 425 | 320 | 290 | 230 | ..... | ..... |

TABLE 2—PORTABLE CORD AMPACITIES—600 VOLTS (AMPERES PER CONDUCTOR BASED ON 60° C. COPPER TEMPERATURE—40° C. AMBIENT)

| Conductor size—AWG | 1-3 conductor | 4-6 conductor | 7-9 conductor |
|--------------------|---------------|---------------|---------------|
| 14..... | 15 | 12 | 8 |
| 12..... | 20 | 16 | 11 |
| 10..... | 25 | 20 | 14 |

TABLE 3—PORTABLE POWER CABLE AMPACITIES—601 TO 5,000 VOLTS (AMPERES PER CONDUCTOR BASED ON 75° C. COPPER TEMPERATURE—40° C. AMBIENT)

| Conductor size—AWG or MCM | 3-conductor types G-GC and SHC-GC 2,000 volts | 3-conductor type SHD-GC 2,001-5,000 volts |
|---------------------------|---|---|
| 6..... | 65 | 65 |
| 4..... | 85 | 85 |
| 3..... | 100 | 100 |
| 2..... | 115 | 115 |
| 1..... | 130 | 130 |
| 1/0..... | 145 | 145 |
| 2/0..... | 170 | 170 |
| 3/0..... | 195 | 195 |
| 4/0..... | 220 | 220 |
| 250..... | 245 | 245 |
| 300..... | 275 | 275 |
| 350..... | 305 | 305 |

TABLE 4—NOMINAL DIAMETERS OF ROUND CABLES WITH TOLERANCES IN INCHES—600 VOLTS

| Conductor size—AWG or MCM | Single conductor | 2-conductor | | | 3-conductor | | | 4-conductor | 5-conductor | 6-conductor | Tolerance |
|---------------------------|------------------|---------------------|--------------------------|--------------------------------------|-------------|--------------------------|--------------------------------------|-------------|-------------|-------------|-----------|
| | | Types W & G twisted | Type PG, 2 power, ground | Type PCG, 2 power, 2 control, ground | Types W & G | Type PG, 3 power, ground | Type PCG, 3 power, 2 control, ground | | | | |
| 8..... | 0.44 | 0.81 | 0.84 | 0.94 | 0.91 | 0.93 | 1.03 | 0.99 | 1.07 | 1.18 | ±0.03 |
| 6..... | .51 | .93 | .98 | .98 | 1.01 | 1.03 | 1.18 | 1.10 | 1.21 | 1.31 | ±.03 |
| 4..... | .57 | 1.08 | 1.08 | 1.10 | 1.17 | 1.20 | 1.29 | 1.27 | 1.40 | 1.52 | ±.03 |
| 3..... | .63 | 1.17 | 1.17 | 1.20 | 1.24 | 1.27 | 1.31 | 1.34 | 1.48 | 1.61 | ±.03 |
| 2..... | .66 | 1.27 | 1.27 | 1.29 | 1.34 | 1.34 | 1.39 | 1.48 | 1.61 | 1.75 | ±.03 |
| 1..... | .74 | 1.44 | 1.44 | 1.44 | 1.51 | 1.52 | 1.52 | 1.68 | 1.88 | 2.05 | ±.03 |
| 1/0..... | .77 | 1.52 | 1.52 | 1.52 | 1.65 | 1.68 | 1.68 | 1.79 | 1.96 | 2.13 | ±.04 |
| 2/0..... | .82 | 1.65 | 1.65 | 1.65 | 1.75 | 1.79 | 1.79 | 1.93 | 2.13 | 2.32 | ±.04 |
| 3/0..... | .87 | 1.77 | 1.77 | 1.77 | 1.89 | 1.93 | 1.93 | 2.07 | 2.26 | 2.49 | ±.05 |
| 4/0..... | .93 | 1.92 | 1.92 | 1.92 | 2.04 | 2.13 | 2.13 | 2.26 | 2.46 | 2.71 | ±.05 |
| 250..... | 1.03 | 2.16 | 2.16 | 2.16 | 2.30 | 2.39 | 2.39 | 2.66 | ----- | ----- | ±.06 |
| 300..... | 1.09 | 2.32 | ----- | ----- | 2.56 | ----- | ----- | 2.84 | ----- | ----- | ±.06 |
| 350..... | 1.15 | 2.43 | ----- | ----- | 2.68 | ----- | ----- | 2.98 | ----- | ----- | ±.06 |
| 400..... | 1.20 | 2.57 | ----- | ----- | 2.82 | ----- | ----- | 3.14 | ----- | ----- | ±.06 |
| 450..... | 1.26 | 2.67 | ----- | ----- | 2.94 | ----- | ----- | 3.28 | ----- | ----- | ±.06 |
| 500..... | 1.31 | 2.76 | ----- | ----- | 3.03 | ----- | ----- | 3.40 | ----- | ----- | ±.06 |

TABLE 5—NOMINAL DIMENSIONS OF FLAT CABLES WITH TOLERANCES IN INCHES—600 VOLTS

| Conductor size—AWG | 2-conductor | | | | | | | | 3-conductor | | | |
|--------------------|-------------|-----------|-------|-----------|--------|-----------|-------|-----------|-------------|-----------|-------|-----------|
| | Type W | | | | Type G | | | | Type G | | | |
| | Major | | Minor | | Major | | Minor | | Major | | Minor | |
| | O.D. | Tolerance | O.D. | Tolerance | O.D. | Tolerance | O.D. | Tolerance | O.D. | Tolerance | O.D. | Tolerance |
| 8..... | 0.84 | ±0.04 | 0.51 | ±0.03 | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| 6..... | .93 | ±.04 | .56 | ±.03 | 1.02 | ±0.04 | 0.56 | ±0.03 | 1.65 | ±0.06 | 0.67 | ±0.05 |
| 4..... | 1.05 | ±.04 | .61 | ±.03 | 1.15 | ±.04 | .61 | ±.03 | 1.85 | ±.06 | .75 | ±.05 |
| 3..... | 1.14 | ±.04 | .68 | ±.03 | 1.26 | ±.04 | .68 | ±.03 | 1.99 | ±.06 | .77 | ±.05 |
| 2..... | 1.24 | ±.04 | .73 | ±.03 | 1.35 | ±.04 | .73 | ±.06 | 2.10 | ±.06 | .81 | ±.05 |
| 1..... | 1.40 | ±.04 | .81 | ±.03 | 1.55 | ±.04 | .81 | ±.03 | 2.43 | ±.06 | .97 | ±.05 |
| 1/0..... | 1.51 | ±.04 | .93 | ±.03 | 1.67 | ±.04 | .93 | ±.03 | ----- | ----- | ----- | ----- |
| 2/0..... | 1.63 | ±.04 | .99 | ±.03 | 1.85 | ±.04 | .99 | ±.03 | ----- | ----- | ----- | ----- |
| 3/0..... | 1.77 | ±.04 | 1.03 | ±.03 | 2.00 | ±.04 | 1.03 | ±.03 | ----- | ----- | ----- | ----- |
| 4/0..... | 1.89 | ±.04 | 1.10 | ±.03 | 2.10 | ±.04 | 1.10 | ±.03 | ----- | ----- | ----- | ----- |

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TABLE 6—NOMINAL DIAMETERS OF HEAVY JACKETED CORDS WITH TOLERANCES IN INCHES—600 VOLTS

| Conductor size—AWG | 2-conductor | | 3-conductor | | 4-conductor | | 5-conductor | | 6-conductor | | 7-conductor | |
|--------------------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|
| | Diameter | Tolerance | Diameter | Tolerance | Diameter | Tolerance | Diameter | Tolerance | Diameter | Tolerance | Diameter | Tolerance |
| 14..... | 0.64 | ±0.02 | 0.67 | ±0.02 | 0.71 | ±0.02 | 0.78 | ±0.03 | 0.83 | ±0.03 | 0.89 | ±0.03 |
| 12..... | .68 | ±.02 | .72 | ±.03 | .76 | ±.03 | .83 | ±.03 | .89 | ±.03 | .98 | ±.03 |
| 10..... | .73 | ±.03 | .80 | ±.03 | .84 | ±.03 | .90 | ±.03 | 1.00 | ±.03 | 1.07 | ±.03 |

TABLE 7.—NOMINAL DIAMETERS OF THREE-CONDUCTOR PORTABLE POWER CABLES WITH TOLERANCES IN INCHES—601 to 5,000 VOLTS

| Conductor size—AWG or MCM | Type G-GC (nonshielded) 2,000 volts | | Type SHC-GC (shielded overall) 2,000 volts | | Type SHD-GC (individually shielded power conductors) 2,001-3,000 volts | | Type SHD-GC (individually shielded power conductors) 3,001-5,000 volts | |
|---------------------------|-------------------------------------|--------------|--|--------------|--|--------------|--|--------------|
| | Diameter | Tolerance | Diameter | Tolerance | Diameter | Tolerance | Diameter | Tolerance |
| 4..... | 1.25 | +0.10, -0.06 | 1.39 | +0.11, -0.07 | 1.62 | +0.13, -0.08 | 1.78 | +0.14, -0.09 |
| 3..... | 1.40 | + .11, - .07 | 1.55 | + .12, - .08 | 1.77 | + .14, - .09 | 1.90 | + .15, - .10 |
| 2..... | 1.48 | + .12, - .07 | 1.62 | + .13, - .08 | 1.84 | + .15, - .09 | 1.98 | + .16, - .10 |
| 1..... | 1.55 | + .12, - .08 | 1.71 | + .14, - .09 | 1.92 | + .15, - .10 | 2.09 | + .17, - .11 |
| 1..... | 1.74 | + .14, - .09 | 1.89 | + .15, - .09 | 2.04 | + .16, - .10 | 2.18 | + .17, - .11 |
| 2/0..... | 1.84 | + .15, - .09 | 2.02 | + .16, - .10 | 2.18 | + .17, - .11 | 2.34 | + .19, - .12 |
| 3/0..... | 1.99 | + .16, - .10 | 2.16 | + .17, - .11 | 2.29 | + .18, - .12 | 2.46 | + .20, - .12 |
| 4/0..... | 2.12 | + .17, - .11 | 2.30 | + .18, - .11 | 2.45 | + .20, - .12 | 2.62 | + .21, - .13 |
| 2/0..... | 2.30 | + .18, - .12 | 2.48 | + .20, - .12 | 2.62 | + .21, - .13 | 2.76 | + .22, - .14 |
| 350..... | 2.46 | + .20, - .12 | 2.70 | + .22, - .13 | ----- | ----- | ----- | ----- |
| 300..... | 2.63 | + .21, - .13 | 2.84 | + .23, - .14 | ----- | ----- | ----- | ----- |
| 650..... | 2.75 | + .22, - .14 | 2.97 | + .24, - .15 | ----- | ----- | ----- | ----- |

TABLE 8—FUSE RATINGS OR INSTANTANEOUS SETTING OF CIRCUIT BREAKERS FOR SHORT-CIRCUIT PROTECTION OF PORTABLE CABLES AND CORDS

| Conductor size—AWG or MCM | Ohms/1,000 ft. at 25° C. | Maximum allowable fuse rating (amperes) | Maximum allowable circuit breaker instantaneous setting (amperes) ¹ |
|---------------------------|--------------------------|---|--|
| 14..... | 2.62 | 20 | 50 |
| 12..... | 1.65 | 30 | 75 |
| 10..... | 1.04 | 40 | 150 |
| 8..... | .654 | 80 | 200 |
| 6..... | .410 | 100 | 300 |
| 4..... | .259 | 200 | 500 |
| 3..... | .205 | 250 | 600 |
| 2..... | .162 | 300 | 800 |
| 1..... | .129 | 375 | 1,000 |
| 1/0..... | .102 | 500 | 1,250 |
| 2/0..... | .081 | ----- | 1,500 |
| 3/0..... | .064 | ----- | 2,000 |
| 4/0..... | .051 | ----- | 2,500 |
| 250..... | .043 | ----- | 2,500 |
| 300..... | .036 | ----- | 2,500 |
| 350..... | .031 | ----- | 2,500 |
| 400..... | .027 | ----- | 2,500 |
| 450..... | .024 | ----- | 2,500 |
| 500..... | .022 | ----- | 2,500 |

TABLE 9—SPECIFICATIONS FOR PORTABLE CABLES LONGER THAN 500 FEET ¹

| Conductor size—AWG or MCM | Maximum allowable length (feet) | Normal ampacity at 60° C. copper temperature (40° C. ambient) | Resistance at 60° C. copper temperature (ohms) |
|---------------------------|---------------------------------|---|--|
| 6..... | 550 | 50 | 0.512 |
| 4..... | 600 | 70 | .353 |
| 3..... | 650 | 80 | .302 |
| 2..... | 700 | 95 | .268 |
| 1..... | 750 | 110 | .220 |
| 1/0..... | 800 | 130 | .185 |
| 2/0..... | 850 | 150 | .157 |
| 3/0..... | 900 | 175 | .130 |
| 4/0..... | 1,000 | 200 | .116 |
| 250..... | 1,000 | 220 | .098 |
| 300..... | 1,000 | 240 | .082 |
| 350..... | 1,000 | 260 | .070 |
| 400..... | 1,000 | 280 | .061 |
| 450..... | 1,000 | 300 | .054 |
| 500..... | 1,000 | 320 | .050 |

¹ Fuses shall not be used for short-circuit protection of these cables. Circuit breakers shall be used with the instantaneous trip settings not to exceed the values given in Table 8.

¹ Higher circuit-breaker settings may be permitted or special applications when justified.
 [33 F.R. 4660, Mar. 19, 1968; 33 F.R. 6345, Apr. 26, 1968]

APPENDIX II
LIST OF FIGURES

- Figure No.** **Title**
- 1 Typical layout drawing of a machine.
 - 2 Sample bill of material (to accompany layout drawing shown on figure 1).
 - 3 Material to be included with the operating instructions on or with the wiring diagram submitted to each customer.
 - 4 Sample factory inspection form.
 - 5 Typical plane joint.
 - 6 Typical combination joint.

- Figure No.** **Title**
- 7 Typical threaded joint.
 - 8 Typical threaded straight stuffing box and packing gland lead entrance with provision for hose conduit.
 - 9 Typical slip-fit straight type and angle-type stuffing box and packing gland lead entrance.
 - 10 Typical slip-fit angle-type stuffing box and packing gland lead entrance and typical plug for spare lead entrance hole.

Figure 1
TYPICAL LAYOUT DRAWING OF A MACHINE

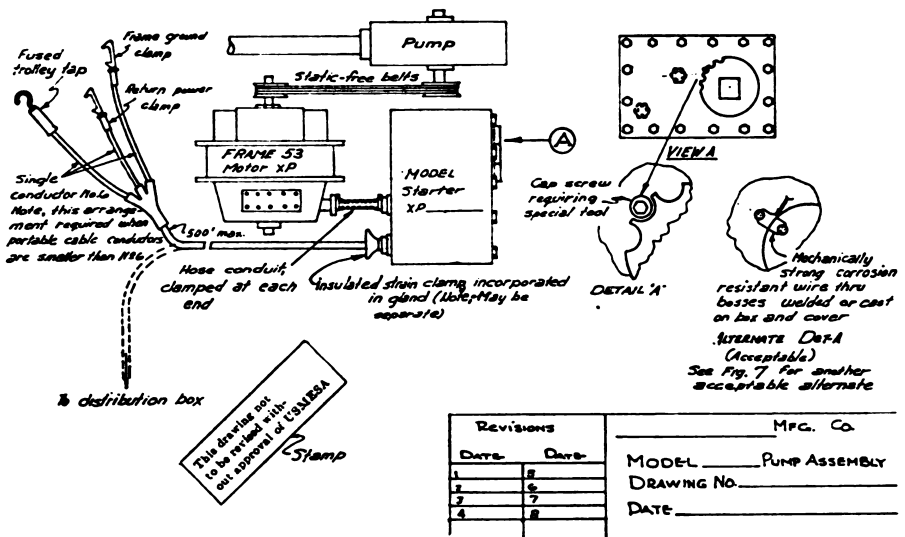


FIGURE 2.—SAMPLE BILL OF MATERIAL

MESA No. _____
Date _____
Revision _____ Date _____

1. _____
2. _____
3. _____
4. _____
5. _____

Bill of Material (Electrical)

_____ (Manufacturing Company)

Model: _____ (Unit Name)

Approval 2G— _____

Motor: _____ (Manufacturing Company)

Frame _____
Hp., _____ Volts, _____ Ph.,
_____ Cy., _____ R.P.M.

X/P— _____ (Date) _____ Extension (Date) _____ (Manufacturing Company)

Starter: _____ Model _____ Hp., _____ Volts.

X/P— _____ (Date) _____ Extension (Date) _____

Cable—Motor to Starter: Cond. No. _____ O.D., _____' Long

Hose—Motor to Starter Cable: _____' I.D., _____' O.D., _____' Long

Portable (Trailing) Cable—Type: _____ Cond. No. _____ O.D., _____' Long

Hose—for Portable Cable: _____' I.D., _____' O.D., _____' Long

Hose Clamps—
 2 for Motor-Starter Hose conduit D
 1 for Portable Cable Hose conduct D*

*Only when short length of hose is used.

Trolley Tap—

 (Manufacturing Company)
 Model ----- with
 -----ampere fuse.

Rail Clamps, 2.
 1 Ground Clamp, Cat. No. -----

 (Manufacturing Company)
 1 Return Power Conductor, Cat. No. -----

 (Manufacturing Company)
 or—as Optional

Plug on outby end of potable cable for insertion into receptacle on distribution box or equivalent with short-circuit protective device set at ----- amperes.

Static-free Belt
 Model -----
 Style -----
 Catalog No. -----

 (Manufacturing Company)

Guard for Belt—
 Material -----
 Overall Dimensions -----" Long x -----"
 Wide x -----" High

NOTE: The foregoing is intended as a guide. Additional electrical components used shall be completely identified.

FIGURE 3.—MATERIAL TO BE INCLUDED WITH THE OPERATING INSTRUCTIONS—ON OR WITH THE WIRING DIAGRAM SUBMITTED TO EACH CUSTOMER

(Sometimes referred to as "Caution Statement")

CAUTION

To retain "permissibility" of this equipment the following conditions shall be satisfied:

1. *General safety.* Frequent inspection shall be made. All electrical parts, including the portable cable and wiring, shall be kept in a safe condition. There shall be no openings into the casings of the electrical parts. A permissible distribution box shall be used for connection to the power circuit unless connection is made in fresh intake air. To maintain the overload protection on direct-current machines, the ungrounded conductor of the portable cable shall be connected to the proper terminal. The machine frame shall be effectively grounded. The power wires shall not be used for grounding except in conjunction with diode(s) or equivalent. The operating voltage should match the voltage rating of the motor(s).

2. *Servicing.* Explosion-proof enclosures shall be restored to the state of original safety with respect to all flame arresting paths, lead entrances, etc., following disassembly for repair or rebuilding, whether by the owner or an independent shop.

3. *Fastenings.* All bolts, nuts, screws, and other means of fastening, and also threaded covers, shall be in place, properly tightened and secured.

4. *Renewals and repairs.* Inspections, repairs, or renewals of electrical parts shall not be made unless the portable cable is disconnected from the circuit furnishing power, and the cable shall not be connected again until all parts are properly reassembled. Special care shall be taken in making renewals or repairs. Leave no parts off. Use replacement parts exactly like those furnished by the manufacturer. When any lead entrance is disturbed, the original leads or exact duplicates thereof shall be used and stuffing boxes shall be repacked in the approved manner.

5. *Cable requirements.* A flame-resistant portable cable bearing a MESA assigned identification number, adequately protected by an automatic circuit-interrupting device shall be used. Special care shall be taken in handling the cable to guard against mechanical injury and wear. Splices in portable cables shall be made in a workmanlike manner, mechanically strong, and well insulated. Not more than five temporary splices are permitted in a portable cable regardless of length. Connections and wiring to the outby end of the cable shall be in accordance with recognized standards of safety.

FIGURE 4.—SAMPLE FACTORY INSPECTION FORM

Date -----
 Inspector -----
 MACHINE
 Designation: -----
 Type: ----- Serial No. -----
 MOTOR
 Manufacturer: -----
 Serial No.: ----- Type: -----
 Frame: -----
 Hp. --- F.L. Speed: ----- Volts: --- Amps. ---
 Winding: ----- X/P No. ----- (or parts list designation).
 STARTER
 Manufacturer: -----
 Serial No. ----- Type: -----
 Hp. ----- Volts: ----- X/P No. -----
 (or parts list designation).
 Short-circuit protection ----- amps.
 Overload-current protection ----- amps.
 PORTABLE CABLE
 Manufacturer: -----
 Type: ----- Conductors: -----
 Length: ----- O.D. ----- MESA No. -----
 Is all wiring around machine adequately protected from mechanical damage? -----
 By hose conduit -----, Troughs -----,
 Metal tubing -----, Other -----
 By removal of all sharp corners or edges? -----
 Is wiring separated from hydraulic components? -----
 Is an adequate insulated strain clamp provided for the portable cable? -----

Are all packing glands properly packed so that $\frac{1}{8}$ -inch clearance remains between packing nut and stuffing box? -----

Are lockwashers (or equivalent) provided for all explosion-proof enclosure fastenings? -----

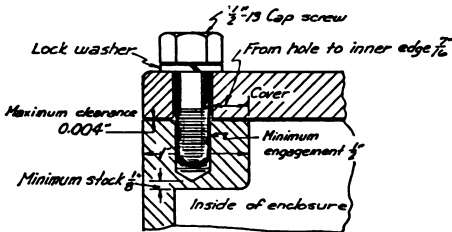
Are all plane joints securely fastened so that an 0.005-inch feeler gage cannot be inserted? -----

Are all threaded covers secured? -----
How? -----

Are all electrical connections secure and properly insulated where necessary?..

NOTE: Add appropriate material for each explosion-proof enclosure when more than a motor and starter are on a machine.

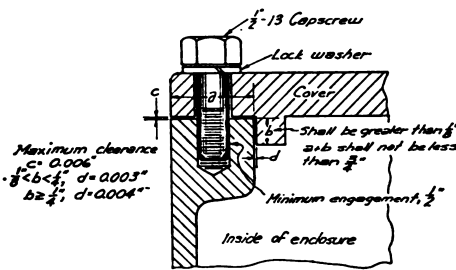
All dimensions apply to enclosures larger than 124 cubic inches in volume (when empty). For smaller enclosures refer to 18.31 (a)(6)



TYPICAL PLANE JOINT

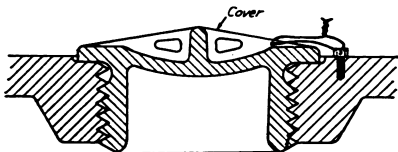
Figure 5

All dimensions apply to enclosures larger than 124 cubic inches in volume (when empty). For smaller enclosures refer to 18.31 (a)(6)



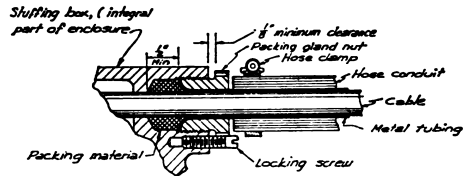
TYPICAL COMBINATION JOINT

Figure 6



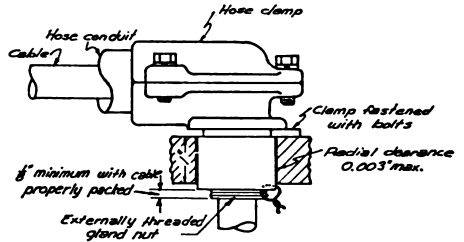
TYPICAL THREADED JOINT

Figure 7

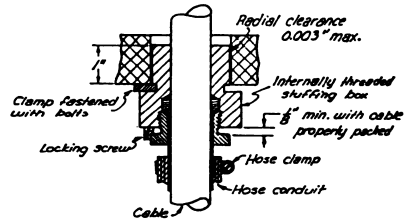


TYPICAL THREADED STRAIGHT STUFFING BOX AND PACKING GLAND LEAD ENTRANCE WITH PROVISION FOR HOSE CONDUIT

Figure 8

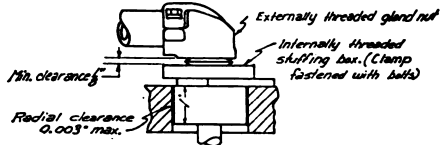


TYPICAL SLIP-FIT ANGLE TYPE STUFFING BOX PACKING GLAND LEAD ENTRANCE WITH HOSE CLAMP



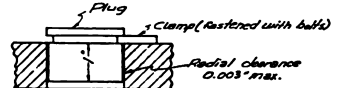
TYPICAL SLIP-FIT STRAIGHT TYPE STUFFING BOX AND PACKING GLAND LEAD ENTRANCE

Figure 9



TYPICAL SLIP-FIT ANGLE TYPE STUFFING BOX AND PACKING GLAND LEAD ENTRANCE

Plugs shall be secured by spot welding or brazing, weld may be on plug, clamp, or fastening bolt



TYPICAL PLUG FOR SPARE LEAD ENTRANCE HOLE

Figure 10

Subpart E—Field Approval of Electrically Operated Mining Equipment

AUTHORITY: The provision of this Subpart E issued pursuant to the authority vested in the Secretary of the Interior under sections 318(1) and 508 of the Federal Coal Mine Health and Safety Act of 1969, Public Law 91-173, 83 Stat. 742, 30 U.S.C. 801.

SOURCE: The provisions of this Subpart E appear at 36 F.R. 7007, Apr. 13, 1971, unless otherwise noted.

§ 18.90 Purpose.

The regulations of this Subpart E set forth the procedures and requirements for permissibility which must be met to obtain MESA field approval of electrically operated machinery used or intended for use in by the last open cross-cut of a coal mine which has not been otherwise approved, certified or accepted under the provisions of this Part 18, Chapter I, Title 30, Code of Federal Regulations (Bureau of Mines Schedule 2G).

§ 18.91 Electric equipment for which field approvals will be issued.

(a) Individual field approvals will be issued by MESA under the provisions of this Subpart E for electrically operated machines commercially built, or constructed, by the owner-coal mine operator of such machines including any associated electrical equipment, electrical components, and electrical accessories.

(b) Approvals will not be issued under the provisions of this Subpart E for electrically operated mining equipment manufactured or rebuilt primarily for sale or resale to any operator of a coal mine, or for small electrically operated equipment which consumes less than 2,250 watts of electricity, or for instruments and other small devices which employ electric power.

§ 18.92 Quality of material and design.

(a) Electrically operated machinery approved under the provisions of this Subpart E shall be rugged in construction and shall be designed to facilitate maintenance and inspection.

(b) MESA shall conduct field investigations and, where necessary, field test electric machinery only where such machinery is found to be constructed of suitable materials and safe for its intended use.

§ 18.93 Application for field approval; filing procedures.

(a) (1) Investigation and testing leading to field approval shall be undertaken by MESA only pursuant to individual written applications for each machine submitted in triplicate on MESA Form No. 6-1481, by the owner-coal mine operator of the machine.

(2) Except as provided in paragraph (b) of this section, each application shall be accompanied by appropriate photographs, drawings, specifications, and descriptions as required under the provisions of § 18.94 and each such application shall be filed with the Coal Mine Health and Safety District Manager for the District in which such machine will be employed.

(b) The Coal Mine Health and Safety District Manager may, upon receipt of any application filed pursuant to paragraph (a) of this section, waive the requirements of § 18.94 with respect to such application if he determines that the submission of photographs, drawings, specifications, or descriptions will place an undue financial burden upon the applicant. In the event a waiver is granted in accordance with this paragraph (b), initial review of the application will be waived and the applicant shall be notified on MESA Form 6-1481 of such waiver and the date, time, and location at which field inspection of the equipment described in the application will be conducted.

(c) Following receipt of an application filed in accordance with paragraph (a) of this section, the Coal Mine Health and Safety District Manager shall determine whether the application has been filed in accordance with § 18.91, and cause the application to be reviewed by a qualified electrical representative to determine compliance with § 18.92:

(1) If it is determined on the basis of the application or the data submitted in accordance with § 18.94 that further consideration of a field approval is warranted under this Subpart E or that the machine appears suitable and safe for its intended use, the Coal Mine Health and Safety District Manager shall advise the applicant in writing that further investigation and inspection of the machine will be necessary. The notice issued by the Coal Mine Health and Safety District Manager shall set forth the time and place at which such inspection will be conducted and specify the location and

size of any tapped holes required to be made by the applicant to facilitate the pressure testing of enclosures.

(2) If it is determined on the basis of data submitted in accordance with § 18.94 that the applicant is not qualified to receive an approval or that the machine does not appear to be suitable and safe for its intended use, the Coal Mine Health and Safety District Manager shall so advise the applicant in writing, setting forth the reasons for his denial of the application, and where applicable, the deficiencies in the machine which rendered it unsuitable or unsafe for use.

(3) Rejected applications, together with attached photographs, drawings, specifications and descriptions shall be forwarded by the Coal Mine Health and Safety District Manager to Approval and Testing which shall record all pertinent data with respect to the machine for which field approval was sought.

§ 18.94 Application for field approval; contents of application.

(a) Each application for field approval shall, except as provided in § 18.93(b), include the following information with respect to the electrically operated machine for which field approval is sought:

(1) The trade name and the certification number or other means of identifying any explosion-proof compartment or intrinsically-safe component installed on the machine for which a prior approval or certification has been issued under the provisions of Bureau of Mines Schedules 2D, 2E, 2F, or 2G.

(2) The trade name and the flame resistance acceptance number of any cable, cord, hose, or conveyor belt installed on the machine for which a prior acceptance has been issued under the provisions of § 18.36, § 18.39, § 18.64, or § 18.65.

(b) Each application for field approval shall be accompanied by:

(1) If the machine is constructed or assembled entirely from components which have been certified or removed from machines approved under Bureau of Mines Schedule 2D, 2E, 2F, or 2G, photographs or a single layout drawing which clearly depicts and identifies each of the permissible components and its location on the machine.

(2) If the machine contains one or more components required to be permissible which has not been approved or certified under Bureau of Mines Schedule 2D, 2E, 2F, or 2G, a single layout draw-

ing which clearly identifies all of the components from which it was assembled.

(3) All applications shall include specifications for:

(i) Overcurrent protection of motors:

(ii) All wiring between components, including mechanical protection such as hose conduit and clamps;

(iii) Portable trailing cable for use with the machine, including the type, length, diameter, and number and size of conductors;

(iv) Insulated strain clamp for machine end of portable trailing cable;

(v) Short-circuit protection to be provided at outby end of portable trailing cable.

§ 18.95 Approval of machines constructed of components approved, accepted or certified under Bureau of Mines Schedule 2D, 2E, 2F, or 2G.

Machines for which field approval is sought which are constructed entirely from properly identified components that have been investigated and accepted or certified for applications on approved machines under the Bureau of Mines Schedule 2D, 2E, 2F, or 2G, shall be approved following a determination by the electrical representative that the construction of the entire machine is permissible and conforms to the data submitted in accordance with § 18.94.

§ 18.96 Preparation of machines for inspection; requirements.

(a) Upon receipt of written notice from the Health and Safety District Manager of the time and place at which a field approval investigation will be conducted with respect to any machine, the applicant will prepare the machine for inspection in the following manner:

(1) The machine shall be in fresh air out by the last open crosscut and free from obstructions, or, if the machine is located on the surface, moved to a clear area;

(2) All enclosure covers shall be removed;

(3) The flanges and interior of each enclosure, including the cover, shall be cleaned thoroughly;

(4) All hoses, cables, cord, and conveyor belts shall be wiped clean to expose surface markings;

(5) All electrical components shall be cleaned to reveal all stampings, identification plates, certification numbers, or explosion test markings.

§ 18.97 Inspection of machines; minimum requirements.

(a) Except as provided in § 18.95, all machines approved under the provisions of this Subpart E shall, where practicable, meet the minimum design and performance requirements set forth in Subpart B of this Part 18 and, where necessary, the requirements of § 18.98.

(b) The inspection of each machine shall be conducted by an electrical representative and such inspection shall include:

(1) Examination of all electrical components for materials, workmanship, design, and construction;

(2) Examination of all components of the machine which have been approved or certified under Bureau of Mines Schedule 2D, 2E, 2F, or 2G to determine whether such components have been maintained in permissible conditions;

(3) Comparison of the location of components on the machine with the drawings or photographs submitted to determine that each of them is properly located, identified and marked;

(4) Pressure testing of explosion-proof compartments, when necessary, shall be conducted in accordance with § 18.98, and;

(i) Where the results of pressure testing are acceptable, the applicant shall be advised;

(ii) Where the explosion-proof enclosure is found unacceptable, the applicant shall be so informed;

(iii) If the performance of the explosion-proof enclosure is questionable, the qualified electrical representative may, at the request of the applicant, conduct a further detailed examination of the enclosure after disassembly and record his additional findings on Bureau of Mines Form No. 6-1481 under Results of Field Inspections.

§ 18.98 Enclosures, joints, and fastenings; pressure testing.

(a) Cast or welded enclosures shall be designed to withstand a minimum internal pressure of 150 pounds per square inch (gage). Castings shall be free from blowholes.

(b) Pneumatic field testing of explosion-proof enclosures shall be conducted by determining:

(1) Leak performance with a peak dynamic or static pressure of 150 pounds per square inch (gage); or,

(2) A pressure rise and rate of decay consistent with unyielding components

during a pressure-time history as derived from a series of oscillograms.

(c) Welded joints forming an enclosure shall have continuous gastight welds.

§ 18.99 Notice of approval or disapproval; letters of approval and approval plates.

Upon completion of each inspection conducted in accordance with § 18.97 (b), the electrical representative conducting such inspection shall record his findings with respect to the machine examined on Bureau of Mines Form No. 6-1481 together with his recommendation of approval or disapproval of the machine.

(a) If the qualified electrical representative recommends field approval of the machine, the Coal Mine Health and Safety District Manager shall forward the completed application form together with all attached photographs, drawings, specifications, and descriptions to Approval and Testing. Approval and Testing shall record all pertinent data with respect to such machine, issue a letter of approval with a copy to the Coal Mine Health and Safety District Manager who authorized its issuance and send the field approval plate to the applicant. The approval plate shall be affixed to the machine by the applicant in such a manner so as not to impair its explosion-proof characteristics.

(b) If the electrical representative recommends disapproval of the machine, he shall record the reasons for such disapproval and the Coal Mine Health and Safety District Manager shall forward the completed application form and other data to Approval and Testing which shall record all pertinent data with respect to such machine and notify the applicant that the application for approval has been rejected and the reasons for the rejection.

PART 19—ELECTRIC CAP LAMPS

| | |
|-------|--------------------------------------|
| Sec. | |
| 19.1 | Purpose. |
| 19.2 | Fees. |
| 19.3 | Applications. |
| 19.4 | Conditions governing investigations. |
| 19.5 | General requirements for approval. |
| 19.6 | Specific requirements for approval. |
| 19.7 | Protection against explosion hazard. |
| 19.8 | Protection against bodily hazard. |
| 19.9 | Performance. |
| 19.10 | Material required for MESA records. |
| 19.11 | How approvals are granted. |

Sec.

- 19.12 Wording, purpose, and use of approval plate.
- 19.13 Instructions for handling future changes in lamp design.

AUTHORITY: The provisions of this Part 19 issued under secs. 2, 3, 5, 36 Stat. 370, as amended, sec. 212, 66 Stat. 709; 30 U.S.C. 3, 5, 7, 482.

SOURCE: The provisions of this Part 19 contained in Schedule 6D, 4 F.R. 4003, Sept. 21, 1939, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 39 FR 23999, June 28, 1974.

§ 19.1 Purpose.

(a) The purpose of investigations made under this part is to promote the development of electric cap lamps that may be used in mines, especially in mines that may contain dangerous concentrations of methane. Lists of such lamps will be published from time to time in order that State mine-inspection departments, compensation bureaus, mine operators, miners, and others interested in safe equipment for mines may have information in regard to available permissible electric cap lamps. This part supersedes Schedule 6C issued under date of December 21, 1935, and goes into effect August 26, 1939.

(b) Any electric cap lamp that meets the requirement set forth in this part will be termed "permissible" by MESA and, if actively marketed, will be listed as such in publications relating to permissible electric cap lamps.

(c) *Definition of permissible.* Completely assembled and conforming in every respect with the design formally approved by the MESA under this part. (Approvals under this part are given only to equipment for use in gassy and dusty mines.)

[Sched. 6D, 4 F.R. 4003, Sept. 21, 1939, as amended by Supp. 1, 20 F.R. 2718, Apr. 23, 1955]

§ 19.2 Fees.

| | |
|--|-------|
| (a) Detailed inspection..... | \$105 |
| (b) Safety tests (headpiece)..... | 90 |
| (c) Headpiece dropping..... | 30 |
| (d) Headpiece smash..... | \$45 |
| (e) Battery sparking..... | 105 |
| (f) Battery dropping..... | 30 |
| (g) Battery spilling..... | 70 |
| (h) Bulb uniformity (current consumption)..... | 170 |
| (i) Bulb life..... | 135 |
| (j) Light distribution..... | 140 |
| (k) Discharge voltage (battery)..... | 95 |
| (l) Cord slatting..... | 135 |

- (m) Final examination and recording of drawings and specifications requisite to issuing and approval..... 110
- (n) Examining and recording of drawings and specifications requisite to issuing an extension of approval..... 70
- (o) Tests to assist an applicant in evaluating equipment intended for certification may be made at the discretion of MESA. Written requests for such tests shall be directed to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213. A deposit of \$200 shall be paid in advance when such tests have been authorized. The fees charged shall be in amounts proportionate to the work performed based on normal charges. Any surplus will be refunded at the completion of the work, or applied to future work, as directed by the applicant.

[Sched. 6D, 30 F.R. 3755, Mar. 23, 1965]

§ 19.3 Applications.

Before MESA will undertake the active investigation leading to approval of any lamp the manufacturer shall make application by letter for an investigation leading to approval of his lamp. This application in duplicate, accompanied by a check, bank draft, or money order, payable to U.S. Mining Enforcement and Safety Administration, to cover all the necessary fees, shall be sent to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213, together with the required drawings, one complete lamp, and instructions for its operation. [Supp. 1, 20 F.R. 2718, Apr. 23, 1955]

§ 19.4 Conditions governing investigations.

(a) One complete lamp, with the assembly and detail drawings that show the construction of the lamp and the materials of which it is made, should be submitted at the time the application for test is made. This material should be sent prepaid to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213.

(b) When this lamp has been inspected by MESA, the applicant will be notified as to the amount of material that will be required for the tests. In general, the material required will be as

follows: (1) Thirty complete lamps; (2) 500 bulbs; (3) 50 feet of cord; (4) a battery discharge rack for 20 batteries; and (5) a 50-bulb rack. Specifications for items (4) and (5) will be furnished by MESA.

(c) The applicant will be notified of the date on which the tests will start and will be given an opportunity to witness them.

(d) *Observers at formal investigations and demonstrations.* No one shall be present during any part of the formal investigation conducted by MESA which leads to approval for permissibility except the necessary Government personnel, representatives of the applicant, and such other persons as may be mutually agreed upon by the applicant and MESA. Upon granting approval for permissibility, MESA will announce that such approval has been granted to the device and may thereafter conduct, from time to time in its discretion, public demonstrations of the tests conducted on the approved device. Those who attend any part of the investigation, or any public demonstration, shall be present solely as observers; the conduct of the investigation and of any public demonstration shall be controlled by MESA. Results of chemical analyses of material and all information contained in the drawings, specifications, and instructions shall be deemed confidential and their disclosure will be appropriately safeguarded by MESA.

(e) Permissibility tests will not be made unless the lamp has been completely developed and is in a form that can be marketed.

(f) The results of the tests shall be regarded as confidential by all present at the tests and shall not be made public in any way prior to the formal approval of the lamp by MESA.

(g) No verbal report of approval or disapproval will be made to the applicant. After MESA has considered the results of the tests, a formal report of the approval or disapproval will be made to the applicant in writing by Approval and Testing, Pittsburgh Technical Support Center. The applicant shall not advertise the lamp as being permissible or as having passed the tests prior to receipt of formal notice of approval.

[Sched. 6D, 4 F.R. 4003, Sept. 21, 1939, as amended by Supp. 1, 20 F.R. 2718, Apr. 23, 1955]

§ 19.5 General requirements for approval.

Electric cap lamps shall be complete units. They shall be durable in construction, practical in operation, and suitable for the conditions of underground service. They shall offer no probable explosion hazard if used in gassy or dusty mine atmospheres or bodily hazard from the spilling of the battery electrolyte. They shall exhibit, under laboratory test conditions, the various minimum performance requirements specified in this part.

§ 19.6 Specific requirements for approval.

(a) *Design.* In the determination of the adequacy of the lamp, with respect to design, the following points will be considered: (1) The materials used; (2) construction; (3) weight; (4) amount of light; (5) distribution of light; and (6) exclusion of dust from the headpiece. The suitability of the materials and the construction shall be determined by preliminary inspection, by dropping tests,¹ by durability tests of the cord and cord armor,² and by the general behavior of the lamp equipment during the investigation. The amount and distribution of the light shall be judged both by observation of the illumination on a white screen and by photometric measurements.

(b) *Angle of light beam.* MESA recommends that the angle of the light beam be at least 130 degrees horizontally to insure that the contrast edge of the beam is away from the more sensitive sector of the wearer's vision; however, to allow for manufacturing and assembly tolerances and the use of multiple filament bulbs, MESA will approve lamps giving a minimum beam angle of 120 degrees. If the bulb has more than one major filament, the one giving the smaller angle will be used in the determination.

(c) *Light distribution, visual.* Excepting special headpieces for inspection

¹ Batteries are dropped 3 feet, at least 20 times onto an oak floor. Headpieces are dropped 6 feet, at least 20 times, onto concrete.

² Ten cords, assembled with the cord armor and outlet of the lamp with which it is to be used, are slatted at least 100,000 times through an arc of 50 degrees at approximately 90 slappings per minute.

purposes, the area illuminated by the beam shall be free from sharp gradations in light intensity and spectral shadows.

(d) *Light distribution, photometric.*

(1) Excepting special headpieces for inspection purposes, the maximum candlepower of the light beam shall not be greater than 25 times the average or mean candlepower of the beam.*

(2) The minimum candlepower of the beam based upon readings at the design voltage of the bulb shall not be less than 1.

§ 19.7 Protection against explosion hazard.

Unless properly designed, electric cap lamps may present two sources of probable explosion hazards: Ignition of an explosive atmosphere by the heated filament of the bulb in case the bulb glass is accidentally broken, and ignition by sparks or flashes from the battery. MESA therefore requires the following safeguards:

(a) *Safety device (design).* The headpiece shall be provided with a safety device which shall prevent the ignition of explosive mixtures of the methane and air when the bulb glass surrounding the filament is broken.

(b) *Headpiece lock or seal.* The headpiece shall be provided with a lock or seal to prevent unauthorized removal of the lens and tampering with the safety device, the bulb, or the electrical contacts.

(c) *Locks on charging terminals.* Lamps shall be equipped with a magnetic or other equally effective lock at the battery, the headpiece, or the cord assembly to prevent unauthorized access to live charging terminals.

(d) *Protection of battery terminals.* The battery covers of lamps that are recharged through the cord shall be so constructed and assembled as to prevent unauthorized access to the battery terminals.

(e) *Battery current restricted.* The amount of current flow between the conductors of the cord, if short-circuited just outside of the battery casing or cord armor, shall be limited by the design of

* The minimum allowable angle of 120 degrees will be used in determining the mean candlepower of the beam.

the battery or by a fuse to such a value⁴ as will not produce sparks that will ignite an explosive mixture of methane and air.

(f) It shall not be possible to obtain a difference of potential between any two accessible points of the cap lamp when assembled for use.

§ 19.8 Protection against bodily hazard.

This hazard is chiefly due to the possible burning of the wearer by electrolyte spilled from the battery. MESA therefore requires that:

(a) *Spilling of electrolyte.* The lamp shall be so designed and constructed that, when properly filled, the battery will neither leak nor spill electrolyte under actual service conditions. Lamps passing a laboratory spilling test will be considered satisfactory in this respect, contingent upon satisfactory performance in service.

(b) *Corrosion of battery container.* The material of which the container is made shall resist corrosion under conditions of use.

§ 19.9 Performance.

In addition to the general design and the safety features, MESA considers that a lamp of permissible type should meet certain minimum requirements with respect to performance, as follows:

(a) *Time of burning and candlepower.* Permissible electric cap lamps shall burn for at least 10 consecutive hours on one charge of the battery and shall give during that period a mean candlepower of light beam of not less than 1.

(b) *Bulb life.* The average life of the bulbs shall be not less than 200 hours, and at least 92 percent of the bulbs shall have a life of 150 hours. The life of a bulb is the number of hours its main filament will burn in the cap lamp or its equivalent.

The life of a bulb having main filaments in parallel is considered ended when the first filament ceases to burn; the life of a bulb having independent main filament is considered ended when the last filament ceases to burn.

⁴The following maximum short-circuit current values may be used as a guide in the design of cap lamp batteries: 100 amperes for a 4-volt battery; 75 amperes for a 6-volt battery; 50 amperes for an 8-volt battery.

(c) *Bulb uniformity.* (1) The bulbs submitted shall meet the following minimum requirements for variation in current consumption and candlepower:

(2) The current consumption of at least 94 percent of the bulbs shall not exceed the average current by more than 6 percent. The candlepower (s. cp.) of at least 90 percent of the bulbs shall not fall short of the average candlepower by more than 30 percent.

(d) *Corrosion of contacts.* Battery terminals and leads therefrom, as well as the battery gas vents, shall be designed to minimize corrosion of the electrical contacts.

§ 19.10 Material required for MESA records.

In order that MESA may know exactly what it has tested and approved, detailed records are kept covering each investigation. These include drawings and actual equipment, as follows:

(a) *Drawings.* The original drawings submitted with the application for the tests and the final drawings, which the manufacturer must submit to MESA before the approval is granted, to show the details of the lamp as approved. These drawings are used to identify the lamp in the approval and as a means of checking the future commercial product of the manufacturer.

(b) *Actual equipment.* (1) If MESA so desires, parts of the lamps which are used in the tests will be retained as a permanent record of the investigation and of the lamps submitted.

(2) If the lamp is approved, MESA will require the manufacturer, as soon as his first manufactured lamps are available, to submit one complete lamp, bearing the approval plate, as a record of his commercial product.

§ 19.11 How approvals are granted.

(a) All approvals are granted by official letter from MESA. A lamp will be approved under this part only when the testing engineers judge that the lamp has met the requirements of the part and MESA's records concerning the lamp are complete, including drawings from the manufacturer that show the lamp as it is to be commercially made. No verbal reports of MESA's decisions, concerning the investigation will be given, and no informal approvals will be granted.

(b) As soon as the manufacturer has received the formal approval he shall be free to advertise his lamps as permissible. [Sched. 6D, 4 FR 4003, Sept. 21, 1939, as amended by Supp. 1, 19 FR 2718, Apr. 23, 1955]

§ 19.12 Wording, purpose, and use of approval plate.

(a) *Approval plate.* The manufacturer shall attach, stamp, or mold an approval plate on the battery container of each permissible lamp. The plate shall bear the emblem of the Mining Enforcement and Safety Administration and be inscribed as follows: "Permissible Electric Cap Lamp. Approval No. _____ issued to the _____ Company." When deemed necessary, an appropriate caution statement shall be added. The size and position of the approval plate shall be satisfactory to MESA.

(b) *Purpose of approval plate.* The approval plate is a label which identifies the lamp so that anyone can tell at a glance whether or not the lamp is of the permissible type. By it, the manufacturer can point out that his lamp complies with specifications of MESA and that it has been judged as suitable for use in gassy mines.

(c) *Use of approval plate.* Permission to place MESA's approval plate on his lamp obligates the manufacturer to maintain the quality of his product and to see that each lamp is constructed according to the drawings which have been accepted by MESA for this lamp and which are in MESA's files. Lamps exhibiting changes in design which have not been approved are not permissible lamps and must not bear MESA's approval plate.

(d) *Withdrawal of approval.* MESA reserves the right to rescind, for cause, at any time any approval granted under this part.

§ 19.13 Instructions for handling future changes in lamp design.

All approvals are granted with the understanding that the manufacturer will make his lamp according to the drawings which he has submitted to MESA and which have been considered and included in the approval. Therefore, when he desires to make any change in the design of the lamp, he should first

of all obtain MESA's approval of the change. The procedure is as follows:

(a) The manufacturer shall write to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213, requesting an extension of his original approval and stating the change or changes desired. With this letter he should submit a revised drawing or drawings showing the changes in detail, and one of each of changed lamp parts.

(b) MESA will consider the application and inspect the drawings and parts to determine whether it will be necessary to make any tests.

(c) If no tests are necessary, the applicant will be advised of the approval or disapproval of the change by letter from MESA.

(d) If tests are judged necessary, the applicant will be advised of the material that will be required and of the necessary deposit to cover the fee for the test. [Sched. 6D, 4 F.R. 4008, Sept. 21, 1939, as amended by Supp. 1, 20 F.R. 2718, Apr. 23, 1955]

PART 20—ELECTRIC MINE LAMPS OTHER THAN STANDARD CAP LAMPS

Sec.

- 20.0 Compliance with the requirements necessary for obtaining approval.
- 20.1 Purpose.
- 20.2 Definitions.
- 20.3 Applications.
- 20.4 Fees.
- 20.5 Conditions governing investigations.
- 20.6 General requirements.
- 20.7 Specific requirements.
- 20.8 Class 1 lamps.
- 20.9 Class 2 lamps.
- 20.10 Tests (class 1 and 2 lamps).
- 20.11 Material required for MESA records.
- 20.12 How approvals are granted.
- 20.13 Approval plate.
- 20.14 Instructions for handling future changes in lamp design.

AUTHORITY: The provisions of this Part 20 issued under secs. 2, 3, 5, 36 Stat. 370, as amended, sec. 212, 66 Stat. 709; 30 U.S.C. 3, 5, 7, 482.

SOURCE: The provisions of this Part 20 contained in Schedule 10C, May 17, 1938, as amended at 5 F.R. 3467, Aug. 30, 1940, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 39 FR 24000, June 28, 1974.

§ 20.0 Compliance with the requirements necessary for obtaining approval.

To receive approval of MESA for any electric mine lamps other than standard cap lamps a manufacturer must comply with the requirements specified in this part.

§ 20.1 Purpose.

(a) The purpose of the investigations made under this part is to aid in the development and use of electric lamps, other than standard cap lamps, that may be used in mines, especially in mines that may contain dangerous proportions of methane.

(b) This part supersedes Schedule 10B, issued under date of June 1, 1932, and Schedule 11A, issued under date of January 13, 1936, and goes into effect May 17, 1938.

(c) Electric lamps and flashlights that meet the requirements set forth in this part will be termed "permissible" by MESA, and if actively marketed will be listed as such in publications relating to permissible equipment, in order that State mine inspection departments, compensation bureaus, mine operators, miners, and others interested in safety equipment for mines may have information in regard to electric lamps and flashlights approved by MESA.

§ 20.2 Definitions.

(a) *Adequate.* Appropriate and sufficient as determined by mutual agreement between the manufacturer and MESA.

(b) *Approval.* Official notification in writing from MESA to a responsible organization, stating that upon investigation its lamp has been adjudged satisfactory under the requirements of this part.

(c) *Explosion-proof compartment.* An enclosure that withstands internal explosions of methane-air mixtures without damage to itself or discharge of flame and without ignition of surrounding explosive methane-air mixtures.

(d) *Permissible.* Completely assembled and conforming in every respect with the design formally approved by MESA under this part. (Approvals under this part are given only to equipment for use in gassy and dusty mines.)

[Sched. 10C, May 17, 1938, as amended by Supp. 1, 20 F.R. 2718, Apr. 23, 1955]

§ 20.3 Applications.

Before MESA will undertake the active investigation leading to approval of any lamp, the manufacturer shall make application by letter for an investigation of his lamp. This application in duplicate, accompanied by a check, bank draft, or money order, payable to the U.S. Mining Enforcement and Safety Administration, to cover all the necessary fees, shall be sent to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213, together with the required drawings, one complete lamp, and instructions for its operation.

[Supp. 1, 20 F.R. 2718, Apr. 23, 1955]

§ 20.4 Fees.

| | |
|--|------|
| (a) Detailed inspection ¹ ----- | \$60 |
| (b) Safety tests in gas ¹ ----- | 90 |
| (c) Battery sparking ² ----- | 105 |
| (d) Battery spilling ³ ----- | 70 |
| (e) Dropping ¹ ----- | 80 |
| (f) Bumping ⁴ ----- | 100 |
| (g) Explosion tests ⁵ ----- | 70 |
| (h) Final examination and recording of drawings and specifications requisite to issuing an approval----- | 110 |
| (i) Examining and recording drawings and specifications requisite to issuing an extension of approval----- | 70 |
| (j) Tests to assist an applicant in evaluating equipment intended for certification may be made at the discretion of MESA. Written requests for such tests shall be directed to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213. A deposit of \$200 shall be paid in advance when such tests have been authorized. The fees charged shall be in amounts proportionate to the work performed based on normal charges. Any surplus will be refunded at the completion of the work, or applied to future work, as directed by the applicant. | |

¹ Applies to all lamps.

² Applies only if cord is involved.

³ Applies only to storage-battery lamps.

⁴ Applies only to trip lamps.

⁵ Applies only to units in explosion-proof housings.

[Sched. 10C, 30 FR 3755, Mar. 23, 1965]

§ 20.5 Conditions governing investigations.

(a) One complete lamp, with assembly and detail drawings that show the con-

struction of the lamp and the materials of which it is made, should be submitted at the time the application for investigation is made. This material should be sent prepaid to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213.

(b) When the lamp has been inspected by MESA, the applicant will be notified as to the amount of material that will be required for the test. He will also be notified of the date on which the tests will start and will be given an opportunity to witness the tests.

(c) *Observers at formal investigations and demonstrations.* No one shall be present during any part of the formal investigation conducted by MESA which leads to approval for permissibility except the necessary Government personnel, representatives of the applicant, and such other persons as may be mutually agreed upon by the applicant and MESA. Upon granting approval for permissibility, MESA will announce that such approval has been granted to the device and may thereafter conduct, from time to time in its discretion, public demonstrations of the tests conducted on the approved device. Those who attend any part of the investigation, or any public demonstration, shall be present solely as observers; the conduct of the investigation and of any public demonstration shall be controlled by MESA. Results of chemical analyses of material and all information contained of material and all information contained in the drawings, specifications, and instructions shall be deemed confidential and their disclosure will be appropriately safeguarded by MESA.

(d) Permissibility tests will not be made unless the lamp is complete and in a form that can be marketed.

(e) The results of the tests shall be regarded as confidential by all present at the tests and shall not be made public in any way prior to the formal approval of the lamp by MESA.

(f) No verbal report of approval or disapproval will be made to the applicant. Approval will be made only in writing by MESA. The applicant shall not be free to advertise the lamp as being permissible, or as having passed the tests, prior to receipt of formal notice of approval.

[Sched. 10C, May 17, 1938, as amended by Supp. 1, 20 FR 2719, Apr. 23, 1955]

§ 20.6 General requirements.

(a) The lamps shall be durable in construction, practical in operation, and suitable for the service for which they are designed and approved.

(b) The intensity of light, distribution of light, and battery capacity shall be adequate for the use for which the lamp is intended.

(c) Battery terminals and leads therefrom, as well as the battery gas vents, shall be designed to minimize corrosion of the electrical contacts.

(d) Bulbs and other replacement parts of the lamps shall be adequately marked as a means of identification.

§ 20.7 Specific requirements.

Two general classes of electric lamps are recognized in these requirements, namely: Class 1, those that are self-contained and easily carried by hand, and class 2, those that may or may not be self-contained and not so readily portable as the first class.

(a) *Class 1.* Class 1 includes hand lamps, signal lamps, inspection lamps, flashlights, and animal lamps which are operated by small storage batteries or dry cells.

(b) *Class 2.* Class 2 includes lamps such as the pneumatic-electric types and large battery lamps.

§ 20.8 Class 1 lamps.

(a) *Protection against explosion hazards.* Unless properly designed, class 1 lamps present two sources of probable explosion hazards: Ignition of an explosive atmosphere by the heated filament of the bulb in case the bulb glass is accidentally broken, and ignition by electric sparks or arcs from the battery or connections thereto. MESA therefore, requires the following safeguards:

(1) *Safety device.* The lighting unit shall be provided with a safety device which shall prevent the ignition of explosive mixtures of methane and air by the heated filament if the bulb glass surrounding the filament is broken.

(2) *Safety device (protection).* The design of the safety device and the housing which protects it shall be such that the action of the safety device is positive; yet the lamp shall not be too readily extinguished during normal service by the unnecessary operation of the device.

(3) *Locks or seals.* For lamps other than flashlights, all parts, such as bulb housing and battery container, through which access may be had to live termi-

nals or contacts shall be adequately sealed or equipped with magnetic or other equally reliable locks to prevent opening by unauthorized persons. For flashlights, provision shall be made for sealing the battery container.

(4) *Battery current restricted.* Unless all current-carrying parts including conductors, are adequately covered and protected by the sealed or locked compartments, the maximum possible current flow through that part shall be limited by battery design, or by an enclosed-type fuse inside the sealed or locked container, to values that will not produce sparks or arcs sufficient to ignite an explosive mixture of methane and air.

(b) *Protection against bodily hazard.* This hazard is chiefly due to the possible burning of the user by electrolyte spilled from the battery. MESA, therefore, requires that:

(1) *Spilling of electrolyte.* The lamp shall be so designed and constructed that when properly filled the battery will neither leak nor spill electrolyte under conditions of normal use. Lamps passing a laboratory spilling test will be considered satisfactory in this respect, contingent upon satisfactory performance in service.

(2) *Corrosion of battery container.* The material of which the container is made shall resist corrosion under conditions of normal use.

§ 20.9 Class 2 lamps.

(a) *Safety.* (1) Unless special features of the lamp prevent ignition of explosive mixtures of methane and air by the broken bulb or other igniting sources within the lamp, the bulb and all spark-producing parts must be enclosed in explosion-proof compartments.

(2) Explosion-proof compartments will be tested while filled and surrounded with explosive mixtures of Pittsburgh natural gas¹ and air. A sufficient number of tests of each compartment will be made to prove that there is no danger of ignition of the mixture surrounding the lamp by explosions within the compartment. The lamp will not pass the above tests, even though the surrounding explosive mixtures are not ignited, if external flame is observed, if excessive pressures are developed, or if excessive

¹ Investigation has shown that for practical purposes Pittsburgh natural gas (containing a high percentage of methane) is a satisfactory substitute for pure methane.

distortion of any part of the compartment takes place.

(3) Glass-enclosed parts of such compartments must be guarded and be of extra-heavy glass to withstand pick blows, and be adequately protected by shrouds or by an automatic cut-out that opens the lamp circuit if the enclosure is broken.

(4) When an explosion-proof enclosure consists of two or more parts that are held together securely by bolts or some suitable means to permit assembly, the flanges comprising the joints between parts shall have surfaces with metal-to-metal contact, except enclosures requiring glass, in which case glass-to-metal joints are permitted. Gaskets, if adequate, may be used to obtain a firm seat for the glass but not elsewhere. Rubber, putty, and plaster of paris are not acceptable as material for gaskets. For enclosures having an unoccupied volume (air space) of more than 60 cubic inches the width of the joint measured along the shortest flame path from the inside to the outside of the enclosure shall not be less than 1 inch. When the unoccupied volume (air space) is less than 60 cubic inches, this path shall not be less than three-fourths inch.

(b) *Locks and seals (lighting attachment)*. Explosion-proof compartments shall be equipped with seals or locks that prevent unauthorized and unsafe opening of the compartments in a mine.

(c) *Locks or seals (battery)*. The battery shall be enclosed in a locked or sealed container that will prevent exposure of live terminals.

(d) *Temperature of lamp*. The temperature of the lamp under conditions of use shall not be such that a person may be burned in handling it.

(e) *Cable and connection*. (1) The cable or cord connecting the lamp to its battery shall be of high-grade design and materials, comparable to the specially recommended trailing cables as listed by MESA, and shall be not more than 15 feet in length.

(2) The cable (or cord) shall be adequately protected at the battery end by a fuse in the locked battery box or housing. The cable (or cord) and the fuse shall be considered parts of the lamp, and specifications for them shall be submitted by the lamp manufacturer.

(3) The method of terminating the cable (or cord) at the lamp and at the battery housing shall be adequate, but

in no case shall the cable or cord be detachable.

MESA reserves the right to make minor changes in the requirements outlined in subparagraphs (1), (2), and (3) of this paragraph (No. 9, class 2 lamps), as experience and service prove to be necessary in the interests of safety.

§ 20.10 Tests (class 1 and 2 lamps).

Such tests will be made as are necessary to prove the adequacy of a lamp or any of its parts in fulfilling the purposes for which it was designed. These tests include the following:

(a) Safety tests, including tests of safety devices, electrical contacts, and explosion-proof features.

(b) Photometric tests.

(c) Tests to demonstrate adequacy of mechanical strength.

(d) Tests of nonspilling features (storage-battery lamps of class 1).

(e) Temperature tests.

§ 20.11 Material required for MESA records.

In order that MESA may know exactly what it has tested and approved, detailed records are kept covering each investigation. These include drawings and actual equipment, as follows:

(a) *Drawings*. The original drawings submitted with the application for the tests and the final drawings which the manufacturer must submit to MESA before approval is granted, to show the details of the lamp as approved, are retained. These drawings are used to identify the lamp and its parts in the approval and as a means of checking the future commercial product of the manufacturer.

(b) *Equipment*. (1) If MESA so desires, parts of the lamps which are used in the tests will be retained as a permanent record of the investigation and of the lamps submitted.

(2) If the lamp is approved, MESA will require the manufacturer, as soon as his first manufactured lamps are available, to submit one complete lamp, with the approval plate attached, as a record of his commercial product.

§ 20.12 How approvals are granted.

(a) All approvals are granted by official letter from MESA. A lamp will be approved under this part only when the testing engineers judge that the lamp has met the requirements of this part and after MESA's records concerning the lamp are complete, in-

cluding manufacturer's drawings that show the lamp as it is to be made commercially. No verbal reports of MESA's decision concerning the investigation will be given, and no informal approvals will be granted.

(b) As soon as the manufacturer has received the formal approval he shall be free to advertise his lamp as permissible. [Sched. 10C, May 17, 1938, as amended by Supp. 1, 20 F.R. 2719, Apr. 23, 1955]

§ 20.13 Approval plate.

The manufacturer shall attach, stamp, or mold an approval plate on the battery container or housing of each permissible lamp. The plate shall bear the emblem of the Mining Enforcement and Safety Administration, and be inscribed as follows: "Permissible ----- Lamp. Approval No. ----- issued to the ----- Company." When deemed necessary, an appropriate caution statement shall be added. The size, material, and position of the approval plate shall be satisfactory to MESA.

(a) *Purpose of approval plate.* The approval plate is a label which identifies the lamp so that anyone can tell at a glance whether the lamp is of the permissible type or not. By it the manufacturer can point out that his lamp complies with specifications of MESA and that it has been adjudged safe for use in gassy and dusty mines.

(b) *Use of approval plate.* Permission to place MESA's approval plate on his lamp obligates the manufacturer to maintain the quality of his product and to see that each lamp is constructed according to the drawings which have been accepted by MESA for this lamp and which are in the MESA files. Lamps exhibiting changes in design which have not been approved are not permissible lamps and must not bear MESA's approval plate.

(c) *Withdrawal of approval.* MESA reserves the right to rescind for cause at any time any approval granted under this part.

§ 20.14 Instructions for handling future changes in lamp design.

All approvals are granted with the understanding that the manufacturer will make his lamp according to the drawings which he has submitted to MESA and which have been considered and included in the approval. Therefore, when he desires to make any change in the de-

sign of the lamp, he should first of all obtain an extension of the original approval to cover the change. The procedure is as follows:

(a) The manufacturer shall write to the Central Experiment Station, Bureau of Mines, 4800 Forbes Street, Pittsburgh 13, Pa., requesting an extension of his original approval and describing the change or changes proposed. With this letter he should submit a revised drawing or drawings showing the changes in detail, and one of each of the changed lamp parts.

(b) MESA will consider the application and inspect the drawings and parts to determine whether it will be necessary to make any tests.

(c) If no tests are necessary, the applicant will be advised of the acceptance or rejection of the proposed change by letter from MESA.

(d) If tests are judged necessary, the applicant will be advised of the material that will be required and of the necessary deposit to cover the fee for the test.

[Sched. 10C, May 17, 1938, as amended by Supp. 1, 20 F.R. 2719, Apr. 23, 1955]

PART 21—FLAME SAFETY LAMPS

- Sec.
- 21.0 Compliance with the requirements necessary for obtaining approval.
- 21.1 Purpose.
- 21.2 Definitions.
- 21.3 Fees.
- 21.4 Applications.
- 21.5 Conditions governing investigations.
- 21.6 General requirements.
- 21.7 Material required for MESA records.
- 21.8 How approvals are granted.
- 21.9 Approval plate.
- 21.10 Instructions for handling future changes in lamp design.

AUTHORITY: The provisions of this Part 21 issued under secs. 2, 3, 5, 36 Stat. 370, as amended, sec. 212, 66 Stat. 709; 30 U.S.C. 3, 5, 7, 482.

SOURCE: The provisions of this Part 21 contained in Schedule 7C, Aug. 30, 1935, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 39 FR 24000, June 28, 1974.

§ 21.0 Compliance with the requirements necessary for obtaining approval.

To receive approval of MESA for any flame safety lamps a manufacturer must comply with the requirements specified in this part.

§ 21.1 Purpose.

(a) The purpose of investigations under this part is to make available flame lamps that may be safely used for detecting the presence of methane and deficiency of oxygen in mine atmospheres. Lists of such lamps will be published from time to time in order that State mine-inspection departments, compensation bureaus, mine operators, miners, and others interested in safe equipment for the mines may have information regarding permissible flame safety lamps. This part supersedes Schedule 7B, issued September 19, 1922, and goes into effect August 30, 1935.

(b) Any flame safety lamp that meets the requirements of this part will be termed permissible by MESA and if actively marketed will be listed as such in publications relating to permissible mining equipment.

§ 21.2 Definitions.

(a) *Permissible*. Completely assembled and conforming in every respect with the design formally approved by MESA under this part. (Approvals under this part are given only to equipment for use in gassy and dusty mines.)

(b) *Adequate*. Adequate means appropriate and sufficient as determined by mutual agreement between the manufacturer and MESA.

[Sched. 7C, Aug. 30, 1935, as amended by Supp. 1, 20 F.R. 2961, May 3, 1955]

§ 21.3 Fees.

| | |
|--|-------|
| (a) Detailed inspection..... | \$105 |
| (b) Mechanical tests of complete lamp: | |
| 1. Dropping test..... | 30 |
| 2. Impact test with 5# weight... | 35 |
| 3. Tension test with 10# weight... | 35 |
| 4. Bonnet test (pendulum impact)..... | 35 |
| 5. Temperature of external parts..... | 65 |
| (c) Mechanical tests of glasses: | |
| 1. Impact test with 1# weight... | 35 |
| 2. Temperature test..... | 45 |
| (d) Safety tests—moving and still mixtures | 155 |
| (e) Safety test—igniter..... | 65 |
| (f) Time of burning..... | 35 |
| (g) Detection of methane and deficiency of oxygen..... | 70 |
| (h) Final examination and recording of drawings and specifications requisite to issuing an approval..... | 110 |
| (i) Examining and recording drawings and specifications requisite to issuing an extension of approval..... | 70 |

(j) Tests to assist an applicant in evaluating equipment intended for certification may be made at the discretion of MESA. Written requests for such tests shall be directed to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213. A deposit of \$200 shall be paid in advance when such tests have been authorized. The fees charged shall be in amounts proportionate to the work performed based on normal charges. Any surplus will be refunded at the completion of the work, or applied to future work, as directed by the applicant.

[Sched. 7C, 30 F.R. 3755, Mar. 23, 1965]

§ 21.4 Applications.

Before MESA will undertake the active investigation leading to approval of any lamp, the manufacturer shall make application by letter for an investigation of his lamp. This application in duplicate, accompanied by a check, bank draft, or money order, payable to the U.S. Mining Enforcement and Safety Administration, to cover all the necessary fees, shall be sent to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213, together with the required drawings, one complete lamp, and instructions for its operation.

[Supp. 1, 20 F. R. 2961, May 3, 1955]

§ 21.5 Conditions governing investigations.

(a) One complete lamp, with drawings that show the construction of the lamp and the material of which it is made, together with a set of operating instructions, should be forwarded prepaid to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213, at the time the application for tests is made.

(b) When these have been inspected by MESA the applicant will be notified as to the amount of material that will be required for the tests. The applicant will be notified also of the date on which the tests will be started and will be given an opportunity to witness the tests.

(c) *Observers at formal investigations and demonstrations*. No one shall be present during any part of the formal investigation conducted by MESA which leads to approval for permissibility except the necessary Government

personnel, representatives of the applicant, and such other persons as may be mutually agreed upon by the applicant and MESA. Upon granting approval for permissibility, MESA will announce that such approval has been granted to the device and may thereafter conduct, from time to time in its discretion, public demonstrations of the tests conducted on the approved device. Those who attend any part of the investigation, or any public demonstration, shall be present solely as observers; the conduct of the investigation and of any public demonstration shall be controlled by MESA. Results of chemical analyses of material and all information contained in the drawings, specifications, and instructions shall be deemed confidential and their disclosure will be appropriately safeguarded by MESA.

[Sched. 7C, Aug. 30, 1935, as amended by Supp. 1, 20 F.R. 2961, May 3, 1955]

§ 21.6 General requirements.

(a) *Safety in gaseous atmospheres.*

(1) Lamps shall be so constructed that they will not cause external ignitions when tested in gassy or dusty atmospheres, such as may be found in coal mines.

(2) Special tests will be made to determine the safety of the igniter device as follows:

(i) To determine whether external ignition is possible when the igniter is operated within the lamp in still mixtures of Pittsburgh natural gas and air.

(ii) To determine whether the residue left in the lamp after working the igniter device is a source of danger in the subsequent use of the lamp.

(iii) To determine the nature of the materials of the sparking material.

(b) *Construction involving safety, operation, and maintenance.* Lamps will be examined with special reference to their mechanical construction, strength, size, and weight, the replacement of parts, the ease of inspection, and the attention required to maintain proper operation. The construction shall be such that the omission or incorrect placing of any part when assembling the lamp may be readily noticed. Provision shall be made for the protection of glass chimneys against breakage by expansion or by shock.

(1) *Lock.* Lamps shall be provided with a magnetic lock that is adequate to prevent the loosening or removal, from

the locked lamp, of any part vital to safety.

(2) *Gauzes.* If gauzes are used they shall be adequate for the safety required. Adequacy will be determined by tests in moving and still mixtures of Pittsburgh natural gas and air, and by inspection of the gauzes relative to the following:

(i) The material of which the gauzes are made.

(ii) The gauze mesh.

(iii) The fabrication of the gauzes, particularly as to uniformity and distortion at seams.

(iv) The relative dimensions of inner and outer gauzes.

(3) *Glasses.* The adequacy of the glasses will be based upon the following:

(i) *The quality and form of the glass.* The glasses shall have smooth surfaces throughout and should be clear. Their ends should be parallel and at right angles to the axis of the glass.

(ii) *Resistance to breakage.* The glasses will be tested to show their resistance to mechanical blows, both alone and when assembled in the lamp, and to sudden temperature changes, such as being sprayed by water at a temperature 85° C. lower than that of the heated glasses.

(iii) *Identification.* The glasses shall be marked distinctly and permanently by a name or design, by which they are to be designated commercially.

(iv) *Protection of the glass against breakage.* Standards or other means used for protection of the glass should protect the glass from breakage except under a direct blow against the glass.

(4) *Bonnet.* (i) The lamp shall be equipped with a bonnet to shield the gauze from the direct action of air currents. The adequacy of the bonnet will be determined as follows:

(ii) The completely assembled lamp will be suspended as a pendulum, the point of suspension being 6 feet above the center of the bonnet. The lamp will be withdrawn 45 degrees from the vertical and allowed to swing freely against the edge of a rigid, flat steel bar one-fourth inch thick, the edge being vertically under the point of suspension. Inward deformation of the bonnet from its normal shape or position shall be not greater than 10 percent of the original outside diameter of the lamp bonnet. The lower openings of the bonnet shall not be materially distorted by this test.

(5) *Performance.* The lamp shall give the following performance:

(i) It shall give positive evidence of the presence of methane and of deficiency of oxygen in mine atmospheres, either through observation of the flame or by a suitable attachment, showing a definite indication in concentrations as low as 1 percent methane.

(ii) It shall have a free-burning, steady flame, sufficient fuel capacity to give 12 hours burning per filling with its normal flame, and a wick adjustment that is simple and dependable.

§ 21.7 Material required for MESA records.

In order that MESA may know exactly what it has tested and approved, detailed records are kept covering each investigation. These include drawings and actual equipment, as follows:

(a) *Drawings.* The original drawings submitted with the application for tests and the final drawings which the manufacturer must submit to MESA before the approval is granted, to show the details of the lamp as approved. These drawings are used to identify the lamp in the approval and as a means of checking the future commercial product of the manufacturer.

(b) *Actual equipment.* (1) If MESA so desires, parts of the lamps which are used in tests will be retained as a permanent record of the investigation and of the lamps submitted.

(2) If the lamp is approved, MESA will require the manufacturer, as soon as his first manufactured lamps are available, to submit one complete lamp, with the approval plate attached, as a record of his commercial product.

§ 21.8 How approvals are granted.

(a) All approvals are granted by official letter from MESA. A lamp will be approved under this part only when the testing engineers judge that the lamp has met the requirements of the schedule and MESA's records concerning the lamp are complete, including drawings from the manufacturer that show the lamp as it is to be made commercially. No verbal reports of MESA's decisions concerning the investigation will be given, and no informal approvals will be granted.

(b) As soon as the manufacturer has received the formal approval he shall be free to advertise his lamp as permissible. [Sched. 7C, Aug. 30, 1935, as amended by Supp. 1, 20 F. R. 2961, May 3, 1955]

§ 21.9 Approval plate.

The manufacturer shall attach, stamp, or mold an approval plate on each permissible lamp. The plate shall bear the emblem of the Mining Enforcement and Safety Administration, and be inscribed as follows: "Permissible Flame Safety Lamp. Approval No. ----- issued to the ----- Company." When deemed necessary, an appropriate caution statement shall be added. The size and position of the approval plate shall be satisfactory to MESA.

(a) *Purpose of approval plate.* The approval plate is a label which identifies the lamp so that anyone can tell at a glance whether the lamp is or is not of the permissible type. By it the manufacturer can point out that his lamps comply with specifications of MESA and that it has been adjudged safe for use in gassy mines.

(b) *Use of approval plate.* Permission to place MESA's approval plate on his lamp obligates the manufacturer to maintain the quality of his product and to see that each lamp is constructed according to the drawings which have been accepted by MESA for this lamp and which are in MESA's files. Lamps exhibiting changes in design which have not been approved are not permissible lamps and must not bear MESA's approval plate.

(c) *Withdrawal of approval.* MESA reserves the right to rescind for cause at any time any approval granted under this schedule.

§ 21.10 Instructions for handling future changes in lamp design.

All approvals are granted with the understanding that the manufacturer will make his lamp according to the drawings which he has submitted to MESA and which have been considered and included in the approval. Therefore, when he desires to make any change in the design of the lamp, he should first of all obtain MESA's approval of the change. The procedure is as follows:

(a) The manufacturer shall write to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213, requesting an extension of his original approval and stating the change or changes desired. With this letter he should submit a revised drawing or drawings showing the changes in detail and one of each of the changed lamp parts.

(b) MESA will consider the application and inspect the drawings and

parts to determine whether it will be necessary to make any tests.

(c) If no tests are necessary the applicant will be advised of the approval or disapproval of the change through the Administrator's office.

(d) If tests are judged necessary the applicant will be advised of the material that will be required and of the deposit necessary to cover the fee for the test. [Sched. 7C, Aug. 30, 1935, as amended by Supp. 1, 20 F.R. 2961, May 3, 1955]

PART 22—PORTABLE METHANE DETECTORS

- Sec. 22.0 Compliance with the requirements necessary for obtaining approval.
- 22.1 Purpose.
- 22.2 Definitions.
- 22.3 Fees.
- 22.4 Applications.
- 22.5 Conditions governing investigations.
- 22.6 General requirements.
- 22.7 Specific requirements.
- 22.8 Material required for MESA records.
- 22.9 How approvals are granted.
- 22.10 Approval plate.
- 22.11 Instructions on handling future changes in design.

AUTHORITY: The provisions of this Part 22 issued under secs. 2, 3, 5, 36 Stat. 370, as amended, sec. 212, 66 Stat. 709; 30 U.S.C. 3, 5, 7, 482.

SOURCE: The provisions of this Part 22 contained in Schedule 8C, Oct. 31, 1935, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 39 FR 24001, June 28, 1974.

§ 22.0 Compliance with the requirements necessary for obtaining approval.

To receive approval of MESA for any portable methane detectors a manufacturer must comply with the requirements specified in this part.

§ 22.1 Purpose.

(a) The purpose of investigations under this part is to provide portable methane detectors that may be safely used in mines. Lists of such detectors will be published from time to time in order that State mine-inspection departments, compensation bureaus, mine operators, miners, and others interested in safe equipment for mines may have information in regard to permissible methane detectors. This part supersedes Schedule 8B, issued under date of November 17, 1926, and goes into effect October 31, 1935.

(b) Any methane detector that meets the requirements set forth in this part will be termed permissible by MESA and if actively marketed will be listed as such in publications relating to permissible mining equipment.

§ 22.2 Definitions.

(a) *Methane detector.* A methane detector is a device that may be used to detect the presence of methane in a gassy mine.

(b) *Methane-indicating detector.* A methane-indicating detector is a device that will show, within certain limits of error, on an adequate scale, the percentage of methane in a gassy atmosphere.

(c) *Permissible.* Completely assembled and conforming in every respect with the design formally approved by MESA under this part. (Approvals under this part are given only to equipment for use in gassy and dusty mines.)

[Sched. 8C, Oct. 31, 1955, as amended by Supp. 1, 20 F. R. 2575, Apr. 19, 1955]

§ 22.3 Fees.

| | |
|--|-------|
| (a) Detailed inspection..... | \$105 |
| (b) Safety-intrinsically safe circuits.. | 85 |
| (c) Battery spilling..... | 70 |
| (d) Battery dropping..... | 30 |
| (e) Accuracy..... | 100 |
| (f) Life tests of replaceable components..... | 100 |
| (g) Field tests..... | 155 |
| (h) Final examination and recording of drawings and specifications requisite to issuing an approval | 110 |
| (i) Examining and recording drawings and specifications requisite to issuing an extension of approval | 70 |
| (j) Tests to assist an applicant in evaluating equipment intended for certification may be made at the discretion of MESA. Written requests for such tests shall be directed to Approval and Testing, Pittsburgh Technical Support Center, 4900 Forbes Avenue, Pittsburgh, Pa. 15213. A deposit of \$200 shall be paid in advance when such tests have been authorized. The fees charged shall be in amounts proportionate to the work performed based on normal charges. Any surplus will be refunded at the completion of the work, or applied to future work, as directed by the applicant. | |

[Sched. 8C, 30 F.R. 3755, Mar. 23, 1965]

§ 22.4 Applications.

Before MESA will undertake the active investigation leading to approval of any

methane detector, the manufacturer shall make application by letter for an investigation leading to approval of his detector. This application in duplicate, accompanied by a check, bank draft, or money order, payable to the U.S. Mining Enforcement and Safety Administration, to cover all the necessary fees, shall be sent to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa., 15213, together with the required drawings, one complete detector, and instructions for its operation.

[Supp. 1, 20 F. R. 2575, Apr. 19, 1955]

§ 22.5 Conditions governing investigations.

(a) One complete detector, with assembly and detail drawings that show the construction of the device and the materials of which it is made, should be forwarded prepaid to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa., 15213, at the time the application for tests is made.

(b) When this has been inspected by MESA, the applicant will be notified as to the amount of material that will be required for the tests. The manufacturer will be notified of the date on which the tests will be started and will be given an opportunity to witness the tests.

(c) *Observers at formal investigations and demonstrations.* No one shall be present during any part of the formal investigation conducted by MESA which leads to approval for permissibility except the necessary Government personnel, representatives of the applicant, and such other persons as may be mutually agreed upon by the applicant and MESA. Upon granting approval for permissibility, MESA will announce that such approval has been granted to the device and may thereafter conduct, from time to time in its discretion, public demonstrations of the tests conducted on the approved device. Those who attend any part of the investigation, or any public demonstration, shall be present solely as observers; the conduct of the investigation and of any public demonstration shall be controlled by MESA. Results of chemical analyses of material and all information contained in the drawings, specifications, and instructions shall be deemed confidential

and their disclosure will be appropriately safeguarded by MESA.

[Sched. 8C, Oct. 31, 1935, as amended by Supp. 1, 20 F. R. 2575, Apr. 19, 1955]

§ 22.6 General requirements.

Methane detectors approved under this part shall be portable. They shall be durable in construction, practical in operation, and suitable for service conditions underground. They shall offer no probable explosion hazard if used in gaseous mine atmospheres nor any bodily hazard, such as spilling of battery electrolyte. They shall exhibit under laboratory test conditions various requirements of minimum performance that are specified in this part.

§ 22.7 Specific requirements.

(a) *Design.* In the determination of adequacy of design, the following points will be considered: (1) Materials used, (2) construction, (3) accuracy, (4) size and shape, (5) range of detection (or indication), (6) life of the active parts, and (7) attention required. The suitability of the materials and the construction shall be determined by preliminary inspection, by dropping tests, by laboratory and field tests in gas and air mixtures, and by the general behavior of the equipment during the investigation.

(b) *Safety against explosion hazard—*
(1) *Detectors.* Detectors shall be constructed so that they will not cause external ignitions when used in gaseous mine atmospheres.

(2) *Seals or locks.* All parts through which external ignitions might result shall be covered and protected adequately. All covers shall be sealed adequately or equipped with magnetic or other equally reliable locks to prevent their being opened by unauthorized persons.

(3) *Glasses.* Glasses or glass windows shall be of good-quality glass and protected adequately against breakage. Unguarded windows may be considered adequate in this respect, provided they are of small diameter and are of reasonably thick glass.

(4) *Battery.* If the detector is equipped with a battery, it shall be of such design that it will not produce sparks that will ignite an explosive mixture of methane and air.

(5) *Detectors of the flame type.* Methane detectors of the flame type shall be subject to the requirements of the flame-lamp schedule then in force.

(c) *Safety against bodily hazard.* Bodily hazard with battery-type detectors is due chiefly to possible burning of the user by electrolyte that has spilled from the battery. MESA, therefore, requires that:

(1) *Spilling of electrolyte.* The battery shall be so designed and constructed that when properly filled it will not spill electrolyte under actual service conditions.

(2) *Corrosion of battery container.* The material of which the container is made shall resist corrosion under conditions of use.

(d) *Performance.* In addition to the general design and safety features, MESA considers that permissible types of methane detectors should meet certain minimum requirements with respect to their performance, as follows:

(1) *Detectors.* (i) When the detector is operated according to the manufacturer's instructions, it shall be possible to detect at least 1 percent methane in air, and increasing percentages up to 5 percent shall be shown by continuously increasing evidence.

(ii) The average number of determinations that may be made in approximately 2-percent methane mixtures without recharging a battery or replacing a chemical accessory shall not be less than 25, and the average number of such determinations that may be made without replacing any other part shall be not less than 100.

(2) *Indicating detectors.* Indicating detectors shall give indications of as low as 0.25 percent methane. Detectors having an upper scale limit of 2 percent may be approved, but it is recommended that the detector be designed to give indications of as high as 4 percent methane. The indications for these percentages shall be within the limits of error specified in the following table:

ALLOWABLE VARIATIONS IN SCALE READING

| Methane in mixtures | Minimum indication | Maximum indication |
|---------------------|--------------------|--------------------|
| Percent | Percent | Percent |
| 0.25 | 0.10 | 0.40 |
| .50 | .35 | .65 |
| 1.00 | .80 | 1.20 |
| 2.00 | 1.80 | 2.20 |
| 3.00 | 2.70 | 3.30 |
| 4.00 | 3.70 | 4.30 |

(1) Tests shall be made at several percentages within the range of the indicat-

ing detector and at temperatures between the limits of 50° and 70° F. by increments of 5°. Ten determinations shall be made at each percentage. Neither the average of the 10 readings nor more than 2 readings for each percentage shall exceed the limits of error given in the table.

(ii) The average number of determinations that may be made with an indicating detector without replacement of any part shall be not less than 30, and the average number that may be made without recharging the battery shall be not less than 15.

(iii) The scale shall not be subdivided into smaller divisions than the general accuracy of the indicating detector warrants.

(3) *Mechanical strength.* Detectors and indicating detectors shall be subjected to the following mechanical tests: Four of each of those parts or groups of assembled parts that are not normally strapped to the user shall be dropped 20 times on a wood floor from a height of 3 feet. Parts that are strapped to the user may be subjected to a jarring or bumping test to demonstrate adequate strength. The average number of times that any one of the detectors can be dropped before breakage or material distortion of essential parts shall be not less than 10.

(e) *Attachments for illumination.* If detectors are provided with attachments for illuminating purposes, such attachments shall be subject to the same requirements as those applying to that type of lamp under the lamp schedule then in force.

§ 22.8 Material required for MESA records.

In order that MESA may know exactly what it has tested and approved, it keeps detailed records covering each investigation. These records include drawings and actual equipment as follows:

(a) *Drawings.* The original drawings submitted with the application for the tests and the final drawings which the manufacturer must submit to MESA before the approval is granted to show the details of the detector as approved, are retained. These drawings are used to identify the detector in the approval and as a means of checking the future commercial product of the manufacturer.

(b) *Actual equipment.* If MESA so desires, parts of the detectors that are used in the tests will be retained as records of the equipment submitted. If the detector is approved, MESA will require the manufacturer to submit one of his detectors, with the approval plate attached, as a record of his commercial product.

§ 22.9 How approvals are granted.

All approvals are granted by official letter from MESA. A detector will be approved under this part only when the testing engineers have judged that it has met the requirements of the schedule and MESA's records are complete, including drawings from the manufacturer that show the detector as it is to be commercially made. No verbal reports of the investigation will be given and no informal approvals will be granted. As soon as the manufacturer has received the formal approval, he shall be free to advertise his detector as permissible.

[Sched. 8C, Oct. 31, 1935, as amended by Supp. 1, 20 F. R. 2575, Apr. 19, 1955]

§ 22.10 Approval plate.

(a) *Attachment to be made by manufacturers.* (1) Manufacturers shall attach, stamp, or mold an approval plate on each permissible methane detector. The plate shall bear the emblem of the Mining Enforcement and Safety Administration and be inscribed as follows:

Permissible Methane Detector (or Permissible Methane Indicating Detector) Approval No. _____ issued to the _____ Company.

(2) When deemed necessary, an appropriate caution statement shall be added. The size and position of the approval plate shall be satisfactory to MESA.

(b) *Purpose of approval plate.* The approval plate is a label that identifies the device so that anyone can tell at a glance whether it is of the permissible type or not. By the plate, the manufacturer can point out that his detector complies with MESA's requirements and that it has been approved for use in gassy mines.

(c) *Use of approval plate.* Permission to place MESA's approval plate on his detector obligates the manufacturer to maintain the quality of his product and to see that each detector is constructed according to the drawings that

have been accepted by MESA and are in MESA's files. Detectors exhibiting changes in design that have not been approved are not permissible and must not bear MESA's approval plate.

(d) *Withdrawal of approval.* MESA reserves the right to rescind for cause at any time any approval granted under this part.

§ 22.11 Instructions on handling future changes in design.

All approvals are granted with the understanding that the manufacturer will make his detector according to the drawings that he has submitted to MESA and that have been considered and included in the approval. Therefore, when he desires to make any changes in the design he should first of all obtain MESA's approval of the change. The procedure is as follows:

(a) The manufacturer should write to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa., 15213, requesting an extension of his original approval and stating the change or changes desired. With this request, he should submit a revised drawing or drawings showing changes in detail, together with one of each of the parts affected.

(b) MESA will consider the application and inspect the drawings and parts to determine whether it will be necessary to make any tests.

(c) If no tests are necessary, the applicant will be advised of the approval or disapproval of the change by letter from MESA.

(d) If tests are judged necessary, the applicant will be advised of the material that will be required and of the necessary deposit to cover the fee for the tests.

[Sched. 8C, Oct. 31, 1935, as amended by Supp. 1, 20 F. R. 2575, Apr. 19, 1955]

PART 23—TELEPHONES AND SIGNALING DEVICES

| | |
|------|--|
| Sec. | |
| 23.1 | Purpose. |
| 23.2 | Definitions. |
| 23.3 | Applications. |
| 23.4 | Fees. |
| 23.5 | Conditions governing investigations. |
| 23.6 | General requirements for approval. |
| 23.7 | Specific requirements for approval. |
| 23.8 | Inspection and tests. |
| 23.9 | Special requirements for complete devices. |

Sec.

- 23.10 Material required for MESA records.
- 23.11 How approvals are granted.
- 23.12 Wording, purpose, and use of approval plate.
- 23.13 Withdrawal of approval.
- 23.14 Instructions for handling future changes in design.

AUTHORITY: The provisions of this Part 23 issued under secs. 2, 3, 5, 36 Stat. 370, as amended, sec. 212, 66 Stat. 709; 30 U.S.C. 3, 5, 7, 482

SOURCE: The provisions of this Part 23 contained in Schedule 9B, 4 F.R. 1955, Apr. 11, 1939 unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 39 FR 24001, June 28, 1974.

§ 23.1 Purpose.

(a) The purpose of investigations under this part is to promote the development of telephones and signaling devices that may be used safely in mines, especially in coal mines that may have gassy or dust-laden atmospheres. This schedule supersedes Schedule 9A, issued under date of December 5, 1922, and becomes effective October 18, 1938.

(b) Telephones and signaling devices approved under the requirements of this part will be termed "permissible" by MESA, and if actively marketed will be listed as such in publications relating to permissible equipment, for the information of State mine inspection departments, compensation bureaus, mine operators, miners, and others interested in safety equipment for mines.

§ 23.2 Definitions.

(a) "Adequate" means appropriate and sufficient, as determined by mutual agreement of the manufacturer, operators, and MESA.

(b) "Approval" means official notification by letter, from MESA to a responsible organization, stating that the device under consideration has been judged to meet the requirements of this part.

(c) "Normal operation" means the performance by each part of the device of those functions for which the part was designed.

(d) "Permissible" as used in this part means completely assembled and conforming in every respect with the design formally approved by MESA under this part. (Approvals under this part are given only to equipment for use in gassy and dusty mines.)

(e) "Protected" means effectively covered, enclosed, or otherwise guarded by adequate covers.

(f) "Signaling device." As used in this part, a signaling device is one that gives visual or audible signals without connection to any power or lighting circuit. (Devices operated from such circuits will not be considered for approval.)

(g) "MESA" means the United States Department of the Interior, Mining Enforcement and Safety Administration. [Sched. 9B, 4 F.R. 1855, Apr. 11, 1939, as amended by Supp. 1, 20 F.R. 2975, May 4, 1955; 39 FR 24001, June 28, 1974]

§ 23.3 Applications.

Before MESA will undertake the active investigation leading to approval of any telephone or signaling service, the manufacturer shall make application by letter for an investigation leading to approval of his device. This application in duplicate, accompanied by a check, bank draft, or money order, payable to the U.S. Mining Enforcement and Safety Administration, to cover all the necessary fees, shall be sent to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213, together with the required drawings, one complete telephone or signaling device, and instructions for its operation.

[Supp. 1, 20 F.R. 2975, May 4, 1955]

§ 23.4 Fees.

| | |
|--|------|
| (a) Detailed inspection..... | \$60 |
| (b) Explosion tests (each compartment) | 70 |
| (c) Intrinsic safety..... | 85 |
| (d) Life tests of relaceable parts... | 100 |
| (e) Final examination and recording of drawings and specifications requisite to issuing an approval.. | 110 |
| (f) Examining and recording drawings and specifications requisite to issuing an extension of approval | 70 |
| (g) Tests to assist an applicant in evaluating equipment intended for certification may be made at the discretion of MESA. Written requests for such tests shall be directed to Approval and Testing, Pittsburgh Technical Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213. A deposit of \$200 shall be paid in advance when such tests have been authorized. The fees charged shall be in amounts proportionate to the work performed based on normal charges. Any surplus will | |

be refunded at the completion of the work, or applied to future work, as directed by the applicant.

[Sched. 9B, 30 F.R. 3755, Mar. 23, 1965]

§ 23.5 Conditions governing investigations.

(a) One complete device together with assembly and detail drawings that show its construction and the materials of which the parts are made, shall be submitted preferably at the time the application for test is made. These shall be sent prepaid to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213.

(b) After the device has been inspected by MESA, the applicant will be notified as to the amount of material that he will be required to supply for the tests and of the date on which testing will be started.

(c) *Observers at formal investigations and demonstrations.* No one shall be present during any part of the formal investigation conducted by MESA which leads to approval for permissibility except the necessary Government personnel, representatives of the applicant, and such other persons as may be mutually agreed upon by the applicant and MESA. Upon granting approval for permissibility, MESA will announce that such approval has been granted to the device and may thereafter conduct, from time to time in its discretion, public demonstrations of the tests conducted on the approved device. Those who attend any part of the investigation, or any public demonstration, shall be present solely as observers; the conduct of the investigation and of any public demonstration shall be controlled by MESA. Results of chemical analyses of material and all information contained in the drawings, specifications, and instructions shall be deemed confidential and their disclosure will be appropriately safeguarded by MESA.

(d) Formal tests will not be made unless the device has been completely developed and is in a form that can be marketed.

(e) The results of the tests shall be regarded as confidential by all present at the tests and shall not be made public in any way prior to the formal approval of the device by MESA.

(f) No verbal report of approval or disapproval will be made to the applicant. After MESA has considered the

results of the inspections and tests, a formal written report of the approval or disapproval will be made to the applicant by MESA. The applicant shall not advertise his device as being permissible or approved, or as having passed the tests, prior to receipt of the formal notice of approval.

[Sched. 9B, 4 F.R. 1555, Apr. 11, 1939, as amended by Supp. 1, 20 F.R. 2975, May 4, 1955]

§ 23.6 General requirements for approval.

Telephones and signaling devices shall be durable in construction, practical in operation, and suitable for conditions of underground service. They shall offer no probable explosion hazard under normal operation if use in gassy or dusty mine atmospheres.

§ 23.7 Specific requirements for approval.

(a) The circuits external to telephones and signal devices shall be intrinsically safe; that is, the electrical design and construction of telephones and signal devices shall be such that neither contact between wires comprising the external circuits nor contact of tools or other metal objects with external terminals and circuits will result in electrical sparks capable of igniting explosive methane-air mixtures (or such mixtures with coal dust in suspension) during normal operation of the telephones or signal devices.

(b) All parts which, during normal operation, are capable of producing sparks that might ignite explosive methane-air mixtures shall be enclosed in explosion-proof compartments. All openings in the casings of such compartments shall be adequately protected. It is desirable that openings be as few as possible. All joints in the casings of an explosion-proof compartment shall be metal-to-metal so designed as to have a width of contact, measured along the shortest path from the inside to the outside of the compartment, of not less than 1 inch if the unoccupied volume (air space) in the compartment is more than 60 cubic inches. For unoccupied volume of 60 cubic inches or less, a 3/8-inch width of contact will be acceptable.

(c) All bolts and screw holes shall be "blind" or bottomed if the omission of a bolt or screw would otherwise leave an opening into the compartment. An adequate lock or seal shall be provided

to prevent tampering and exposure of spark-producing parts by unauthorized persons.

(d) Battery cells shall be placed in an explosion-proof compartment or else in one that is locked or sealed, and the terminals and the connections thereto shall be so arranged and protected as to preclude meddling, tampering, or making other electrical connections with them.

(e) Manufacturers shall furnish adequate instructions for the installation and connection of telephones and signal devices in order that the safety of these devices and other circuits shall not be diminished by improper installation. MESA reserves the right to require the attachment of wiring diagrams to the cases of telephones and signal devices.

(f) If electric light bulbs are used in signaling devices, they shall be either equipped with effective safety devices, such as are required for permissible electric mine lamps,¹ or enclosed in explosion-proof compartments.

§ 23.8 Inspection and tests.

(a) A thorough inspection of the telephone or signaling device will be made to determine its adequacy and permissibility. Tests may be made to check the electrical characteristics and constants of the various parts, and determine the adequacy of the insulation and other parts of features of the device.

(b) In addition, compartments of explosion-proof design will be tested while filled and surrounded with explosive mixtures containing varying percentages of Pittsburgh natural gas² and air, the mixture within the compartment being ignited by a spark plug or other suitable means. For some of the tests bituminous-coal dust will be introduced into the compartment in addition to the explosive mixtures, and the effects will be noted. A sufficient number of tests will be made under the foregoing conditions to determine the ability of the compartment to retain flame without bursting. Even though the surrounding mixtures are not ignited, the compartment will not be considered as having passed the tests, if flames are discharged from any joint

¹In this case, the requirements of the current schedule for mine lamps will apply.

²Investigation has shown that for test purposes Pittsburgh natural gas (containing a high percentage of methane) is a satisfactory substitute for pure methane.

or opening; if excessive pressures are developed or if serious distortion of the compartment walls take place.

§ 23.9 Special requirements for complete devices.

Telephones and signaling devices will be considered nonpermissible if used under any of the followings conditions:

(a) Without the approval plate, mentioned hereafter.

(b) With unprotected openings in any of the explosion-proof compartments. This condition refers to any openings in these compartments, but especially to those equipped with removable covers.

(c) If not complete with all of the parts considered in the approval.

(d) If installed or connected otherwise than in accordance with the instructions furnished by the manufacturer.

(e) If modified in any manner not authorized by MESA.

§ 23.10 Material required for MESA records.

In order that MESA may know exactly what it has tested and approved, it keeps detailed records covering each investigation. These records include drawings and actual equipment as follows:

(a) *Drawings.* The original drawings submitted with the application for the tests and the final drawings which the manufacturer must submit to MESA before the approval is granted, to show the details of the device as approved. These drawings are used to identify the device in the approval and as a means of checking the future commercial product of the manufacturer.

(b) *Actual equipment.* If MESA so desires, parts of the devices that are used in the tests will be retained as records of the equipment submitted. If the device is approved, MESA reserves the right to require the manufacturer to submit one, with the approval plate attached and without cost to MESA, as a record of his commercial product.

§ 23.11 How approvals are granted.

All approvals are granted by official letter from MESA. A device will be approved under this part only when the testing engineers have judged that it has met the requirements of the part and MESA's records are complete, including drawings from the manufacturer that show the device as it is to be commer-

cially made. Individual parts of devices will not be approved. No verbal reports of the investigation will be given and no informal approvals will be granted. As soon as the manufacturer has received the formal approval, he shall be free to advertise his device as permissible.

[Sched. 9B, 4 F.R. 1555, Apr. 11, 1939, as amended by Supp. 1, 20 F.R. 2975, May 4, 1955]

§ 23.12 Wording, purpose, and use of approval plate.

(a) *Approval plate.* (1) Manufacturers shall attach, stamp, or mold an approval plate on each permissible device. The plate shall bear the emblem of the Mining Enforcement and Safety Administration and be inscribed as follows:

Permissible Telephone (or Permissible Signaling Device) Approval No. ----- Issued to the ----- Company.

(2) When deemed necessary, an appropriate caution statement shall be added. The size and position of the approval plate shall be satisfactory to MESA.

(b) *Purpose.* The approval plate is a label that identifies the device so that anyone can tell at a glance whether or not it is of the permissible type. By the plate, the manufacturer can point out that his device complies with MESA's requirements and that it has been approved for use in gassy or dusty mines.

(c) *Use.* Permission to place MESA's approval plate on his device obligates the manufacturer to maintain the quality of his product and to see that each device is constructed according to the drawings that have been accepted by MESA and are in MESA's files. Devices exhibiting changes in design that have not been authorized are not permissible and must not bear MESA's approval plate.

§ 23.13 Withdrawal of approval.

MESA reserves the right to rescind for cause at any time any approval granted under this part.

§ 23.14 Instructions for handling future changes in design.

All approvals are granted with the understanding that the manufacturer will make his device according to the drawings that he has submitted to MESA and that have been considered and included in the approval. Therefore, be-

fore making any changes in the design he shall obtain MESA's authorization of the change. The procedure is as follows:

(a) The manufacturer shall write to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213, requesting an extension of his original approval and stating the change or changes desired. With this request, he should submit a revised drawing or drawings showing the changes in detail, together with one of each of the parts affected.

(b) MESA will consider the application and inspect the drawings and parts to determine whether it will be necessary to make any tests.

(c) If no tests are necessary, and the change meets the requirements, the applicant will be officially advised by MESA that his original approval has been extended to include the change.

(d) If tests are judged necessary, the applicant will be advised of the material that will be required and of the necessary deposit to cover the fee for the tests. In this case extension of approval will be granted upon satisfactory completion of the tests and full compliance with the requirements.

[Sched. 9B, 4 F.R. 1555, Apr. 11, 1939, as amended by Supp. 1, 20 F.R. 2975, May 4, 1955]

PART 24—SINGLE-SHOT BLASTING UNITS

| | |
|------|--------------------------------------|
| Sec. | |
| 24.0 | Authorization and purpose. |
| 24.1 | Fees. |
| 24.2 | Applications. |
| 24.3 | Conditions governing investigations. |
| 24.4 | Requirements for approval. |
| 24.5 | Materials required for MESA records. |
| 24.6 | Approvals. |
| 24.7 | Approval plate. |
| 24.8 | Withdrawal of approval. |
| 24.9 | Future changes in design. |

AUTHORITY: The provisions of this Part 24 issued under secs. 2, 3, 5, 36 Stat. 370, as amended, sec. 212, 66 Stat. 709; 30 U.S.C. 3, 5, 7, 482.

SOURCE: The provisions of this Part 24 contained in Schedule 12D, 10 F.R. 14895, Dec. 11, 1945, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 39 FR 24001, June 23, 1974.

§ 24.0 Authorization and purpose.

(a) Investigations conducted under this part are authorized by the act of Congress (37 Stat. 681) approved February 25, 1913. This act, as amended June 30, 1932 (47 Stat. 410), contains the

following provisions in regard to fees charged for investigations by MESA:

For tests or investigations authorized by the Secretary of the Interior under the provisions of this act, as amended and supplemented, except those performed for the Government of the United States or State Governments within the United States, a fee sufficient in each case to compensate MESA for the entire cost of the services rendered shall be charged according to a schedule prepared by the Director of MESA and approved by the Secretary of the Interior, who shall prescribe rules and regulations under which such tests or investigations may be made. All moneys received from such sources shall be paid into the Treasury to the credit of miscellaneous receipts.

(b) The purpose of investigations under this part is to promote the development of safe types of single-shot blasting units that may be used in mines, especially in mines that may contain methane or inflammable dust in dangerous proportions. Lists of such units will be published from time to time so that State mine-inspection departments, compensation bureaus, mine operators, miners, and others interested in safe equipment for mines may have information regarding permissible blasting units. This part supersedes Schedule 12C issued under date of July 16, 1940 (30 CFR, 1943 Cum. Supp., Part 24), and goes into effect November 27, 1945.

(c) Any blasting unit that meets the requirements set forth in this part will be termed "permissible" by MESA.

(d) Definition of permissible. Completely assembled and conforming in every respect with the design formally approved by MESA under this part. (Approvals under this part are given only to equipment for use in gassy and dusty mines.)

(e) "MESA" means the United States Department of the Interior, Mining Enforcement and Safety Administration.

[Sched. 12D, 10 F.R. 14895, Dec. 11, 1945, as amended by Supp. 1, 20 F.R. 2719, Apr. 23, 1955; 39 FR 24001, June 28, 1974]

§ 24.1 Fees.

| | |
|--|------|
| (a) Detailed inspection..... | \$60 |
| (b) Intrinsic safety tests..... | 85 |
| (c) Life tests of replaceable parts or complete unit..... | 270 |
| (d) Discharge voltage test..... | 50 |
| (e) Firing capacity test..... | 80 |
| (f) Dropping test..... | 30 |
| (g) Final examination and recording of drawings and specifications requisite to issuing an approval..... | 110 |

(h) Examining and recording drawings and specifications requisite to issuing an extension of approval -----

70

(i) Tests to assist an applicant in evaluating equipment intended for certification may be made at the discretion of MESA. Written requests for such tests shall be directed to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213. A deposit of \$200 shall be paid in advance when such tests have been authorized. The fees charged shall be in amounts proportionate to the work performed based on normal charges. Any surplus will be refunded at the completion of the work, or applied to future work, as directed by the applicant.

[Sched. 12D, 30 F.R. 3755, Mar. 23, 1965]

§ 24.2 Applications.

Before MESA will undertake the active investigation leading to approval of any single-shot blasting unit, the manufacturer shall make application by letter for an investigation leading to approval of his unit. This application in duplicate, accompanied by a check, bank draft, or money order, payable to the U.S. Mining Enforcement and Safety Administration, to cover all the necessary fees, shall be sent to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa., 15213, together with the required drawings, one complete blasting unit, and instructions for its operation.

§ 24.3 Conditions governing investigations.

(a) One complete blasting unit, with drawings that show the construction of the device and the materials of which it is made, should be forwarded to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213 at the time the application for tests is made.

(b) When this has been inspected by MESA, the applicant will be notified as to the amount of material that will be required for the tests.

(c) The applicant will be notified of the date on which the tests will be started and will be given an opportunity to witness the tests.

(d) Observers at formal investigations and demonstrations. No one shall

be present during any part of the formal investigation conducted by MESA which leads to approval for permissibility except the necessary Government personnel, representatives of the applicant, and such other persons as may be mutually agreed upon by the applicant and MESA. Upon granting approval for permissibility, MESA will announce that such approval has been granted to the device and may thereafter conduct, from time to time in its discretion, public demonstrations of the tests conducted on the approved device. Those who attend any part of the investigation, or any public demonstration, shall be present solely as observers; the conduct of the investigation and of any public demonstration shall be controlled by MESA. Results of chemical analyses of material and all information contained in the drawings, specifications, and instructions shall be deemed confidential and their disclosure will be appropriately safeguarded by MESA.

(e) Permissibility tests will not be made unless the unit has been completely developed and is a form that can be marketed.

(f) The results of the tests shall be regarded as confidential by all present at the tests and shall not be made public in any way before the shot-firing unit is formally approved by MESA.

(g) No verbal report of approval or disapproval will be made to the applicant. After MESA has considered the results of the tests, a formal report of the approval or disapproval will be made to the applicant in writing by MESA. The applicant shall not advertise the unit as being permissible or as having passed the tests before he receives formal notice of approval.

[Sched. 12D, 10 F.R. 14895, Dec. 11, 1945, as amended by Supp. 1, 20 F.R. 2719, Apr. 23, 1955]

§ 24.4 Requirements for approval.

Single-shot blasting units approved under this part shall be practical in construction and operation as well as suitable for service conditions underground. They shall offer no probable ignition hazard when used in gassy mine atmospheres. They shall meet, under laboratory test conditions, the following requirements of minimum performance:

(a) The unit shall fire consistently single electric blasting caps through a total resistance of $4\frac{1}{2}$ ohms.

(b) The unit shall not produce sparks capable of igniting explosive mixtures of methane and air.¹

(c) Units of the battery type shall be designed to prevent accidental connection to the firing circuit. Batteries having a short-circuit current greater than 10 amperes, shall be enclosed in an effectively locked or sealed housing.

(d) Storage batteries supplying current for both blasting and illumination at the same time shall have ample capacity for the combined service or shall be equipped with an automatic device that cuts off the lamp during shot firing. The lamp part of the unit shall meet the requirements of the current lamp schedules.

(e) Magneto units shall be operable only by a special key or handle.

(f) A unit that depends on some special modification, such as a shunt resistance, to prevent igniting sparks, shall have its housing sealed or locked to prevent removal or disturbance of this safety feature.

[Sched. 12D, 10 F.R. 14895, Dec. 11, 1945, as amended by Supp. 1, 20 F.R. 2719, Apr. 23, 1955]

§ 24.5 Materials required for MESA records.

In order that MESA may know exactly what it has tested and approved, it keeps detailed records covering each investigation. These records include drawings and actual equipment, as follows:

(a) *Drawings.* The original drawings submitted with the application for approval and any drawings that are needed to show changes in design. These drawings are used to identify the unit in the

¹ Sparking tests of battery-type units will be made with a contactor disk 8 inches in diameter equipped with brush-type contacts, each of approximately 50 No. 34 copper wires. The contactor will be surrounded by an explosive mixture of Pittsburgh natural gas and air. The test shall consist of making and breaking the discharge of each of three units at least 300 times with the contactor operating at 60 revolutions per minute. The resistance of the contactor circuit shall not be greater than 0.25 ohm. Similar tests will be made of magneto- and generator-type units but with the contactor equipped with a $\frac{1}{16}$ -inch bronze brush and brass contact and operating at speeds up to 1,200 revolutions per minute.

approval and to check the future product of the manufacturer.

(b) *Actual equipment.* If MESA so desires, parts of the units that are used in the tests will be retained as records of the equipment submitted. If the unit is approved, MESA will require the manufacturer to submit one of his units, with the approval plate attached, as a record of his future commercial product.

§ 24.6 Approvals.

All approvals are granted by letter from MESA. A blasting unit will be approved under this part only when the testing engineers shall have judged that it has met the requirements of the schedule and MESA's records are complete, including drawings from the manufacturer that show the unit as it is to be made. No verbal reports of the investigation will be given, and no informal approval will be granted. The manufacturer shall not advertise his blasting unit as permissible or approved until he has received the formal notification of approval from MESA.

[Sched. 12D, 10 F.R. 14895, Dec. 11, 1945, as amended by Supp. 1, 20 F.R. 2719, Apr. 23, 1955]

§ 24.7 Approval plate.

(a) *Design.* Manufacturers shall attach, stamp, or mold an approval plate on each permissible single-shot blasting unit. The plate shall bear the emblem of the Mining Enforcement and Safety Administration, United States Department of the Interior, and be inscribed as follows:

Permissible Single-Shot Blasting Unit,
Approval No. ----- issued to the -----
----- Co.

When deemed necessary, an appropriate cautionary statement shall be added. A photograph of the approval plate design will be supplied to the manufacturer with the approval letter. The size and position of the approval plate adopted shall be satisfactory to MESA.

(b) *Purpose.* The approval plate is a label that identifies the device so that anyone can tell at a glance whether or not it is of the permissible type. By the plate, the manufacturer can point out that his blasting unit complies with MESA's requirements, and that it has been approved for use in gassy mines.

(c) *Significance.* Permission to place the approval plate on his unit obligates the manufacturer to maintain the quality of his product and to see that each unit is constructed according to the drawings that have been accepted and placed on file by MESA. Blasting units exhibiting changes in design that have not been authorized by MESA are not permissible and must not bear the approval plate.

§ 24.8 Withdrawal of approval.

MESA reserves the right to rescind for cause, at any time, any approval granted under this part.

§ 24.9 Future changes in design.

All approvals are granted with the understanding that the manufacturer will make each blasting unit according to the drawings that were submitted to MESA and that have been included in the approval. Changes in the design shall not be made without first obtaining MESA's authorization, procedure for which is as follows:

(a) The manufacturer shall write to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213, requesting an extension of his original approval and stating the change or changes desired. A copy of the letter, a revised drawing of the change in detail, and one of each of the parts affected shall be sent by the manufacturer to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213.

(b) MESA will consider the application and inspect the drawings and parts to determine whether it will be necessary to make any tests.

(c) If MESA finds the change to be acceptable without test, extension of approval authorizing the change will be granted in writing from MESA.

(d) If tests are judged necessary, the applicant will be advised of the material that will be required and of the necessary deposit to cover the fee for the tests. When the changed design has been found to comply with the requirements of this schedule, extension of approval authorizing the changes will be granted.

[Sched. 12D, 10 F.R. 14895, Dec. 11, 1945, as amended by Supp. 1, 20 F.R. 2719, Apr. 23, 1955]

PART 25—MULTIPLE-SHOT BLASTING UNITS

Subpart A—General Provisions

- Sec. 25.1 Purpose.
- 25.2 Definitions.
- 25.3 Consultation.
- 25.4 Fees.
- 25.5 Tests and investigations.
- 25.6 Applications.
- 25.7 Specifications; all types of units.
- 25.8 Specifications; particular types of units.
- 25.9 Conduct of investigations and demonstrations.
- 25.10 Certificate of approval.
- 25.11 Approval plate.
- 25.12 Changes after approval.
- 25.13 Withdrawal of approval.

Subpart B—Blasting Units Capable of Detonating 10 Short-Delay Electric Detonators

- 25.20 Definition.
- 25.21 Specifications.

Subpart C—Blasting Units Capable of Detonating 20 Short-Delay Electric Detonators

- 25.25 Definition.
- 25.26 Specifications.

AUTHORITY: The provisions of this Part 25 issued under secs. 2, 3, 5, 36 Stat. 370, as amended, secs. 201, 209, 212, 66 Stat. 692, 703, 709; 30 U.S.C. 3, 5, 7, 471, 479, 482.

SOURCE: The provisions of this Part 25 contained in Schedule 16E, 25 F.R. 4645, May 26, 1960, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 39 FR 24002, June 28, 1974.

Subpart A—General Provisions

§ 25.1 Purpose.

The regulations in this part set forth the specifications and requirements for multiple-shot blasting units to procure their approval and certification as permissible for use in coal mines; procedures for applying for such certification; and fees.

§ 25.2 Definitions.

As used in this part:

(a) "Permissible," as applied to a multiple-shot blasting unit, means that the unit conforms to the specifications and requirements of this part, and that a certificate of approval to that effect has been issued.

(b) "Certificate of approval" means a formal document issued by MESA

stating that the unit has met the specifications and requirements in this part and authorizing the use and attachment of an official approval plate.

(c) "Blasting unit" means an apparatus for detonating high explosives by applying electric current to electric detonators.

(d) "Multiple-shot blasting unit" means a blasting unit capable of detonating short-delay electric detonators, as further defined in § 25.20 or § 25.25.

(e) "Short-delay electric detonator" means a delay-type detonator (blasting cap) the delay periods of which range in nominal value from 25 to 500 milliseconds, and which will initiate (detonate) multiple charges of high explosives in succession with one application of the firing current.

(f) "MESA" means the United States Department of the Interior, Mining Enforcement and Safety Administration.

(g) "Applicant" means an individual, partnership, company, corporation, association, or other organization that designs, manufactures, or assembles, and that seeks a certificate of approval or preliminary testing of a multiple-shot blasting unit.

[25 FR 4645, May 26, 1960, as amended at 39 FR 24002, June 28, 1974]

§ 25.3 Consultation.

By appointment, applicants or their representatives may visit Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pennsylvania 15213, to discuss with qualified MESA representatives proposed designs of equipment to be submitted in accordance with the requirements of the regulations of this part. No charge is made for such consultation.

§ 25.4 Fees.

| | |
|---|------|
| (a) Detailed inspection..... | \$60 |
| (b) Timing and energy requirement determination | 165 |
| (c) Safety tests in methane-air mixtures | 180 |
| (d) High-potential test..... | 40 |
| (e) Dropping test..... | 30 |
| (f) Life test of complete unit..... | 270 |
| (g) Firing-capacity test..... | 130 |
| (h) Final examination and recording of drawings and specifications requisite to issuing an approval.. | 110 |
| (i) Examining and recording drawings and specifications requisite to issuing an extension of approval | 70 |

(j) Tests to assist an applicant in evaluating equipment intended for certification may be made at the discretion of MESA. Written requests for such tests shall be directed to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213. A deposit of \$200 shall be paid in advance when such tests have been authorized. The fees charged shall be in amounts proportionate to the work performed based on normal charges. Any surplus will be refunded at the completion of the work, or applied to future work, as directed by the applicant.

[Sched. 16E, 30 F.R. 3756, Mar. 23, 1966]

§ 25.5 Tests and investigations.

Unless the application states otherwise, it will be presumed that a complete investigation for certification is desired. However, the application may be expressly limited to some element or phase less than a complete investigation; and in any case if the tests at any stage indicate that the unit does not conform to the specification in this part, MESA may treat the application as one for a partial investigation up to that point. Complete investigation for certification will not be undertaken unless the unit has been fully developed, is ready to be marketed, and is submitted completely assembled. The minimum material required for tests will be four complete units and such additional expendable parts as MESA may require.

§ 25.6 Applications.

(a) No investigation or testing will be undertaken by MESA except pursuant to a written application, in duplicate, accompanied by a check, bank draft, or money order, payable to the U.S. Mining Enforcement and Safety Administration, to cover the fees, and all prescribed drawings, specifications, and related material. The application and all related matters and all correspondence concerning it shall be sent to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pennsylvania 15213.

(b) The unit to be tested may be shipped (charges prepaid) at the same time the application is submitted, or at the option of the applicant shipment of the unit may be deferred until MESA

has notified the applicant that the application will be accepted.

(c) Drawings and specifications shall be adequate in number and detail to identify fully the design of the unit and to disclose its materials, detailed dimensions of all parts, and wiring diagram. Drawings must be numbered and dated to insure accurate identification and reference to records, and must show the latest revision. Specifications must be given for materials, components, and subassemblies.

§ 25.7 Specifications; all types of units.

(a) MESA will not test or investigate any unit that in its opinion is not constructed of suitable materials, that evidences faulty workmanship, or that is not designed upon sound engineering principles. In addition to any specifications or requirements imposed by the regulations in this part, MESA may impose such further specifications or requirements as in its opinion are necessary or proper to investigate or test the particular device submitted.

(b) Any unit that satisfies all of the requirements of this part may be certified as permissible.

(c) Adequacy of design and construction will be determined in connection with the following factors: Kind and durability of materials, test of active parts, resistance to moisture, drop test, insulation measurements, durability of construction, practicality in operation, suitability for underground service, and performance characteristics during the investigation.

(d) The unit shall not ignite explosive gas-air mixtures or cause misfires or premature firing when operated according to the applicant's prescribed conditions of use, which shall be acceptable to MESA.

(e) The firing operation must be accomplished by a removable key or other acceptable means to prevent accidental or premature firing.

(f) A suitable means, incorporated as an integral part of the blasting unit, shall be provided to indicate, before each round of shots is fired, that the voltage applied to the firing line is adequate to meet the requirements as stated in paragraphs (h) and (i) of this section. An automatic means to prevent inadvertent or deliberate firing prior to the indication of readiness shall be incorporated in the unit.

(g) The voltage must be cut off or be reduced within 15 milliseconds (0.015 second) after the firing contact is made to such a value that no incandive spark (an electric spark of sufficient intensity to ignite flammable methane-air mixtures) can result from accidental post-firing contact of wires in the firing circuit.

(h) The average current produced by the unit shall be not less than 1.5 amperes, based on a 5-millisecond application to the bridgewire of the short-delay electric detonators. The unit shall be so designed that discontinuities in the firing circuit of the unit shall not be possible during the specified firing time.

(i) The energy applied to the firing circuit of the blasting unit shall be as stated in § 25.21(a) or § 25.26(a).

(j) The difference of potential at the terminals of the blasting unit shall be as stated in § 25.21(b) or § 25.26(b).

(k) Terminals of the unit for connecting the firing (blasting) cable shall be well insulated, without exposed parts that can become "alive" when energized.

(l) The unit shall have a shunt resistance or other means acceptable to MESA to limit the voltage across the firing-line terminals, except during periods of charging and firing.

(m) The housing for the unit shall be sealed to prevent tampering with the contents and mechanically strong for mine service.

(n) The unit shall meet electrical leakage and clearance tests. The voltage for testing shall be twice the maximum voltage employed in the shot-firing unit. These tests shall be made in an atmosphere of at least 80 percent relative humidity.

§ 25.8 Specifications; particular types of units.

(a) Generator type: The energy output shall not depend upon the physical effort of an operator of the blasting unit.

(b) Generator or battery, condenser-discharge type:

(1) Condensers must be capable of withstanding 25,000 charge and discharge cycles at the normal rate specified by the applicant.

(2) An automatic means shall be provided to insure that no electrical charge will remain in the condenser(s) when the blasting unit is not in use.

(3) Firing shall not occur automatically upon operation of a device provided for charging condensers but must be accomplished by a separate manual opera-

tion. The method of firing shall be designed to insure no significant loss of charge from condensers during the firing process by inadvertent or deliberate action prior to the closing of the firing switch or contact(s).

(4) If battery-powered, the unit shall be so designed and constructed that the battery can be replaced without disturbing or damaging other electrical components.

§ 25.9 Conduct of investigations and demonstrations.

(a) Prior to the issuance of a certificate of approval, only necessary Government personnel, representatives of the applicant, and such other persons as may be mutually agreed upon, may observe the investigations or tests. After the issuance of a certificate of approval, MESA may conduct such public demonstrations and tests of the approved unit as it deems appropriate. The conduct of all investigations, tests, and demonstrations shall be under the direction and control of MESA, and any other persons shall be present only as observers. MESA shall hold as confidential and shall not disclose the results of chemical analyses of materials or the contents of the application and its accompanying drawings, specifications, and related materials.

[Schedule 16E, 25 FR 4645, May 26, 1960, as amended at 39 FR 24002, June 28, 1974]

§ 25.10 Certificate of approval.

(a) Upon the completion of the investigation MESA shall issue to the applicant either a certificate of approval or a written notice of disapproval. If a certificate of approval is issued, no test data or detailed results of the test will accompany it. If the unit is disapproved, the notice of disapproval will be accompanied by details of the defects, with a view to possible correction. MESA will hold as confidential the results of tests of units that are disapproved.

(b) Only formal written certificates of approval or notices of disapproval will be issued.

(c) A certificate of approval will be accompanied by a list of the drawings and specifications covering the details of design and construction upon which the approval is based, and with the official approval number marked thereon. Applicants shall keep exact duplicates of the drawings and specifications that have been submitted to MESA and that relate to any unit which has re-

ceived a certificate of approval, and these are to be adhered to exactly in production of the approved unit for commercial purposes.

§ 25.11 Approval plate.

(a) A certificate of approval will be accompanied by a photograph of a design for an approval plate, bearing the emblem of the Mining Enforcement and Safety Administration, the name of the applicant, the class of unit to which the approval relates, and spaces for the approval number, the type, and serial number. When necessary, an appropriate statement of the precautions to be observed in maintaining the unit in an approved condition shall be added.

(b) The applicant shall reproduce the design on a stainless steel plate with the lettering etched or indented thereon. The size, type, method of attaching, and location of approval plates are subject to the approval of MESA. The method of affixing the approval plate shall not impair any explosion-proof feature of the unit.

(c) The approval plate identifies the unit to which it is attached as permissible, and is the applicant's guarantee that the unit complies with the specifications and requirements in this part. Without an approval plate, no unit has the status of "permissible" under the provisions of this part.

(d) Use of the approval plate obligates the applicant to maintain the quality of each unit bearing it and guarantees that it is manufactured and assembled according to the drawings and specifications upon which a certificate of approval is based. Use of the approval plate is not authorized except on units that conform strictly with the drawings and specifications upon which the certificate of approval is based.

§ 25.12 Changes after approval.

If an applicant desires to change any feature of an approved unit and still have it covered by an existing certificate of approval, he shall first obtain MESA's approval of the change, pursuant to the following procedures:

(a) Application shall be made, as for an original certification, requesting that the existing certificate of approval be extended to cover the proposed change. The application shall be accompanied by drawings and specifications and related material as in the case of an original application.

(b) The application will be examined

by MESA to determine whether inspection and testing of the modified unit or any part thereof will be required. Generally, inspection and testing will be necessary if there is a possibility that the modification may affect adversely the performance of the unit. MESA will inform the applicant whether such inspection and testing is required, the parts or materials to be submitted for that purpose, and the fee required.

(c) If the proposed modification meets the requirements and specifications of this part, a formal "extension of approval" will be issued accompanied by a list of new and corrected drawings and specifications to be added to those already on file as the basis for the certificate of approval.

§ 25.13 Withdrawal of approval.

MESA reserves the right to rescind, for cause, at any time, any approval granted under this part.

Subpart B—Blasting Units Capable of Detonating 10 Short-Delay Electric Detonators

§ 25.20 Definition.

As used in this subpart:

"Multiple-shot blasting unit" means that the unit is capable of consistently detonating not to exceed ten (10) short-delay electric detonators with a single application of electrical energy to the firing circuit, with the detonators connected in series, and with a total firing-circuit resistance of not less than 125 ohms.

§ 25.21 Specifications.

(a) The electrical energy applied to the firing circuit by the multiple-shot blasting unit shall be not less than 1.4 watt-seconds when the unit is operated according to the applicant's prescribed conditions of use, which shall be acceptable to MESA.

(b) The difference of potential at the terminals of the multiple-shot blasting unit shall not exceed 375 volts.

Subpart C—Blasting Units Capable of Detonating 20 Short-Delay Electric Detonators

§ 25.25 Definition.

As used in this subpart:

"Multiple-shot blasting unit" means that the unit is capable of consistently detonating not to exceed twenty (20)

short-delay electric detonators with a single application of electrical energy to the firing circuit, with the detonators connected in series, and with a total firing-circuit resistance of not less than 150 ohms.

§ 25.26 Specifications.

(a) The electrical energy applied to the firing circuit by the multiple-shot blasting unit shall be not less than 1.7 watt-seconds when the unit is operated according to the applicant's prescribed conditions of use, which shall be acceptable to MESA.

(b) The difference of potential at the terminals of the multiple-shot blasting unit shall not exceed 400 volts.

PART 26—LIGHTING EQUIPMENT FOR ILLUMINATING UNDERGROUND WORKINGS

| | |
|-------|--|
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AUTHORITY: The provisions of this Part 26 issued under secs. 2, 3, 5, 36 Stat. 370, as amended, secs. 201, 209, 212, 66 Stat. 692, 703, 709; 30 U.S.C. 3, 5, 7, 471, 479, 482.

SOURCE: The provisions of this Part 26 contained in Schedule 29A, 23 F.R. 9479, Dec. 6, 1958, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 39 FR 24002, June 28, 1974.

§ 26.1 Purpose.

The regulations in this part set forth the specifications and requirements for

mine-lighting systems to procure their approval and certification as permissible for use in coal mines and certification of components for use in permissible lighting systems; procedures for applying for such certification; and fees.

§ 26.2 Definitions.

As used in this part:

(a) "Permissible," as applied to mine-lighting systems, means that the system conforms to the specifications and requirements of this part, and that a certificate of approval to that effect has been issued.

(b) "Certificate of approval for permissibility" means a formal document issued by MESA stating that the system has met the specifications and requirements in this part and authorizing the use and attachment of an official approval plate.

(c) "Certification of components" means a statement in a letter of certification issued by MESA that the components which are intended for use in permissible mine-lighting systems have satisfied all of the applicable requirements prescribed in this part.

(d) "Lighting system" means a complete assembly of all the components required to establish illumination, including the fixtures, wiring, connectors, circuit-protection devices, and any other related parts.

(e) "Incentive spark" means an electric spark or arc capable of igniting flammable methane-air mixtures.

(f) "Intrinsically safe" means a fixture, a combination of parts, or an electrical circuit that will not cause ignition of flammable methane-air mixtures in any normal operation, during an intended manipulation, or when accidentally broken, if properly installed and supplied by a voltage that does not vary excessively from the nominal rating. (For the purpose of this part, the definition may include, for example, certain types of fluorescent lamps which when broken will not cause ignition of flammable methane-air mixtures.)

(g) "Fixture circuit" means the circuit or wiring contained in the fixture enclosure.

(h) "Explosion-proof" means capable of withstanding internal explosions of methane-air mixtures without damage to the enclosure or discharge of flame. For detailed requirements see Part 18 of this subchapter (Schedule 2F).

(i) "Explosion resistant" means an enclosure not built to explosion-proof specifications but capable of withstanding internal explosions of methane-air mixtures without igniting surrounding explosive methane-air mixtures, and without damage to the enclosure.

(j) "Drip-proof" means so constructed or protected that the successful operation of a lighting fixture is not interfered with when it is subjected to falling moisture or dirt.

(k) "Distribution box" means a portable enclosure in which one or more portable cables may be connected to a common source of electrical energy.

(l) "Normal operation" means the performance of those functions for which the component was designed.

(m) "Portable cable" means a flexible cable by means of which a portable lighting system may be connected to a source of electrical energy.

(n) "Frame ground" means a connection through a separate conductor to all exposed metallic castings and other parts which will maintain the casings and components at ground potential.

(o) "Sectional unit" means a lighting fixture that may be added to or removed from a lighting circuit as work advances or retreats.

(p) "MESA" means the United States Department of the Interior, Mining Enforcement and Safety Administration.

(q) "Applicant" means an individual, partnership, company, corporation, association, or other organization that designs, manufactures, or assembles, and seeks certification, or preliminary testing of a lighting system or its components. [Schedule 29A, 23 FR 9479, Dec. 6, 1958, as amended at 39 FR 24002, June 28, 1974]

§ 26.3 Consultation.

By appointment, applicants or their representatives may visit Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pennsylvania 15213, to discuss with qualified MESA representatives proposed designs of equipment to be submitted in accordance with the requirements of the regulations of this part. No charge is made for such consultation.

§ 26.4 Type of equipment that may be granted certificates of approval for permissibility.

Certificates of approval for permissibility will be granted for completely assembled lighting systems only and not for individual parts or subassemblies.

A certificate of approval for permissibility shall include all components, cables, and equipment used in other than fresh intake air, and also, necessary protective devices which may be housed in non-explosion-proof enclosures located in fresh intake air.

§ 26.5 Components that may be certified.

Manufacturers of components that are designed for use in permissible mine-lighting systems may request MESA to issue a letter certifying to the suitability of components for such use. To qualify for certification, components shall have satisfactorily met the prescribed inspection and test requirements, and the construction thereof shall be adequately covered by specifications officially recorded and filed by MESA.

§ 26.6 Fees.

| | |
|--|-------|
| (a) Detailed inspection..... | \$105 |
| (b) Explosion tests, each series..... | 70 |
| (c) Dropping test..... | 30 |
| (d) Temperature test..... | 65 |
| (e) High-potential test..... | 40 |
| (f) Safety tests in methane-air mixtures ¹ | 255 |
| (g) Short-circuit test ¹ | 55 |
| (h) Flame-resistance test (cable connectors)..... | 50 |
| (i) Final examination and recording of drawings and specifications requisite to issuing an approval..... | 110 |
| (j) Examining and recording drawings and specifications requisite to issuing an extension of approval..... | 70 |
| (k) Tests to assist an applicant in evaluating equipment intended for certification may be made at the discretion of MESA. Written requests for such tests shall be directed to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213. A deposit of \$200 shall be paid in advance when such tests have been authorized. The fees charged shall be in amounts proportionate to the work performed based on normal charges. Any surplus will be refunded at the completion of the work, or applied to future work, as directed by the applicant. | |

¹ Applies to cable connectors submitted for certification. [Sched. 29A, 30 F.R. 3756, Mar. 23, 1965]

§ 26.7 Tests and investigations.

Unless the application states otherwise, it will be presumed that a complete in-

investigation for certification is desired. However, the application may be expressly limited to some element or phase less than a complete investigation. If the tests at any stage indicate that the lighting system does not conform to the specifications in this part, MESA may treat the application as one for a partial investigation up to that point. Complete investigation for certification will not be undertaken unless the equipment has been fully developed, is ready to be marketed, and is submitted completely assembled, including parts, connectors, and all related materials.

§ 26.8 Applications.

(a) No investigation or testing will be undertaken by MESA except pursuant to a written application, in duplicate, accompanied by a check, bank draft, or money order, payable to the U.S. Mining Enforcement and Safety Administration to cover the fees, and all prescribed drawings, specifications, and related material. The application and all related matters and all correspondence concerning it shall be sent to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pennsylvania 15213.

(b) The equipment to be tested may be shipped (charges prepaid) at the same time the application is submitted, or, at the option of the applicant, shipment of the equipment may be deferred until MESA has notified the applicant that the application will be accepted.

(c) Drawings and specifications shall be adequate in number and detail to identify fully the design of the device and to disclose its materials, detailed dimensions of all parts, and include a wiring diagram. Drawings must be numbered and dated to insure accurate identification and reference to records and must show the latest revision. Specifications must be given for materials, components, and subassemblies.

§ 26.9 Specifications; all types of lighting systems.

(a) MESA will not test or investigate any lighting system that in its opinion is not constructed of suitable materials, that evidences faulty workmanship, or that is not designed upon sound engineering principles. In addition to any specifications or requirements imposed by the regulations in this part, MESA may impose such further specifications or requirements as in

its opinion are necessary or proper to investigate or test the particular device submitted.

(b) Adequacy of design and construction will be determined in connection with the following factors: Kind and durability of materials, test of active parts, resistance to moisture, drop test, insulation measurements, durability of construction, practicality in operation, suitability for underground service, and performance characteristics during the investigation. Since all possible designs, arrangements, or combinations cannot be foreseen, MESA reserves the right to make any tests or to place any limitations on equipment or parts of equipment not specifically covered herein to determine the safety of such equipment with regard to explosion and fire hazards.

(c) The following types of lighting fixtures will be considered: (1) Intrinsically safe, and (2) explosion proof.

(d) All components must be designed and constructed in such a manner that they will not create an explosion or fire hazard.

(e) All enclosures must be essentially of "drip-proof" design.

(f) All fixtures and related components in a lighting system must be so designed that the temperature of external surfaces will not exceed 390° F. (200° C.) at any point during continual operation.

(g) No certificate of approval will be issued for a lighting system if the electrical pressure (difference of potential) of the power supply exceeds 300 volts direct current or 260 volts alternating current at the input terminals of any lighting fixture.

(h) The clearances between live parts and casings shall be such as to minimize the possibility of electric arcs between them, or if space is limited, the casing shall be lined with adequate insulation.

(i) Phenolic and other insulating materials that give off highly explosive gases when decomposed by heat, such as may be generated electrically, shall not be placed within enclosures where they might be subjected to destructive electrical arcing.

(j) All lighting circuits shall be provided with short-circuit protection. If distribution boxes are used for this purpose, they must conform with all of the applicable requirements of Part 18 of this subchapter (Schedule 2F) unless these distribution boxes are installed in

fresh intake air. The circuit of each lighting fixture shall be protected against excessive overload currents.

(k) If an ungrounded system is used, which is electrically isolated from all other power circuits, fixtures and auxiliary equipment need not be frame grounded.

(l) If a grounded system is used, all cables must contain a separate grounding conductor to insure that all exposed conducting materials in the system will not exceed ground potential. A device that will disconnect all power from the system in case of a ground fault will meet this requirement.

(m) Power conductors must not be used for grounding.

(n) Lighting systems and fixtures shall be designed for hanging from supports, so that cables or components are not permitted to rest on the mine floor.

(o) All lighting fixtures must be provided with a lock or seal. Any other fastening that requires a special tool for its removal will be construed as an effective seal. In place of a conventional lock or seal, an electrical or mechanical interlock may be provided to prevent gaining access to the lamps with power on. Provision for removal of lamps without arcing or sparking will also be acceptable.

(p) Lighting fixtures must be so designed that vibration will not shake the lamps loose from their sockets or holders.

§ 26.10 Specifications; intrinsically safe lighting fixtures.

(a) Intrinsically safe lighting fixtures shall be so constructed that they will withstand being dropped five times from a height of five feet on an oak platform in the presence of explosive methane-air mixtures. (In these tests Pittsburgh natural gas may be substituted for methane.) The safety elements of the fixture must function so that no explosion or fire hazard exists at any time during or after the tests. (Breakage of a fluorescent lamp will not in itself constitute test failure.)

(b) The fixture must be enclosed in an explosion-resistant housing that will afford mechanical protection and withstand a minimum of ten internal explosion tests in surrounding explosive atmospheres containing air with 7.0 to 10.0 percent of methane without (1) igniting the surrounding atmosphere, or (2) permanently distorting of any part of the fixture.

(c) Plastic material used in place of glass for lighting fixtures must not

create explosion, fire, or toxic hazards when subjected to normal maximum operating temperatures.

§ 26.11 Specifications; explosion-proof lighting fixtures.

(a) All lighting fixtures that cannot be designed intrinsically safe shall be constructed strictly in accordance with the applicable requirements of Part 18 of this subchapter (Schedule 2F).

(b) Transparent plastics used in place of glass shall be of the thickness required of glass and shall not crack or shatter when struck by dripping cold water.

§ 26.12 Specifications; cable connectors.

(a) Connectors shall be constructed so as to afford a minimum of accessibility to live electrodes by any means other than the related plug.

(b) The material of which cable connectors are made must be equivalent to the insulation on the cables with respect to flame-resistant properties.

(c) Cable connectors shall meet the following requirements:

(1) A connector designed for a nominal 240-volt system shall be engaged and disengaged through 750 cycles under its rated load at 260 volts alternating current at 80 percent power factor.

(2) A connector designed for a nominal 120-volt system shall be engaged and disengaged through 750 cycles under its rated load at 130 volts alternating current at 80 percent power factor.

NOTE: The tests described in subparagraphs (1) and (2) of this paragraph will be performed mechanically in the presence of explosive atmospheres containing air with 7.0 to 10.0 percent of methane. Ignition of the surrounding explosive atmosphere, destructive burning, distortion, and excessive temperature constitute failure.

(3) Under normal load, no part of any cable connector shall attain a temperature in excess of 175° F. during any of the prescribed tests.

(4) At 260 volts impressed, one cable connector shall be subjected to a short-circuit test at the maximum capacity of a 5 KVA transformer. The connector components will be mechanically engaged with the cable on the male portion short circuited at the plug. A time lag fuse of the maximum current rating of the connector will be connected in the circuit.

NOTE: The connector used for this test will be one already subjected to the cycling test

described in subparagraphs (1) and (2) of this paragraph.

Fusing of the contacts will constitute a failure.

(d) Cable connectors must be so designed that they will withstand a pull of 25 pounds without separating subsequent to the cycling tests described in paragraph (c) (1) and (2) of this section.

§ 26.13 Specifications; portable cables.

(a) All portable cables shall have 600-volt insulation and shall have an outer jacket that is highly resistant to abrasion, moisture, and heat. They shall meet the flame-resistance requirements of Part 18 of this subchapter (Schedule 2F).

(b) The minimum conductor size acceptable for lighting circuits shall be No. 14 (AWG). In any case, cables must have conductors of a size equal to or greater than the National Electric Code standard. The current carrying capacity shall be based upon the maximum load that will be carried by the cables in normal service.

§ 26.14 Conduct of investigations and demonstrations.

Prior to the issuance of a certificate of approval, necessary Government personnel, representatives of the applicant, and such other persons as may be mutually agreed upon, may observe the investigations or tests. After the issuance of a certificate of approval, MESA may conduct such public demonstrations and tests of the approved system as it sees fit. The conduct of all investigations, tests, and demonstrations shall be under the sole direction and control of MESA, and any other persons shall be present only as observers. MESA shall hold as confidential and shall not disclose the results of chemical analyses of material or the contents of the application and its accompanying drawings, specifications, and related material.

[Schedule 29A, 23 FR 9479, Dec. 6, 1958, as amended at 39 FR 24002, June 28, 1974]

§ 26.15 Certificate of approval for permissibility.

(a) Upon completion of investigation of a lighting system, MESA will issue to the applicant either a certificate of approval for permissibility or a written notice of disapproval, as the case may require. If a certificate of approval for permissibility is issued, no test data or detailed results of tests will accompany it. If a notice of disapproval is

issued, it will be accompanied by details of the defects, with a view to possible correction. MESA will hold as confidential results of tests that terminate in a notice of disapproval.

(b) A certificate of approval for permissibility will be accompanied by a list of the drawings and specifications covering the details of design and construction of the lighting system upon which the certificate is based, and with the official approval number marked thereon. Applicants shall keep exact duplicates of the drawings and specifications that have been submitted to MESA and that relate to any system which has received a certificate of approval, and these are to be adhered to exactly in production of the approved system for commercial purposes.

§ 26.16 Certification of components.

(a) Upon completion of investigation of a component intended for use in a permissible lighting system, MESA will issue a letter of certification to the applicant, or a written notice of disapproval, as the case may require. If a letter of certification is issued, no test data or detailed results of tests will accompany it. If a notice of disapproval is issued, it will be accompanied by details of the defects, with a view to possible correction. MESA will hold as confidential results of tests that terminate in a notice of disapproval.

(b) Letters certifying components may be cited to manufacturers or assemblers of permissible lighting systems as evidence that further inspection and tests of the components will not be required, provided they are constructed strictly in accordance with the specifications on file with MESA. Such letters will specify a MESA file number to be used in marketing a certified component, as indicated in paragraph (a) of § 26.18. Since MESA does not issue certificates of approval for permissibility except as applying to complete lighting systems, no person shall advertise or label components in a manner indicating that such components are certified as approved for permissibility by MESA. Certified components may be advertised as suitable for application in permissible lighting systems.

§ 26.17 Approval plate for permissible lighting systems.

(a) A certificate of approval for permissibility will be accompanied by a

photograph of a design for an approval plate, bearing the emblem of the Mining Enforcement and Safety Administration, space for the approval number, the type, the serial number, the class of device to which the approval relates, and the name of the applicant. When deemed necessary by MESA, an appropriate statement of the precautions to be observed in maintaining the system in an approved condition shall be added.

(b) The applicant shall reproduce the design either as a separate plate or by stamping or molding it in some suitable place on each lighting fixture of a certified system. The size, type, method of attaching and location of approval plates are subject to the approval of MESA. The method of affixing the plate shall not impair the explosion-proof or explosion-resistant features of any enclosure.

(c) The approval plate identifies the lighting system as permissible, and is the applicant's guarantee that the system complies with the specifications and requirements in this part. Without an approval plate, no lighting system is considered "permissible" under the provisions of this part.

(d) Use of the approval plate obligates the applicant to maintain the quality of the system which bears it, and guarantees that it is manufactured and assembled according to the drawings and specifications upon which a certificate of approval was based. Use of the approval plate is not authorized except on systems that conform strictly with the drawings and specifications upon which the certificate of approval was based.

§ 26.18 Markings for certified components.

(a) Certified components shall bear permanent markings satisfactory to MESA and shall contain the following:

Certified -----
(Name of component)

MESA File No. -----
Rating or caution statement, whichever is applicable.

(b) Use of such markings obligates the applicant to maintain the quality of each component bearing it and guarantees that it is manufactured and assembled according to the drawings and specifications upon which certification was based. Use of such markings is not authorized except on components that conform strictly with the drawings and

specifications upon which certification was based.

§ 26.19 Changes after certification.

If an applicant desires to change any feature of a certified system or component and have it covered by existing certification, he shall first obtain MESA's approval of the change, pursuant to the following procedures:

(a) Application shall be made, as for an original certification, requesting that the existing certification be extended to cover the proposed change. The application shall be accompanied by drawings and specifications and related material as in the case of an original application.

(b) The application will be examined by MESA to determine whether inspection and testing of the modified system or component will be required. Generally, inspection and testing will be necessary if there is a possibility that the modification may affect adversely the performance of the system or component. MESA will inform the applicant whether such inspection and testing is required, the parts or materials to be submitted for that purpose, and the fee.

(c) If the proposed modification meets the requirements and specifications of this part, a formal extension of the certification will be issued accompanied by a list of new and corrected drawings and specifications to be added to those already on file as the basis for the certificate.

§ 26.20 Withdrawal of certification.

MESA reserves the right to rescind for cause, at any time, any certification granted under this part.

PART 27—METHANE-MONITORING SYSTEMS

Subpart A—General Provisions

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 27.21 Methane-monitoring system.
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 27.35 Tests to determine life of critical components and subassemblies.
 27.36 Test for adequacy of electrical insulation and clearances.
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 27.38 Tests to determine adequacy of windows and lenses.
 27.39 Tests to determine resistance to vibration.
 27.40 Test to determine resistance to dust.
 27.41 Tests to determine resistance to moisture.

AUTHORITY: The provisions of this Part 27 issued under secs. 2, 3, 5, 36 Stat. 370, as amended, secs. 201, 209, 212(a), 66 Stat. 692, 703, 709; 30 U.S.C. 3, 5, 7, 471, 479, 482(a).

SOURCE: The provisions of this Part 27 appear at 31 F.R. 10607, Aug. 9, 1966, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 39 FR 24003, June 28, 1974.

Subpart A—General Provisions**§ 27.1 Purpose.**

The regulations in this part set forth the requirements for methane-monitoring systems or components thereof to procure certification for their incorporation in or with permissible equipment that is used in gassy mines, tunnels, or other underground workings; procedures for applying for such certification; and fees.

§ 27.2 Definitions.

As used in this part:

(a) "MESA" means the United States Department of the Interior, Mining Enforcement and Safety Administration.

(b) "Applicant" means an individual, partnership, company, corporation, association, or other organization that designs, manufactures, or assembles and that seeks certification or preliminary testing of a methane-monitoring system or component.

(c) "Methane-monitoring system" means a complete assembly of one or more methane detectors and all other components required for measuring and signalling the presence of methane in the atmosphere of a mine, tunnel, or other underground workings, and shall include a power-shutoff component.

(d) "Methane detector" means a component for a methane-monitoring system that functions in a gassy mine, tunnel, or other underground workings to sample the atmosphere continuously and responds to the presence of methane.

(e) "Power-shutoff component" means a component of a methane-monitoring system, such as a relay, switch, or switching mechanism, that will cause a control circuit to deenergize a machine, equipment, or power circuit when actuated by the methane detector.

(f) "Flammable mixture" means a mixture of a gas, such as methane, natural gas, or similar hydrocarbon gas with normal air, that can be ignited.

(g) "Gassy mine or tunnel" means a mine, tunnel, or other underground workings in which a flammable mixture has been ignited, or has been found with a permissible flame safety lamp, or has been determined by air analysis to contain 0.25 percent or more (by volume) of methane in any open workings when tested at a point not less than 12 inches from the roof, face, or rib.

(h) "Letter of certification" means a formal document issued by MESA stating that a methane-monitoring system or subassembly or component thereof: (1) Has met the requirements of this part, and (2) is certified for incorporation in or with permissible or approved equipment that is used in gassy mines and tunnels.

(i) "Component" means a part of a methane-monitoring system that is essential to its operation as a certified methane-monitoring system.

(j) "Explosion proof" means that a component or group of components (subassembly) is so constructed and protected by an enclosure with or without a flame arrester(s) that, if a flammable mixture of gas is ignited within the enclosure, it will withstand the resultant pressure without damage to the enclosure and/or flame arrester(s). Also the enclosure and/or flame arrester(s) shall prevent the discharge of flame from within either the enclosure or the flame arrester, or the ignition of any flamma-

ble mixture that surrounds the enclosure and/or flame arrester.¹

(k) "Normal operation" means that performance of each component as well as of the entire assembly of the methane-monitoring system is in conformance with the functions for which it was designed and for which it was tested by MESA.

(l) "Flame arrester" means a device so constructed that it will prevent propagation of flame or explosion from within the unit of which it is part to a surrounding flammable mixture.

(m) "Intrinsically safe equipment and circuitry" means equipment and circuitry that are incapable of releasing enough electrical or thermal energy under normal or abnormal conditions to cause ignition of a flammable mixture of the most easily ignitable composition.

(n) "Fail safe" means that the circuitry of a methane-monitoring system shall be so designed that electrical failure of a component which is critical in MESA's opinion will result in de-energizing the methane-monitoring system and the machine or equipment of which it is a part.

[31 FR 10607, Aug. 9, 1966, as amended at 39 FR 24003, June 28, 1974]

§ 27.3 Consultation.

By appointment, applicants or their representatives may visit Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213, to discuss with qualified MESA personnel proposed methane-monitoring systems to be submitted in accordance with the regulations of this part. No charge is made for such consultation and no written report thereof will be made to the applicant.

§ 27.4 Applications.

(a) No investigation or testing for certification will be undertaken by MESA except pursuant to a written application, in duplicate, accompanied by all drawings, specifications, descriptions, and related materials and also a check, bank draft, or money order, payable to U.S. Mining Enforcement and Safety Administration, to cover the fees. The application and all related matters and correspondence concerning it shall be addressed to Approval and Testing, Pittsburgh Technical Support Center,

¹ Explosion-proof components or subassemblies shall be constructed in accordance with the requirements of Part 18 of this subchapter.

4800 Forbes Avenue, Pittsburgh, Pa. 15213.

(b) Drawings, specifications, and descriptions shall be adequate in detail to identify fully all components and subassemblies that are submitted for investigation, and shall include wiring and block diagrams. All drawings shall include title, number, and date; any revision dates and the purpose of each revision shall also be shown on the drawing.

(c) For a complete investigation leading to certification, the applicant shall furnish all necessary components and material to MESA. MESA reserves the right to require more than one of each component, subassembly, or assembly for the investigation. Spare parts and expendable components, subject to wear in normal operation, shall be supplied by the applicant to permit continuous operation during test periods. The applicant shall furnish special tools necessary to assemble or disassemble any component or subassembly for inspection or test.

(d) The applicant shall submit a plan of inspection of components at the place of manufacture or assembly. The applicant shall furnish to MESA a copy of any factory-inspection form or equivalent with the application. The form shall direct attention to the points that must be checked to make certain that all components or subassemblies of the complete assembly are in proper condition, complete in all respects, and in agreement with the drawings, specifications, and descriptions filed with MESA.

(e) The applicant shall furnish to MESA complete instructions for operating the assembly and servicing components. After completion of MESA's investigation, and before certification, if any revision of the instructions is required, a revised copy thereof shall be submitted to MESA for inclusion with the drawings and specifications.

§ 27.5 Letter of certification.

(a) Upon completion of investigation of a methane-monitoring system, or component or subassembly thereof, MESA will issue to the applicant either a letter of certification or a written notice of disapproval, as the case may require. If a letter of certification is issued, no test data or detailed results of tests will accompany it. If a notice of disapproval is issued, it will be accompanied by details of the defects, with a view to possible correction. MESA will not disclose

except to the applicant or his authorized representative, any information because of which a notice of disapproval has been issued.

(b) A letter of certification will be accompanied by an appropriate cautionary statement specifying the conditions to be observed for operating and maintaining the device(s) and to preserve its certified status.

§ 27.6 Certification of components.

In accordance with § 27.4, manufacturers of components may apply to MESA to issue a letter of certification. To qualify for certification, electrical components shall conform to the prescribed inspection and test requirements and the construction thereof shall be adequately covered by specifications officially recorded and filed with MESA. Letters of certification may be cited to fabricators of equipment intended for use in a certified methane-monitoring system as evidence that further inspection and test of the components will not be required.

§ 27.7 Certification plate or label.

A certified methane-monitoring system or component thereof shall be identified with a certification plate or label which is attached to the system or component in a manner acceptable to MESA. The method of attachment shall not impair the explosion-proof characteristics of any enclosure. The plate or label shall be of serviceable material, acceptable to MESA, and shall contain the following inscription with spaces for appropriate identification of the system or component and assigned certificate number:

Manufacturer's Name-----
Description -----
(Name)

Model or Type No.-----
Certified as complying with the applicable requirements of Schedule 32A.
Certificate No.-----

§ 27.8 Fees.

| | |
|--|------|
| (a) Detailed inspection—each assembled component----- | \$60 |
| (b) Explosion testing—each explosion-proof enclosure----- | 70 |
| (c) Each series of tests to determine adequacy of design, materials, and/or construction----- | 105 |
| (d) Tests to determine safe operation and performance of a complete methane-monitoring system----- | 200 |
| (e) Tests to determine intrinsic safety----- | 105 |

| | |
|--|-------|
| (f) Final examination and recording of drawings and specifications requisite to issuing a letter of certification----- | \$110 |
| (g) Examining and recording drawings and specifications requisite to issuing an extension of certification, each 4 hours or fraction thereof----- | 35 |
| (h) Tests to assist an applicant in evaluating equipment intended for certification may be made at the discretion of MESA. Written requests for such tests shall be directed to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pennsylvania 15213. A deposit of \$200 shall be paid in advance when such tests have been authorized. The fees charged shall depend on the work performed based on normal charges. Any surplus will be refunded at the completion of the work, or applied to future work, on the same device, as directed by the applicant. | |

If an applicant is unable to determine the exact fee that should be submitted with his application, the information will be provided upon request addressed to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213. Any surplus from a fee submitted in excess of requirements will be refunded to the applicant upon completion or termination of the investigation or tests.

§ 27.9 Date for conducting tests.

The application, payment of necessary fees, and submission of required material will determine the order of precedence for testing when more than one application is pending. The applicant will be notified of the date on which tests will begin.

NOTE: If an assembly, subassembly, or component fails to meet any of the requirements, testing of it may be suspended and other items may be tested. However, if the cause of failure is corrected, testing will be resumed after completing such other test work as may be in progress.

§ 27.10 Conduct of investigations, tests, and demonstrations.

MESA shall hold as confidential and shall not disclose principles or patentable features, nor shall it disclose any details of drawings, specifications, or related materials. The conduct of all investigations, tests, and demonstrations shall be under the direction and control of MESA, and any other persons

shall be present only as observers, except as noted in paragraph (b) of this section.

(a) Prior to the issuance of a letter of certification, necessary Government personnel, representatives of the applicant, and such other persons as are mutually agreed upon may observe the investigations or tests.

(b) When requested by MESA the applicant shall provide assistance in assembling or disassembling components, subassemblies, or assemblies for testing, preparing components, subassemblies, or assemblies for testing, and operating the system during the tests.

(c) After the issuance of a letter of certification, MESA may conduct such public demonstrations and tests of the certified methane-monitoring system or components as it deems appropriate.

[31 FR 10607, Aug. 9, 1966, as amended at 39 FR 24003, June 28, 1974]

§ 27.11 Extension of certification.

If an applicant desires to change any feature of a certified system or component, he shall first obtain MESA's approval of the change, pursuant to the following procedure:

(a) Application shall be made as for an original certification, requesting that the existing certification be extended to cover the proposed changes. The application shall include complete drawings, specifications, and related data, showing the changes in detail.

(b) The application will be examined by MESA to determine whether inspection and testing of the modified system or component or of a part will be required. MESA will inform the applicant whether testing is required; the component or components and related material to be submitted for that purpose; and the fee for testing.

(c) If the proposed modification meets the requirements of this part, a formal extension of certification will be issued, accompanied by a list of revised drawings and specifications which MESA has added to those already on file.

§ 27.12 Withdrawal of certification.

MESA reserves the right to rescind for cause any certification issued under this part.

Subpart B—Construction and Design Requirements

§ 27.20 Quality of material, workmanship, and design.

(a) MESA will test only equipment that, in its opinion, is constructed of suitable materials, is of good workmanship, is based on sound engineering principles, and is safe for its intended use. Since all possible designs, arrangements, or combinations of components cannot be foreseen, MESA reserves the right to modify the construction and design requirements of components or subassemblies and the tests to obtain the degree of protection intended by the tests described in Subpart C of this part.

(b) Unless otherwise noted, the requirements stated in this part shall apply to explosion-proof enclosures and intrinsically safe circuits.

(c) All components, subassemblies, and assemblies shall be designed and constructed in a manner that will not create an explosion or fire hazard.

(d) All assemblies or enclosures—explosion-proof or intrinsically safe—shall be so designed that the temperatures of the external surfaces, during continuous operation, do not exceed 150° C. (302° F.) at any point.

(e) Lenses or globes shall be protected against damage by guards or by location.

(f) If MESA determines that an explosion hazard can be created by breakage of a bulb having an incandescent filament, the bulb mounting shall be so constructed that the bulb will be ejected if the bulb glass enclosing the filament is broken.

NOTE: Other methods that provide equivalent protection against explosion hazards from incandescent filaments may be considered satisfactory at the discretion of MESA.

§ 27.21 Methane-monitoring system.

(a) A methane-monitoring system shall be so designed that any machine or equipment, which is controlled by the system, cannot be operated unless the electrical components of the methane-monitoring system are functioning normally.

(b) A methane-monitoring system shall be rugged in construction so that its operation will not be affected by vibration or physical shock, such as normally encountered in mining operations.

(c) Insulating materials that give off flammable or explosives gases when

decomposed shall not be used within enclosures where they might be subjected to destructive electrical action.

(d) An enclosure shall be equipped with a lock, seal, or acceptable equivalent when MESA deems such protection necessary for safety.

(e) A component or subassembly of a methane-monitoring system shall be constructed as a package unit or otherwise in a manner acceptable to MESA. Such components or subassemblies shall be readily replaceable or removable without creating an ignition hazard.

(f) The complete system shall "fail safe" in a manner acceptable to MESA.

§ 27.22 Methane detector component.

(a) A methane detector component shall be suitably constructed for incorporation in or with permissible and approved equipment that is operated in gassy mines and tunnels.

(b) A methane detector shall include:

(1) A method of continuous sampling of the atmosphere in which it functions.

(2) A method for actuating a warning device which shall function automatically at a methane content of the mine atmosphere between 1.0 to 1.5 volume percent. The warning device shall also function automatically at all higher concentrations of methane in the mine atmosphere.

(3) A method for actuating a power-shutoff component, which shall function automatically when the methane content of the mine atmosphere is 2.0 volume percent and at all higher concentrations of methane.

(4) A suitable filter on the sampling intake to prevent dust and moisture from entering and interfering with normal operation.

NOTE: This requirement for the methane detector may be waived if the design is such as to preclude the need of a filter.

(c) A methane detector may provide means for sampling at more than one point; provided, the methane detector shall separately detect the methane in the atmosphere at each sampling point with, in MESA's opinion, sufficient frequency.

§ 27.23 Automatic warning device.

(a) An automatic warning device shall be suitably constructed for incorporation in or with permissible and approved equipment that is operated in gassy mines and tunnels.

(b) An automatic warning device shall include an alarm signal (audible or colored light), which shall be made to function automatically at a methane content of the mine atmosphere between 1.0 to 1.5 volume percent and at all higher concentrations of methane.

(c) It is recommended that the automatic warning device be supplemented by a meter calibrated in volume percent of methane.

§ 27.24 Power-shutoff component.

(a) A power-shutoff component shall be suitably constructed for incorporation in or with permissible and approved equipment that is operated in gassy mines and tunnels.

(b) The power-shutoff component shall include:

(1) A means which shall be made to function automatically to deenergize the machine or equipment when actuated by the methane detector at a methane concentration of 2.0 volume percent and at all higher concentrations in the mine atmosphere.

(i) For an electric-powered machine or equipment energized by means of a trailing cable, the power-shutoff component shall, when actuated by the methane detector, cause a control circuit to shut down the machine or equipment on which it is installed; or it shall cause a control circuit to deenergize both the machine or equipment and the trailing cable.

NOTE: It is not necessary that power be controlled both at the machine and at the outby end of the trailing cable.

(ii) For a battery-powered machine or equipment, the methane-monitor power-shutoff component shall, when actuated by the methane detector, cause a control circuit to deenergize the machine or equipment as near as possible to the battery terminals.

(iii) For a diesel-powered machine or equipment, the power-shutoff component, when actuated by the methane detector, shall shut down the prime mover and deenergize all electrical components of the machine or equipment. Batteries are to be disconnected as near as possible to the battery terminals. Headlights which are approved under part 20 of this subchapter (Schedule 10, or any revision thereof) are specifically exempted from this requirement.

(2) An arrangement for testing the power-shutoff characteristic to determine whether the power-shutoff component is functioning properly.

Subpart C—Test Requirements

§ 27.30 Inspection.

A detailed inspection shall be made by MESA of the equipment and all components and functions related to safety in operation, which shall include:

(a) Examining materials, workmanship, and design to determine conformance with paragraph (a) of § 27.20.

(b) Comparing components and subassemblies with the drawings and specifications to verify conformance with the requirements of this part.

§ 27.31 Testing methods.

A methane-monitoring system shall be tested by MESA to determine its functional performance, and its explosion-proof and other safety characteristics. Since all possible designs, arrangements, or combinations cannot be foreseen, MESA reserves the right to make any tests or to place any limitations on equipment, or components or subassemblies thereof, not specifically covered herein, to determine and assure the safety of such equipment with regard to explosion and fire hazards.

§ 27.32 Tests to determine performance of the system.

(a) *Laboratory tests for reliability and durability.* Five hundred successful consecutive tests¹ for gas detection, alarm action, and power shutoff in natural gas-air mixtures² shall be conducted to demonstrate acceptable performance as to reliability and durability of a methane-monitoring system. The tests shall be conducted as follows:

(1) The methane detector component shall be placed in a test gallery into which natural gas shall be made to enter at various rates with sufficient turbulence for proper mixing with the air in the gallery. To comply with the requirements of this test, the detector shall pro-

¹ Normal replacements and adjustments shall not constitute a failure.

² Investigation has shown that, for practical purposes, natural gas (containing a high percentage of methane) is a satisfactory substitute for pure methane in these tests.

³ At the option of MESA, these tests will be conducted with dust or moisture added to the atmosphere within the gallery.

vide an impulse to actuate an alarm at a predetermined percentage of gas and also provide an impulse to actuate a power shutoff at a second predetermined percentage of gas. (See §§ 27.21, 27.22, 27.23, and 27.24.)⁴

(b) *Field tests.* MESA reserves the right to conduct tests, similar to those stated in paragraph (a) of this section, in underground workings to verify reliability and durability of a methane-monitoring system installed in connection with a piece of mining equipment.

§ 27.33 Test to determine explosion-proof construction.

Any assembly, subassembly, or component which, in the opinion of MESA, requires explosion-proof construction shall be tested in accordance with the procedures stated in Part 18 of this subchapter.

§ 27.34 Test for intrinsic safety.

Assemblies, subassemblies, or components that are designed for intrinsic safety shall be tested by introducing into the circuit(s) thereof a circuit-interrupting device which produces an electric spark from the current in the circuit. The circuit-interrupting device shall be placed in a gallery containing various flammable natural gas-air mixtures. To meet the requirements of this test, the spark shall not ignite the flammable mixture. For this test the circuit-interrupting device shall be operated not less than 100 times at 125 percent of the normal operating voltage of the particular circuit.

§ 27.35 Tests to determine life of critical components and subassemblies.

Replaceable components may be subjected to appropriate life tests at the discretion of MESA.

§ 27.36 Test for adequacy of electrical insulation and clearances.

MESA shall examine, and test in a manner it deems suitable, electrical insulation and clearances between electrical conductors to determine adequacy for the intended service.

§ 27.37 Tests to determine adequacy of safety devices for bulbs.

The glass envelope of bulbs with the filament incandescent at normal operating voltage shall be broken in flammable methane-air or natural gas-air mixtures in a gallery to determine that the safety

device will prevent ignition of the flammable mixtures.

§ 27.38 Tests to determine adequacy of windows and lenses.

Impact tests. A 4-pound cylindrical weight with a one-inch diameter hemispherical striking surface will be dropped (free fall) to strike the window or lens in its mounting or the equivalent thereof at or near the center. At least three out of four samples shall withstand the impact according to the following table:

| Overall lens diameter (inches) | Height of fall (inches) | |
|-----------------------------------|----------------------------|----|
| Less than 4..... | | 6 |
| 4 to 5..... | | 9 |
| 5 to 6..... | | 15 |
| Greater than 6..... | | 24 |

Lenses or windows of smaller diameter than 1 inch may be tested by alternate methods at the discretion of MESA.

§ 27.39 Tests to determine resistance to vibration.

(a) **Laboratory tests for reliability and durability.** Components, subassemblies, or assemblies that are to be mounted on permissible and approved equipment shall be subjected to two separate vibration tests, each of one-hour duration. The first test shall be conducted at a frequency of 30 cycles per second with a total movement per cycle of $\frac{1}{16}$ inch. The second test shall be conducted at a frequency of 15 cycles per second with a total movement per cycle of $\frac{1}{8}$ inch. Components, subassemblies, and assemblies shall be secured to the vibration testing equipment in their normal operating positions (with shock mounts, if regularly provided with shock mounts). Each component, subassembly and assembly shall function normally during and after each vibration test.

NOTE: The vibrating equipment is designed to impart a circular motion in a plane inclined 45° to the vertical or horizontal.

(b) **Field tests.** MESA reserves the right to conduct tests to determine resistance to vibration in underground workings to verify the reliability and durability of a methane-monitoring system or component(s) thereof where installed in connection with a piece of mining equipment.

§ 27.40 Test to determine resistance to dust.

Components, subassemblies, or assemblies, the normal functioning of which

might be affected by dust, such as coal or rock dust, shall be tested in an atmosphere containing an average concentration (50 million minus 40 micron particles per cubic foot) of such dust(s) for a continuous period of 4 hours. The component, subassembly, or assembly shall function normally after being subjected to this test.

NOTE: Dust measurements, when necessary, shall be made by impinger sampling and light-field counting technique.

§ 27.41 Test to determine resistance to moisture.

Components, subassemblies, or assemblies, the normal functioning of which might be affected by moisture, shall be tested in atmospheres of high relative humidity (80 percent or more at 65°–75° F.) for continuous operating and idle periods of 4 hours each. The component or subassembly or assembly shall function normally after being subjected to those tests.

PART 28—FUSES FOR USE WITH DIRECT CURRENT IN PROVIDING SHORT-CIRCUIT PROTECTION FOR TRAILING CABLES IN COAL MINES

Subpart A—General Provisions

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Subpart D—Quality Control

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| 28.30 | Quality control plans; filing requirements. |
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Subpart E—Construction, Performance and Testing Requirements

Sec.

28.40 Construction and performance requirements; general.

28.41 Testing requirements; general.

AUTHORITY: The provisions of this Part 28 issued under secs. 306(b) and 508 of the Federal Coal Mine Health and Safety Act of 1969 (30 U.S.C. 801, 83 Stat. 742), and 36 Stat. 369, as amended, 37 Stat. 681, 30 U.S.C. 3, 5, and 7.

SOURCE: 37 FR 7562, Apr. 15, 1972, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 39 FR 24008, June 28, 1974.

Subpart A—General Provisions

§ 28.1 Purpose.

The purpose of the regulations contained in this Part 28 is: (a) To establish procedures and prescribe requirements which must be met in filing applications for the approval of fuses for use with direct current in providing short-circuit protection for trailing cables in coal mines, or the approval of changes or modifications of approved fuses; (b) to specify minimum performance requirements and to prescribe methods to be employed in conducting inspections, examinations, and tests to determine the effectiveness of fuses for use with direct current in providing short-circuit protection for trailing cables in coal mines; and (c) to provide for the issuance of certificates of approval or modifications of certificates of approval for fuses which have met the minimum requirements for performance and short-circuit protection set forth in this part.

§ 28.2 Approved fuses.

(a) On and after the effective date of this part, fuses shall be considered to be approved for use with direct current in providing short-circuit protection for trailing cables in coal mines only where such fuses are: (1) The same in all respects as those fuses which have been approved after meeting the minimum requirements for performance and short-circuit protection prescribed in this Part 28; and (2) maintained in an approved condition.

§ 28.3 Installation, use, and maintenance of approved fuses.

Approved fuses shall be installed and maintained in accordance with the specifications prescribed by the manufacturer of the fuses, and shall be selected and

used in accordance with the standards prescribed for short-circuit protective devices for trailing cables in Parts 75 and 77, Subchapter O of this chapter.

§ 28.4 Definitions.

As used in this part—

(a) "Applicant" means an individual, partnership, company, corporation, association, or other organization that designs, manufactures, assembles, or fabricates, or controls the design, manufacture, assembly, or fabrication of a fuse, and who seeks to obtain a certificate of approval for such fuse.

(b) "Approval" means a certificate or formal document issued by MESA stating that an individual fuse or combination of fuses has met the minimum requirements of this Part 28, and that the applicant is authorized to use and attach an approval label or other equivalent marking to any fuse manufactured, assembled, or fabricated in conformance with the plans and specifications upon which the approval was based, as evidence of such approval.

(c) "Approved" means conforming to the minimum requirements of this Part 28.

(d) "MESA" means the United States Department of the Interior, Mining Enforcement and Safety Administration.

(e) "Fuse" means a device, no less effective than an automatic circuit breaker, for use with direct current which provides short-circuit protection for trailing cables in coal mines by interrupting an excessive current in the circuit.

[37 FR 7562, Apr. 15, 1972, as amended at 39 FR 24003, June 28, 1974]

Subpart B—Application for Approval

§ 28.10 Application procedures.

(a) Each applicant seeking approval of a fuse for use with direct current in providing short-circuit protection for trailing cables shall arrange for submission, at his own expense, of the number of fuses necessary for testing to Westinghouse Electric Corp., High Voltage Test Laboratory, East Pittsburgh, Pa. 15112, or General Electric Co., High Voltage Laboratory, 7500 Lindberg Boulevard, Philadelphia, PA 19155, or any other nationally recognized independent testing laboratory capable of performing the examination, inspection, and testing requirements of this part.

(b) The applicant shall insure, at his own expense, that the examination, in-

spection, and testing requirements of this part are properly and thoroughly performed by the independent testing laboratory of his choice.

(c) Upon satisfactory completion by the independent testing laboratory of the examination, inspection, and testing requirements of this part, the data and results of such examination, inspection, and tests shall be certified by both the applicant and the laboratory and shall be sent for evaluation of such data and results to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, PA 15213.

(d) The certified data and results of the examinations, inspections, and tests required by this part and submitted to MESA shall be accompanied by a check, bank draft, or money order in the amount of \$55 for each fuse size and type payable to the order of the U.S. Mining Enforcement and Safety Administration.

(e) The certified data and results of the examinations, inspections, and tests required by this part and submitted to MESA for evaluation shall be accompanied by a proposed plan for quality control which meets the minimum requirements set forth in Subpart D of this part.

(f) Each applicant shall deliver to MESA at his own expense, three fuses of each size and type which may be necessary for evaluation of the examination, inspection, and test results by the Bureau.

(g) Applicants or their representatives may visit or communicate with Approval and Testing, Pittsburgh Technical Support Center in order to discuss the requirements for approval of any fuse, or to obtain criticism of proposed designs; no charge shall be made for such consultation and no written report shall be issued by MESA as a result of such consultation.

Subpart C—Approval and Disapproval

§ 28.20 Certificates of approval; scope of approval.

(a) MESA shall issue certificates of approval pursuant to the provisions of this subpart only for individual, completely fabricated fuses which have been examined, inspected, and tested as specified in § 28.10, and have been evaluated by MESA to ensure that they meet the minimum requirements prescribed in this part.

(b) MESA shall not issue an informal notification of approval.

§ 28.21 Certificates of approval; contents.

(a) Each certificate of approval shall contain a description of the fuse and a classification of its current-interrupting capacity and current rating.

(b) The certificate of approval shall specifically set forth any restrictions or limitations on the use of the fuse in providing short-circuit protection for trailing cables.

(c) Each certificate of approval shall be accompanied by a reproduction of the approval label or marking design, as appropriate, to be employed by the applicant with each approved fuse as provided in § 28.23.

(d) No test data or specific laboratory findings will accompany any certificate of approval, however, MESA will re-release analyses of pertinent test data and specific findings upon receipt of a written request by the applicant, or when required by statute or regulation.

(e) Each certificate of approval shall also contain the approved quality control plan as specified in § 28.31.

§ 28.22 Notice of disapproval.

(a) If, upon completion of the evaluation by MESA conducted in accordance with § 28.10, it is determined that the fuse does not meet the minimum requirements set forth in this part, MESA shall issue a written notice of disapproval to the applicant.

(b) Each notice of disapproval shall be accompanied by all available findings with respect to the defects of the fuse for which approval was sought with a view to the possible correction of any such defects.

(c) MESA shall not disclose, except to the applicant upon written request or when required by statute or regulation, any data, findings, or other information with respect to any fuse for which a notice of disapproval is issued.

§ 28.23 Approval labels or markings; approval of contents; use.

(a) Approval labels shall bear the emblem of the Mining Enforcement and Safety Administration, an approval number, the restrictions, if any, placed upon the use of the fuse by MESA, and where appropriate, the applicant's name and address.

(b) Upon receipt of a certificate of approval, the applicant shall submit to MESA, for approval of contents, full-scale reproductions of approval labels or markings, as appropriate, and a sketch or description of the method of application and position on the fuse, together with instructions for the installation, use, and maintenance of the fuse.

(c) Legible reproductions or abbreviated forms of the label or markings approved by MESA shall be attached to or printed on each fuse.

(d) Each fuse shall be marked with the rating of the Underwriters Laboratories, Inc.

(e) MESA shall, where necessary, notify the applicant when additional labels, markings, or instructions will be required.

(f) Approval labels or markings shall only be used by the applicant to whom they were issued.

(g) The use of any MESA approval label or marking obligates the applicant to whom it is issued to maintain or cause to be maintained the approved quality control sampling procedure and the acceptable quality level for each characteristic tested, and to guarantee that the approved fuse is manufactured according to the specifications upon which the certificate of approval is based.

(h) The use of any MESA approval to whom it is issued to retest the approved fuse within a 2-year period from the date of the certificate of approval, and every 2 years thereafter, in accordance with the provisions of § 28.10.

§ 28.24 Revocation of certificates of approval.

MESA reserves the right to revoke, for cause, any certificate of approval issued pursuant to the provisions of this part. Such causes include, but are not limited to, misuse of approval labels and markings, misleading advertising, violations of section 109(e) of the Federal Coal Mine Health and Safety Act of 1969 (30 U.S.C. 819(e)), and failure to maintain or cause to be maintained the quality control requirements of the certificate of approval.

§ 28.25 Changes or modifications of approved fuses; issuance of modification of certificate of approval.

(a) Each applicant may, if he desires to change any feature of an approved fuse, request a modification of the original certificate of approval issued by MESA for such fuse by filing an appli-

cation for modification in accordance with the provisions of this section.

(b) Applications, including fees, shall be submitted as specified in § 28.10 for an original certificate of approval, with a request for a modification of the existing certificate to cover any proposed change.

(c) The application for modification, together with the examination, inspection, and tests results prescribed by § 28.10 shall be examined and evaluated by MESA to determine if the proposed modification meets the requirements of this part.

(d) If the proposed modification meets the requirements of this part, a formal modification of approval will be issued, accompanied, where necessary, by reproductions of revised approval labels or markings.

Subpart D—Quality Control

§ 28.30 Quality control plans; filing requirements.

As a part of each application for approval or modification of approval submitted pursuant to this part, each applicant shall file with MESA a proposed quality control plan which shall be designed to assure the quality of short-circuit protection provided by the fuse for which approval is sought,

§ 28.31 Quality control plans; contents.

(a) Each quality control plan shall contain provisions for the management of quality, including; (1) Requirements for the production of quality data and the use of quality control records; (2) control of engineering drawings, documentations, and changes; (3) control and calibration of measuring and test equipment; (4) control of purchased material to include incoming inspection; (5) lot identification, control of processes, manufacturing, fabrication, and assembly work conducted in the applicant's plant; (6) audit or final inspection of the completed product; and, (7) the organizational structure necessary to carry out these provisions.

(b) The sampling plan shall include inspection tests and sampling procedures developed in accordance with Military Specification MIL-F-15160D, "Fuses; Instrument, Power, and Telephone" (which is hereby incorporated by reference and made a part hereof), Group A tests and Group B tests, except that the continuity and/or resistance characteristics of each fuse shall be tested. Mil-

tary Specification MIL-F-15160D is available for examination at Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, PA. Copies of the document may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

(c) The sampling procedure shall include a list of the characteristics to be tested by the applicant or his agent and shall include but not be limited to: (1) Continuity and/or resistance determination for each fuse; (2) carry current capability (not less than 110 percent of the rated current); and, (3) overload current interruption capability (not less than 135 percent of the rated current).

(d) The quality control inspection test method to be used by the applicant or his agent for each characteristic required to be tested shall be described in detail.

§ 28.32 Proposed quality control plans; approval by MESA.

(a) Each proposed quality control plan submitted in accordance with this subpart shall be reviewed by MESA to determine its effectiveness in insuring the quality of short-circuit protection provided by the fuse for which an approval is sought.

(b) If MESA determines that the proposed quality control plan submitted by the applicant will not insure adequate quality control, MESA shall require the applicant to modify the procedures and testing requirements of the plan prior to approval of the plan and issuance of any certificate of approval.

(c) Approved quality control plans shall constitute a part of and be incorporated into any certificate of approval issued by MESA, and compliance with such plans by the applicant shall be a condition of approval.

§ 28.33 Quality control test methods, equipment, and records; review by MESA; revocation of approval.

(a) MESA reserves the right to have its representatives inspect the applicant's quality control test methods, equipment, and records, and to interview any employee or agent of the applicant in regard to quality control test methods, equipment, and records.

(b) MESA reserves the right to revoke, for cause, any certificate of approval where it finds that the applicant's quality control test methods, equipment, or records do not ensure effective quality

control over the fuse for which the approval was issued.

Subpart E—Construction, Performance, and Testing Requirements

§ 28.40 Construction and performance requirements; general.

(a) MESA shall issue approvals for fuses for use with direct current in providing short-circuit protection for trailing cables, when such fuses have met the minimum construction, performance, and testing requirements set forth in this subpart.

(b) Fuses submitted to MESA for approval will not be accepted unless they are designed on sound engineering and scientific principles, constructed of suitable materials, and evidence good workmanship.

(c) Fuses may be single-element or dual-element in type, however, they shall be capable of interrupting any direct current within a range from the ampere rating of the fuse under consideration for approval up to 20,000 amperes.

(d) MESA shall accept the fuse size and ampere rating as specified in the Underwriters Laboratories, Inc., standard for alternating current fuses (UL-198), which is hereby incorporated by reference and made a part hereof. This document is available for examination at Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, PA, and copies of the document are available from Underwriter's Laboratories, Inc., 161 Sixth Avenue, New York, NY 10013.

(e) Fuses shall be capable of completely interrupting a current within 30 milliseconds after initial current interruption, and shall not show any evidence of restriking after 30 milliseconds.

(f) The blown fuse shall show only superficial damage.

§ 28.41 Testing requirements; general.

(a) The open circuit voltage of the test circuit shall be 300 volts d.c., or 600 volts d.c., depending on the voltage rating of the fuse being tested.

(b) Time constant of the circuit (defined as $T=L/R$, where T is the time in seconds, L is the inductance in henries, and R is the resistance in ohms) shall be as follows:

(1) For 10,000 amperes and greater currents, $T=0.016$ second or more;

(2) For 1,000 amperes to 10,000 amperes, $T=0.008$ second or more;

(3) For 100 amperes to 1,000 amperes, $T=0.006$ second or more; and

(4) For less than 100 amperes, $T=0.002$ seconds or more.

(c) Test currents shall be as follows:

(1) 200 percent of rated current for fuses having 200 or less ampere rating, or 300 percent of rated current for fuses having greater than 200 ampere rating;

(2) 900 percent of rated current;

(3) 10,000 amperes; and

(4) 20,000 amperes.

(d) The voltage shall continue to be applied for at least 30 seconds after completion of circuit interruption.

(e) Five fuses of each case size shall be tested at each test current specified in paragraph (c) of this section, with the value of the fuse being the maximum value for the case size.

(f) Three of each lot of five fuses shall be preconditioned at 95 ± 5 percent R H for not less than 5 days immediately prior to testing; and the other two fuses of each lot of five shall be preconditioned by heating to 90° C. for 24 hours, and tested within 1 hour after removal from the preconditioning chamber.

(g) At least 3 of each lot of five fuses shall be tested in a fuse holder of a trolley-tap type, and the fuse holder shall remain intact and shall readily accept and retain a replacement fuse.

PART 29—PORTABLE COAL DUST/ROCK DUST ANALYZERS, AND CONTINUOUS DUTY, WARNING LIGHT, PORTABLE METHANE DETECTORS FOR USE IN COAL MINES

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- 29.70 Minimum performance requirements.
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Table C—Maximum and Minimum Limits of Error for Accessory Quantitative Meters Installed on Continuous Duty, Warning Light, Portable Methane Detectors.

AUTHORITY: The provisions of this Part 29 issued under sec. 508 of the Federal Coal Mine Health and Safety Act of 1969 (80 U.S.C. 801, 83 Stat. 742), and 36 Stat. 369, as amended, 37 Stat. 681, 30 U.S.C. 3, 5, and 7.

SOURCE: 37 FR 7565, Apr. 15, 1972, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 39 FR 24003, June 28, 1974.

Subpart A—General Provisions

§ 29.1 Purpose.

The purpose of the regulations contained in this Part 29 is: (a) To establish procedures and prescribe requirements which must be met in filing applications for the approval of portable coal dust/rock dust analyzers for use in measuring the incombustible content of mine dusts, and the approval of continuous duty, warning light, portable methane detectors for use in providing a visual signal of the presence of a methane-air mixture having a methane concentration of 1.0 percent \pm 0.2 percent, or the approval of changes and modifications of approved portable coal dust/rock dust analyzers and continuous duty, warning light, portable methane detectors; (b) to specify minimum performance requirements and to prescribe methods to be employed in conducting inspections, examinations, and tests to determine the effectiveness of these instruments; and (c) to provide for the issuance of certificates of approval or modifications of certificates of approval for portable coal dust/rock dust analyzers and continuous duty, warning light, portable methane detectors which have met the minimum requirements for performance set forth in this part.

§ 29.2 Approved portable coal dust/rock dust analyzers and continuous duty, warning light, portable methane detectors.

On and after the effective date of this part, portable coal dust/rock dust analyzers and continuous duty, warning light, portable methane detectors shall

be considered to be approved for use in coal mines where such instruments are: (a) The same in all respects as those portable coal dust/rock dust analyzers and continuous duty, warning light, portable methane detectors which have been approved as meeting the minimum requirements for performance prescribed in this Part 29; and (b) maintained in an approved condition.

§ 29.3 Use and maintenance of approved portable coal dust/rock dust analyzers and continuous duty, warning light, portable methane detectors.

Approved portable coal dust/rock dust analyzers and continuous duty, warning light, portable methane detectors shall be operated and maintained in accordance with the specifications prescribed by the manufacturer of such instruments, and in accordance with the applicable provisions of Parts 75 and 77, Subchapter O of this chapter.

§ 29.4 Definitions.

As used in this part—

(a) "Applicant" means an individual, partnership, company, corporation, association, or other organization that designs, manufactures, assembles, or fabricates, or controls the design, manufacture, assembly, or fabrication of a portable coal dust/rock dust analyzer or a continuous duty, warning light, portable methane detector, and who seeks to obtain a certificate of approval for such analyzer or detector.

(b) "Approval" means a certificate or formal document issued by MESA stating that an individual portable coal dust/rock dust analyzer or an individual continuous duty, warning light, portable methane detector has met the applicable minimum requirements of this Part 29, and that the applicant is authorized to use and attach an approval label or plate on any portable coal dust/rock dust analyzer or continuous duty, warning light, portable methane detector manufactured, fabricated, or assembled in conformance with the plans and specifications upon which the approval was based, as evidence of such approval.

(c) "Approved" means conforming to the minimum requirements of this Part 29.

(d) "Bureau" means the U.S. Bureau of Mines, Department of the Interior.

(e) "Coal dust" means particles of coal that can pass a No. 20 sieve.

(f) "Coal Mine" means an area of land and all structures, facilities, machinery,

tools, equipment, shafts, slopes, tunnels, excavations, and other property, real or personal, placed upon, under, or above the surface of such land by any person, used in, or to be used in, or resulting from, the work of extracting in such area bituminous coal, lignite, or anthracite from its natural deposits in the earth by any means or method, and the work of preparing the coal so extracted, and includes custom coal preparation facilities.

(g) "Coal mine dust" means solid particles with sizes ranging from submicroscopic to microscopic, including but not limited to coal dust and rock dust.

(h) "Continuous duty, warning light, portable methane detector" means a portable, self-contained instrument, containing a red warning light which flashes in the presence of methane-air mixtures having methane concentrations of 1.0 percent \pm 0.2 percent.

(i) "Portable coal dust/rock dust analyzer" means a portable, self-contained instrument, capable of indicating the incombustible content of coal mine dust over a range of from 50 percent to 100 percent incombustible.

(j) "Rock dust" means pulverized limestone, dolomite, gypsum, anhydrite, shale, adobe, or other inert material, preferably light colored, 100 per centum of which will pass through a sieve having 20 meshes per linear inch and 70 per centum or more of which will pass through a sieve having 200 meshes per linear inch; the particles of which when wetted and dried will not cohere to form a cake which will not be dispersed into separate particles by a light blast of air; and which does not contain more than 5 per centum of combustible matter or more than a total of 4 per centum of free and combined silica (SiO_2), or, where the Secretary finds that such silica concentrations are not available, which does not contain more than 5 per centum of free and combined silica.

(k) "Work of preparing the coal" means the breaking, crushing, sizing, cleaning, washing, drying, mixing, storing, and loading of bituminous coal, lignite, or anthracite, and such other work of preparing such coal as is usually done by the operator of the coal mine.

(l) "MESA" means the United States Department of the Interior, Mining Enforcement and Safety Administration.

[37 FR 7565, Apr. 15, 1972, as amended at 39 FR 24003, June 28, 1974]

Subpart B—Application for Approval

§ 29.10 Application procedures.

(a) Inspection, examination, and testing leading to the approval of portable coal dust/rock dust analyzers and continuous duty, warning light, portable methane detectors shall be undertaken by MESA only pursuant to written applications which meet the minimum requirements set forth in this Subpart B.

(b) Applications shall be submitted in duplicate to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, PA 15213, and shall be accompanied by a check, bank draft, or money order in the amount specified in Subpart C of this part payable to the order of the U.S. Mining Enforcement and Safety Administration.

(c) Except as provided in §§ 29.54, 29.61(e), and 29.76(b), the examination, inspection, and testing of all portable coal dust/rock dust analyzers and continuous duty, warning light, portable methane detectors shall be conducted at Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213, or at the Bruceton, Pa. facility of the Technical Support Center.

(d) Applicants, manufacturers, or their representatives may visit or communicate with Approval and Testing, Pittsburgh Technical Support Center in order to discuss the requirements for approval of any portable coal dust/rock dust analyzer, or continuous duty, warning light, portable methane detector or the proposed designs thereof. No charge shall be made for such consultation and no written report shall be issued by MESA as a result of such consultation.

§ 29.11 Contents of application.

(a) Each application for approval shall contain a complete written description, including operating instructions, of the analyzer or detector for which approval is requested together with a set of drawings and specifications (and lists thereof) showing full details of construction of the instrument and of the materials used. Drawings and specifications (and lists thereof) shall be submitted in duplicate.

(b) Drawings shall be titled, numbered, and dated; any revision dates shall be shown on the drawings, and the purpose of each revision being sought shall be shown on the drawing or described on

an attachment to the drawing to which it applies.

(c) Each application for approval shall contain a proposed plan for quality control which meets the minimum requirements set forth in Subpart E of this part.

(d) Each application shall contain a statement that the analyzer or detector has been pretested by the applicant as prescribed in § 29.54, and shall include the results of such tests.

(e) Each application for approval shall contain a statement that the analyzer or detector and component parts submitted for approval are either (1) prototypes, or (2) made on regular production tooling, with no operation included which will not be incorporated in regular production processing.

(f) Where any form of radioactivity is employed in the analyzer or detector, the applicant shall submit:

(1) Evidence of compliance with all State regulations with respect to radiation and the use of radioactive materials; and

(2) Evidence of compliance with the requirements set forth in Title 10, Code of Federal Regulations.

§ 29.12 Delivery of analyzers and detectors by applicant; requirements.

(a) Each applicant shall, when an application is filed pursuant to § 29.10 deliver at his own expense, four assembled analyzers or detectors, less the radioactive source, to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213. The radioactive source shall be delivered and inserted in the instrument by the applicant following testing of the electrical components of such instrument.

(b) Analyzers, detectors, and component parts submitted for approval must be made from materials specified in the application.

(c) One completely assembled analyzer or detector approved under the provisions of this part may be retained by MESA as a laboratory exhibit; the remaining instruments will be returned to the applicant at his own expense, upon written request within 30 days after notice of approval. If no such request is made, the instruments will be disposed of by MESA in such manner as it deems appropriate.

(d) Where an analyzer or detector fails to meet the requirements for ap-

proval set forth in this part, all instruments and components delivered intact in accordance with this section will be returned to the applicant at his own expense, upon written request within 30 days after notice of disapproval. If no such request is made, the instruments will be disposed of by MESA in such manner as it deems appropriate.

Subpart C—Fees

§ 29.20 Examination, inspection, and testing of portable coal dust/rock dust analyzers, and continuous duty, warning light, portable methane detectors; fees.

Except as provided in § 29.21, the following fees shall be charged by MESA for the examination, inspection, and testing of portable coal dust/rock dust analyzers and continuous duty, warning light, portable methane detectors:

- (a) Examining and recording drawings and specifications prior to inspection, examination and testing ----- \$110
- (b) Intrinsic-safety investigation and test under Part 18 of this chapter (MESA Schedule 2G)--- 105
- (c) Inspection and explosion testing ----- 175

§ 29.21 Additional fees; payment by applicant prior to approval.

(a) MESA reserves the right to conduct any examination, inspection, or test it deems necessary to determine the quality and effectiveness of any analyzer, detector, or component, and to assess the cost of such examinations, inspections, or tests against the applicant prior to the issuance of any approval for the instrument examined, inspected or tested.

(b) The fees charged for the additional examination, inspection, and testing of analyzers, detectors, and components shall be at the rate of \$100 per day for each man-day required to be expended by MESA.

(c) Upon completion of all examinations, inspections, and tests of analyzers, detectors, and components, MESA shall advise the applicant in writing of the total cost assessed and the additional amount, if any, which must be paid to MESA as a condition of approval.

(d) MESA shall refund any overpayment to the applicant upon the issuance of any approval or notice of disapproval.

Subpart D—Approval and Disapproval

§ 29.30 Certificates of approval; scope of approval.

(a) MESA shall issue certificates of approval pursuant to the provisions of this subpart only for individual, completely assembled portable coal dust/rock dust analyzers and continuous duty, warning light, portable methane detectors which have been examined, inspected, and tested, and which meet the minimum requirements set forth in Subparts G and H, as applicable.

(b) MESA shall not issue an informal notice of approval. However, if the application for approval, submitted in accordance with § 29.11, states that the submitted analyzer, detector, and component parts are only prototypes, MESA will examine, inspect, and test such prototype analyzer, detector, and component parts in accordance with the provisions of this Part 29. If, upon completion of such examinations, inspections and tests, it is found that the prototype meets the minimum requirements set forth in this part, MESA may inform the applicant, in writing, of the results of the examinations, inspections, and tests, and may require him to resubmit analyzers, detectors, and component parts, as applicable, made on regular production tooling, with no operations included which will not be incorporated in regular production processing, for further examination, inspection, and testing, prior to issuance of the certificate of approval.

(c) Applicants required to resubmit analyzers, detectors, and component parts made on regular production tooling, with no operation included which will not be incorporated in regular production processing, shall be charged fees in accordance with Subpart C of this part.

§ 29.31 Certificates of approval; contents.

(a) The certificate of approval shall contain a description of the analyzer or detector for which it is issued as provided in this part.

(b) The certificate of approval shall specifically set forth any restrictions or limitations, if any, on use of the instrument.

(c) Each certificate of approval shall be accompanied by the drawings and specifications (and lists thereof) sub-

mitted by the applicant in accordance with § 29.11. These drawings and specifications shall be incorporated by reference in the certificate of approval and shall be maintained by the applicant. The drawings and specifications listed in each certificate of approval shall set forth in detail the design and construction requirements which shall be met by the applicant during commercial production of the instrument.

(d) Each certificate of approval, shall be accompanied by a reproduction of the approval label design to be employed by the applicant with each approved instrument as provided in § 29.33.

(e) No test data or specific laboratory findings will accompany any certificate of approval, however, MESA will release pertinent test data and specific findings upon written request by the applicant, or when required by statute or regulation.

(f) Each certificate of approval shall also contain the approved quality control plan as specified in § 29.42.

§ 29.32 Notice of disapproval.

(a) If, upon the completion of the examinations, inspections, and tests required to be conducted in accordance with the provisions of this part, it is found that the analyzer or detector does not meet the minimum requirements set forth in this part, MESA shall issue a written notice of disapproval to the applicant.

(b) Each notice of disapproval shall be accompanied by all pertinent data or findings with respect to the defects of the instrument for which approval was sought with a view to the possible correction of any such defects.

(c) MESA shall not disclose, except to the applicant upon written request or when required by statute or regulation, any data, findings or other information with respect to any instrument for which a notice of disapproval is issued.

§ 29.33 Approval labels and markings; approval of contents; use.

(a) Upon receipt of a certificate of approval, the applicant shall submit to MESA, for approval of contents, samples or full-scale reproductions of approval plates, labels, and markings and a sketch or description of the method of application and position on the instrument, together with instructions for the use and maintenance of the instrument.

(b) Approval labels shall bear the emblem of the Mining Enforcement and Safety Administration, the applicant's name and address, the restrictions or limitations placed upon the use of the instrument by MESA, an approval number assigned by MESA, and other information necessary for identification of the instrument.

(c) MESA shall, where necessary, notify the applicant when additional labels, markings or instructions will be required.

(d) Approval labels and markings shall only be used by the applicant to whom they were issued.

(e) Legible reproductions or abbreviated forms of the label approved by MESA for use on each analyzer and detector shall be affixed, attached to, or printed on the instrument at a location where it can be easily seen.

(f) The use of any MESA approval label obligates the applicant to whom it is issued to maintain or cause to be maintained the approved quality control sampling schedule and the acceptable quality level for each characteristic tested, and to guarantee that the instrument is manufactured according to the drawings and specifications upon which the certificate of approval is based.

(g) Each analyzer and detector shall be labeled distinctly to show the name of the applicant, and the name and letters or numbers by which the instrument is designated for trade purposes, and the serial number or approximate date of manufacture.

§ 29.34 Revocation of certificates of approval.

MESA reserves the right to revoke, for cause, any certificate of approval issued pursuant to the provisions of this part. Such causes include, but are not limited to, misuse of approval labels and markings, misleading advertising, violations of section 109(e) of the Federal Coal Mine Health and Safety Act of 1969 (30 U.S.C. 819(e)), and failure to maintain or cause to be maintained the quality control requirements of the certificate of approval.

§ 29.35 Changes or modification of approval analyzers and detectors; issuance of modification of certificate of approval.

(a) Each applicant may, if he desires to change any feature of an approved analyzer or detector, request a modifica-

tion of the original certificate of approval issued by MESA for such instrument by filing an application for such modification in accordance with the provisions of this section.

(b) Applications shall be submitted as for an original certificate of approval, with a request for a modification of the existing certificate to cover any proposed change.

(c) The application shall be accompanied by appropriate drawings and specifications, and by a proposed quality control plan which meets the requirements of Subpart E of this part.

(d) The application for modification, together with the accompanying material, shall be examined by MESA to determine whether testing will be required.

(e) MESA shall inform the applicant of the fee required for any additional testing and the applicant will be charged for the actual cost of any examination, inspection, or test required, and such fees shall be submitted in accordance with the provisions of Subpart C of this part.

(f) If the proposed change or modification meets the requirements of this part, a formal certificate of modification will be issued, accompanied, where necessary, by a list of new and revised drawings and specifications covering the change(s) and reproductions of revised approval labels.

§ 29.36 Delivery of changed or modified approved analyzer or detector.

An approved analyzer or detector for which a formal certificate of modification has been issued shall be delivered by the applicant to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, PA 15213, as soon as it is commercially produced.

Subpart E—Quality Control

§ 29.40 Quality control plans; filing requirements.

As a part of each application for approval or modification of approval submitted pursuant to this part, each applicant shall file with MESA a proposed quality control plan which shall be designed to assure the quality of the instrument for which approval is sought.

§ 29.41 Quality control plans; contents.

(a) Each quality control plan shall contain provisions for the management

of quality, including: (1) Requirements for the production of quality data and the use of quality control records; (2) control of engineering drawings, documentations, and changes; (3) control and calibration of measuring and test equipment; (4) control of purchased material to include incoming inspection; (5) lot identification, control of processes, manufacturing, fabrication, and assembly work conducted in the applicant's plant; (6) audit or final inspection of the completed product; and (7) the organizational structure necessary to carry out these provisions.

(b) Each provision for final inspection in the quality control plan shall include a procedure for the selection of a sample of the end product and the functional components thereof for testing, in accordance with procedures set forth in Military Standard MIL-STD-105D, "Sampling Procedures and Tables for Inspection by Attributes," or Military Standard MIL-STD-414, "Sampling Procedures and Tables for Inspection by Variables for Percent Defective," or an approved equivalent sampling procedure, or an approved combination of sampling procedures. Military Standard MIL-STD-105D, "Sampling Procedures and Tables for Inspection by Attributes," and Military Standard MIL-STD-414, "Sampling Procedures and Tables for Inspection by Variables for Percent Defective" are hereby incorporated by reference and made a part hereof. These documents are available for examination at Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, PA, and may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

(c) The sampling procedure shall include a list of the characteristics to be tested by the applicant or his agent.

(d) The characteristics listed in accordance with paragraph (c) of this section shall be classified according to the potential effect of such defect and grouped into the following classes:

(1) *Critical*. A defect that judgment and experience indicate is likely to result in hazardous or unsafe conditions for individuals using, maintaining, or depending upon the product; or a defect that judgment and experience indicate is likely to prevent performance of the function of the end product.

(2) *Major*. A defect, other than critical that is likely to result in failure, or to

reduce materially the usability of the unit or product for its intended purpose.

(3) *Minor*. A defect that is not likely to materially reduce the utility of the instrument for its intended purpose, or a defect that is a departure from established standards and has little bearing on the effective use or operation of the instrument.

(e) The quality control inspection test method to be used by the applicant or his agent for each characteristic required to be tested shall be described in detail.

(f) Each item manufactured shall be 100 percent inspected for defects in all critical characteristics and all defective items shall be rejected.

(g) The Acceptable Quality Level (AQL) for each major or minor defect so classified by the applicant shall be:

- (1) Major—1.0 percent;
- (2) Minor—4.0 percent.

(h) Except as provided in paragraph (i) of this section, inspection level II as described in MIL-STD-105D, or inspection level IV as described in MIL-STD-414, shall be used for major and minor characteristics and 100 percent inspection for critical characteristics.

(i) Subject to the approval of MESA, where the quality control plan provisions for raw material, processes, manufacturing, and fabrication inspection are adequate to ensure control of finished article quality, destructive testing may be conducted at a lower level of inspection than that specified in paragraph (h) of this section.

§ 29.42 Proposed quality control plans; approval by MESA.

(a) Each proposed quality control plan submitted in accordance with this subpart shall be reviewed by MESA to determine its effectiveness in ensuring the utility of the instrument for which an approval is sought.

(b) If MESA determines that the proposed quality control plan submitted by the applicant will not insure adequate quality control, MESA shall require the applicant to modify the procedures and testing requirements of the plan prior to approval of the plan and issuance of any certificate of approval.

(c) Approved quality control plans shall constitute a part of and be incorporated into any certificate of approval issued by MESA, and compliance with such plans by the applicant shall be a condition of approval.

§ 29.43 Quality control records; review by MESA; revocation of approval.

(a) The applicant shall keep quality control inspection records sufficient to carry out the procedures required in MIL-STD-105D or MIL-STD-414, or an approved equivalent sampling procedure.

(b) MESA reserves the right to have its representatives inspect the applicant's quality control test methods, equipment, and records, and to interview any employee or agent of the applicant in regard to quality control test methods, equipment, and records.

(c) MESA reserves the right to revoke, or cause, any certificate of approval where it finds that the applicant's quality control test methods, equipment, or records do not ensure effective quality control over the instrument for which the approval was issued.

Subpart F—General Construction and Performance Requirements

§ 29.50 Construction and performance requirements; general.

(a) MESA shall issue approvals for portable coal dust/rock dust analyzers and continuous duty, warning light, portable methane detectors which have met the applicable minimum requirements set forth in this Part 29.

(b) In addition to the types of analyzers and detectors described in Subparts G and H of this part, MESA will issue approvals for other portable coal dust/rock dust analyzers and continuous duty, warning light, portable methane detectors subject to such additional requirements as may be imposed in accordance with § 29.53.

§ 29.51 General construction requirements.

Portable coal dust/rock dust analyzers and continuous duty, warning light, portable methane detectors will not be accepted by MESA for examination, inspection, and testing unless they are designed on sound engineering and scientific principles, constructed of suitable materials, and evidence good workmanship.

§ 29.52 Component parts; minimum requirements.

(a) The components of each instrument approved by MESA for use where permissibility is required shall meet the requirements for permissibility and

intrinsic safety set forth in Part 18, Subchapter D of this chapter (Bureau of Mines Schedule 2G).

(b) The components of each instrument shall be:

(1) Designed and constructed to prevent creation of any hazard to the user; and

(2) Assembled to permit easy access for inspection, cleaning, and repair of functional parts.

(c) Replacements parts shall be constructed to maintain the effectiveness of the instrument.

§ 29.53 Test requirements; general.

(a) Each instrument and its components shall, when tested by the applicant and MESA, meet the applicable performance and test requirements set forth in Subparts G and H of this part.

(b) In addition to the minimum requirements set forth in Subparts G and H of this part MESA reserves the right to require, as a further condition of approval, any additional or other minimum requirements it deems necessary to establish the quality effectiveness, and safety of any instrument.

(c) Where it is determined after receipt of an application that additional or other minimum requirements will be required for approval, MESA will notify the applicant in writing of the additional or other minimum requirements, and necessary examinations, inspections, and tests, stating generally its reasons for such requirements, examinations, inspections or tests.

§ 29.54 Pretesting by applicant.

(a) Prior to any application for approval or modification of approval, the applicant shall conduct, or cause to be conducted, examinations, inspections, and tests of analyzer or detector performance which are equal to or exceed the severity of those prescribed in this part.

(b) With the application, the applicant shall provide a statement to MESA showing the types and results of the examinations, inspections, and tests performed as required under paragraph (a) of this section and state that the analyzer or detector meets the minimum requirements of Subpart G or H of this part, as applicable. Complete examination, inspection and test data shall be retained on file by the applicant and be submitted, upon request, to MESA.

(c) MESA may, upon written request by the applicant, provide drawings and descriptions of its test equipment and otherwise assist the applicant in establishing a test laboratory or securing the services of a testing agency.

§ 29.55 Conduct of examinations, inspections, and tests by MESA; assistance by applicants; observers; recorded data; public demonstrations.

(a) All examinations, inspections, and tests conducted by MESA pursuant to Subparts G and H of this part will be under the direction and control of MESA.

(b) MESA may as a condition of approval, require the assistance of the applicant or agents of the applicant during the assembly, disassembly, or preparation of any instrument or instrument component prior to testing or in the operation of such instrument during testing.

(c) Necessary government personnel, persons assisting MESA pursuant to paragraph (b) of this section, and such other persons as are requested by MESA or the applicant to be observers, shall be present during any examination, inspection or test conducted prior to the issuance of an approval by MESA for the instrument under consideration.

(d) MESA shall hold as confidential any analyses, drawings, specifications, or materials submitted by the applicant and shall not disclose any principles or patentable features of such equipment, except as required by statute or regulation.

(e) As a condition of each approval issued for any analyzer or detector, MESA reserves the right, following the issuance of such approval, to conduct such public tests and demonstrations of the approved instrument as it deems appropriate.

[37 FR 7565, Apr. 15, 1972, as amended at 39 FR 24003, June 28, 1974]

§ 29.56 Withdrawal of applications; refund of fees.

(a) Any applicant may, upon a written request submitted to MESA, withdraw any application for approval of any analyzer or detector.

(b) Upon receipt of a written request for the withdrawal of an application, the MESA shall determine the total amount due for services already performed during the course of any examinations, inspections, or tests conducted pursuant to such application. The total amount due

shall be determined in accordance with the provisions of §§ 29.20 and 29.21 and assessed against the fees submitted by the applicant. If the total amount assessed is less than the fees submitted, MESA shall refund the balance together with a statement of the charges made for services rendered.

Subpart G—Portable Coal Dust/Rock Dust Analyzers; Performance and Testing Requirements

§ 29.60 Minimum performance requirements.

(a) Portable coal dust/rock dust analyzers shall be self-contained units, practical in operation, portable, and suitable for service in underground coal mines.

(b) The analyzer shall be equipped with a quantitative indicating device that is capable of indicating the incombustible content of coal mine dusts over the range of from 50 percent to 100 percent incombustible.

(c) Analyzers equipped with batteries shall be constructed so that when such batteries are filled, electrolyte will not spill during use.

(d) Battery containers shall be made of corrosion resistant material.

§ 29.61 Testing requirements.

(a) Portable coal dust/rock dust analyzers shall be tested to ensure that they meet the minimum construction and performance requirements set forth in §§ 29.51, 29.52, and 29.60.

(b) The sampling materials listed in Table A shall be used in testing the capability of the indicating device of the portable coal dust/rock dust analyzer to measure incombustible content as specified in § 29.60(b).

(c) The indicating device of the analyzer being tested shall be within ± 3 percent of the chemically determined incombustible content for 80 percent of the standard samples and inspector's samples listed in Table B.

(d) In preparing sampling materials for testing, all sampling materials shall be:

- (1) Air equilibrated;
- (2) Carefully mixed to minimize segregation or degradation;
- (3) Stored in moisture- and air-tight containers to prevent oxidation and drying; and,
- (4) Analyzed for percent incombustible content within ± 1 percent, by chemical analysis.

(e) In order to determine the reliability and utility of the analyzer, personnel of MESA shall field test the instrument for 1 month in various underground coal mines, in accordance with the applicant's operating and maintenance instructions.

(f) MESA may conduct any additional field testing it deems necessary.

TABLE A

SPECIFICATION FOR SAMPLING MATERIALS USED FOR COAL DUST/ROCK DUST ANALYZER TESTING (PERCENTAGES BY WEIGHT; PARTICLE SIZE \pm 2 PERCENT)

1. Bruceton mine coal, Pittsburgh Seam, 6 to 8 percent ash, 100 percent through U.S. No. 100 sieve, 70 percent through U.S. No. 200 sieve.
2. Pocahontas low volatile, 5 to 6 percent ash, less than 0.7 percent total sulfur, 70 percent through U.S. No. 200 sieve.
3. Pittsburgh Seam, run-of-mine, 27 to 32 percent ash, 1.5 to 2.5 percent sulfur, 100 percent through U.S. No. 20 sieve and 20 percent through U.S. No. 200 sieve.
4. Pyrite, coal-derived, 90 percent or better FeS_2 , 70 percent through U.S. No. 200 sieve.
5. MgCO_3 , analytical grade, powdered, 70 percent through U.S. No. 200 sieve.
6. Ash, mineral matter content of 50 to 80 percent from preparation plant refuse, less than 5 percent pyrite, 70 percent through U.S. No. 200 sieve.
7. Limestone, 99 percent CaCO_3 , 70 percent through U.S. No. 200 sieve.
8. Dolomite, approximately 41 percent MgCO_3 , 70 percent through U.S. No. 200 sieve.
9. Gypsum, approximately 45 percent $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$, 70 percent through U.S. No. 200 sieve.
10. Traction sand, (Quartz) 100 percent through U.S. No. 20 sieve.
11. Flammable hydraulic oil (petroleum based).

TABLE B

SPECIFICATIONS FOR STANDARD SAMPLES AND INSPECTORS' SAMPLES USED FOR COAL DUST/ROCK DUST ANALYZER TESTING (PERCENTAGES BY WEIGHT WITH ALLOWABLE VARIATIONS OF \pm 2 PERCENT)

Standard Samples

1. Bruceton coal and limestone to form 55, 65, 75, and 85 percent incombustible (ash and limestone plus 0.3 to 0.6 percent inherent moisture).
2. Bruceton coal and dolomite to 55, 65, 75, and 85 percent incombustibles.
3. Bruceton coal and gypsum to 55, 65, 75, and 85 percent incombustibles.
4. Pocahontas coal and limestone to 55, 65, 75, and 85 percent incombustibles.
5. Pocahontas coal and dolomite to 55, 65, 75, and 85 percent incombustibles.
6. Pittsburgh seam coal and limestone to 55, 65, 75, and 85 percent incombustibles.

7. Pittsburgh seam coal and dolomite to 55, 65, 75, and 85 percent incombustibles.

8. Moisture added to sample 6 of 65 percent incombustibles resulting in 70 percent incombustibles.

9. Moisture added to sample 6 of 55 percent incombustibles resulting in 65 percent total incombustibles.

10. Pyrite added to sample 1 of 55 percent resulting in 56 percent incombustibles.

11. Pyrite added to sample 4 of 65 percent resulting in 66 percent incombustibles.

12. Pyrite added to sample 6 of 75 percent resulting in 76 percent incombustibles.

13. MgCO_3 added to sample 1 of 55 percent resulting in 58 percent incombustibles.

14. MgCO_3 added to sample 2 of 65 percent resulting in 68 percent incombustibles.

15. MgCO_3 added to sample 3 of 70 percent resulting in 78 percent incombustibles.

16. Ash added to sample 6 of 55 percent resulting in 60 percent incombustibles.

17. Ash added to sample 6 of 55 percent resulting in 70 percent incombustibles.

18. A mixture consisting of 30 percent ash, 45 percent Pittsburgh coal, and 25 percent limestone.

19. Sand added to sample 1 of 55 percent resulting in 60 percent incombustibles.

20. Sand added to sample 1 of 55 percent resulting in 65 percent incombustibles.

21. Sand added to sample 1 of 55 percent resulting in 75 percent incombustibles.

22. Hydraulic oil added to sample 1 of 55 percent resulting in 50 percent incombustibles.

23. Hydraulic oil added to sample 1 of 55 percent resulting in 45 percent incombustibles.

Inspectors' Samples

1. A group of 25 samples shall be chosen from samples taken by MESA inspectors during their regular mine surveys of rock dust sufficiency.

2. The type of rock dust and coal present in the mine from which such samples were taken shall be made available for purposes of calibration.

3. Where the quantity of individual samples is insufficient to supply the sample volume required for testing, composite samples of adequate volume will be used.

Subpart H—Continuous Duty, Warning Light, Portable Methane Detectors; Performance and Testing Requirements

§ 29.70 Minimum performance requirements.

(a) Continuous duty, warning light, portable methane detectors shall be self-contained units, practical in operation, portable and suitable for service in underground coal mines.

(b) The detector shall be equipped with an indicating device that contains

one or more warning lights designed and constructed to flash in the presence of a methane-air mixture having a methane concentration of 1 percent ± 0.2 percent.

(c) Detectors equipped with batteries shall be constructed so that when such batteries are filled, electrolyte will not spill during use.

(d) Battery containers shall be made of corrosion-resistant material.

§ 29.71 Warning light; performance requirements.

(a) Warning lights contained in the indicating devices of detectors shall:

(1) Be visible within the normal visual field of miners working in the vicinity of the detector;

(2) If incandescent, employ lamps of no less than 0.2 candlepower; or

(3) If light-emitting diodes (LED's), have sufficient intensity to be discernible in the working place of an underground coal mine; and,

(4) Be red in color.

(b) The flash rate of the warning light shall be approximately one flash per second, and the duty cycle shall be sufficiently long to attract attention.

§ 29.72 Accessory quantitative meter; minimum requirements.

(a) In addition to the warning lights described in § 29.71, an accessory meter may be installed in a continuous duty, warning light, portable methane detector, to serve as a quantitative indicator of the presence of methane.

(b) Where an accessory quantitative meter is installed on a detector, it shall meet the following minimum requirements for performance and accuracy:

(1) Accessory quantitative meters shall indicate the presence of methane concentrations as low as 0.25 percent and shall have upper scale limits of 2 percent to 4 percent methane. The indications for these percentages shall be within the limits of error specified in Table C;

(2) Accessory quantitative meters shall make no less than 30 determinations for the presence of methane without replacement of any component part, and no less than 15 such determinations prior to recharging of the battery or other power source; and,

(3) The scale of accessory quantitative meters shall not be subdivided into smaller divisions than is warranted by the general accuracy of the meter.

§ 29.73 Operative period.

Detectors shall be tested to ensure that they operate effectively over a 10-hour period (a) without requiring battery replacement or recharging, and (b) without loss of initial accuracy.

§ 29.74 Calibration adaptors.

(a) Each detector shall be equipped with an adaptor that checks the overall response of the instrument to a pre-mixed, methane-air mixture, having a concentration of not less than 1 percent or more than 3 percent, by volume.

(b) Adaptors shall be compatible with methane calibrating kits marketed for methane monitor calibration.

§ 29.75 Visual indicator device.

Each detector shall be equipped with a device capable of giving a visual indication of the operative condition of the battery and the electrical circuitry employed in the detector.

§ 29.76 Testing requirements.

(a) Continuous duty, warning light, portable methane detectors shall be tested to ensure that they meet the minimum construction and performance requirements set forth in §§ 29.51, 29.52, 29.70, 29.71, 29.73, 29.74, and 29.75.

(b) Accessory quantitative meters shall be tested at several percentages within the limits of error specified in Table C, and at temperatures ranging from 50° and 70° F., with 5° increments. Ten tests shall be made at each percentage selected, and neither the average of the 10 tests, nor more than two tests for each percentage, shall exceed the limits of error specified in Table C.

(c) In order to determine the reliability and utility of the detector, personnel of MESA shall field test the instrument for 1 month in various underground coal mines, in accordance with the applicant's operating and maintenance instructions.

(d) MESA may conduct any additional field testing it deems necessary.

TABLE C
MAXIMUM AND MINIMUM LIMITS OF ERROR FOR ACCESSORY QUANTITATIVE METERS INSTALLED ON CONTINUOUS DUTY, WARNING LIGHT, PORTABLE METHANE DETECTORS

| Percent methane | Minimum limit of error—percent methane | Maximum limit of error—percent methane |
|-----------------|--|--|
| 0.25 | 0.10 | 0.40 |
| 0.50 | 0.25 | 0.65 |
| 1.00 | 0.80 | 1.20 |
| 2.00 | 1.80 | 2.20 |
| 3.00 | 2.70 | 3.30 |
| 4.00 | 3.70 | 4.30 |

SUBCHAPTER E—MECHANICAL EQUIPMENT FOR MINES; TESTS FOR PERMISSIBILITY AND SUITABILITY; FEES¹

PART 31—DIESEL MINE LOCOMOTIVES

- Sec.
 31.1 Type of locomotive that may be approved.
 31.2 Definitions.
 31.3 Conditions under which approvals may be granted; preliminary steps.
 31.4 General requirements.
 31.5 Methods of testing.
 31.6 Granting of approval.
 31.7 Withdrawal of approval.
 31.8 Changes in design subsequent to approval.
 31.9 Recommendations on the use of diesel locomotives underground.
 31.10 Revision of requirements and recommendations.

AUTHORITY: The provisions of this Part 31 issued under secs. 2, 3, 5, 36 Stat. 370, as amended, sec. 212, 66 Stat. 709; 30 U.S.C. 3, 5, 7, 482.

NOTE: Nomenclature changes to this part appear at 39 FR 24004, June 28, 1974.

§ 31.1 Type of locomotive that may be approved.

Safe operation of diesel locomotives underground involves consideration of four possible hazards, namely (a) toxic or objectionable gases discharged in the exhaust of the engine, (b) ignition of methane-air mixtures by the engine or by electrical equipment, (c) fire hazards presented by the engine fuel oil and by coal dust or other combustible material in contact with the locomotive, and (d) mechanical hazards. Locomotives for use in coal mines, where methane may be encountered, will be granted approval when proved by test to offer adequate protection against all these hazards.

[Sched. 22, 9 F.R. 18748, Nov. 17, 1944, as amended by Supp. 7, 20 F.R. 2719, Apr. 23, 1955]

§ 31.2 Definitions.

For the sake of brevity and clearness certain terms will be used throughout this part and their definitions as thus used follow:

(a) *Adequate.* Appropriate and sufficient as determined by mutual agreement between the manufacturer and MESA.

(b) *Approval.* Official, formal written notification issued by MESA to a responsible organization, stating that upon in-

vestigation the locomotive is judged to have satisfactorily complied with the requirements of this part. (Approvals will be granted for complete locomotives only, and not for engines and other individual parts used in the assembly of such locomotives.)

(c) *Explosion-proof.* So constructed that the enclosing case is capable of withstanding internal explosions of methane-air mixtures without damage to the case or discharge of flame and without ignition of explosive methane-air mixtures surrounding the enclosing case.

(d) *Extension of approval.* Official written notification from MESA to the locomotive manufacturer, by which the latter is authorized to make changes in permissible locomotives after the changes have been duly examined, accepted, and recorded by MESA.

(e) *Flame arrester.* A device so constructed that flames or sparks from the engine cannot propagate an explosion of methane-air mixtures through it.

(f) *Normal operation.* The performance by each part of the locomotive of those functions for which each part was designed.

(g) *Permissible.* Completely assembled and conforming in every respect with the design formally approved by MESA under this section. (Approvals under this section are given only to equipment for use in gassy and dusty mines.)

(h) *Toxic and objectionable gases.* Toxic and objectionable gases present in the exhaust of diesel engines are carbon monoxide, oxides of nitrogen, carbon dioxide, and aldehydes. The exhaust also will contain oxides of sulfur if the fuel contains sulfur.

(i) *Fuel:air ratio.* The ratio of fuel to air present in the combustion space of the engine, expressed in terms of weight, as pound of fuel per pound of air. Fuel:air ratio at any operating condition may be calculated from the composition of the exhaust gas and of the fuel.

(j) *Gas-air mixtures, explosive mixtures, inflammable mixtures, or inflammable atmospheres.* These terms refer to such mixtures created by mixing natural gas with normal air. Natural gas that will be used by MESA in testing diesel mine locomotives consists chiefly

¹ Supplement 1, 20 F.R. 2720, Apr. 23, 1955.

of methane, with smaller proportions of higher hydrocarbons and approximately 1 percent of nitrogen.

(k) "MESA" means the United States Department of the Interior, Mining Enforcement and Safety Administration.

[Sched. 22, 9 F.R. 13743, Nov. 17, 1944, as amended by Supp. 1, 20 F.R. 2719, Apr. 23, 1955; 39 FR 24004, June 23, 1974]

§ 31.3 Conditions under which approvals may be granted; preliminary steps.

(a) *Consultation.* Upon appointment, manufacturers, engineers, or their representatives may visit the Central Experiment Station of the Bureau of Mines at 4800 Forbes Avenue, Pittsburgh, Pa. 15213, to discuss the requirements of this part or to obtain criticisms of proposed designs of equipment to be submitted for test. There is no charge for such consultation.

(b) *Application.* Before MESA will undertake the active investigation leading to approval of any locomotive, the manufacturer shall make application by letter for an investigation leading to approval of his locomotive. This application in duplicate, accompanied by a check, bank draft, or money order, payable to the U.S. Mining Enforcement and Safety Administration to cover all the necessary fees, shall be sent to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213, together with the required drawings and specifications.

(c) Fees.

| | |
|---|-------|
| 1. Preliminary review of drawings, specifications, and related data—new machine..... | \$50 |
| 2. Tests to determine composition of engine exhaust gases..... | 2,400 |
| <i>NOTE:</i> For preliminary or check testing that requires only carbon dioxide and carbon monoxide determinations, the fee shall be \$800. | |
| 3. Tests to determine effectiveness of engine flame arrester..... | 325 |
| <i>NOTE:</i> For check testing a redesigned flame arrester that requires less than 20 tests, the fee shall be \$165. | |
| 4. Detailed inspection of engine flame arrester..... | 100 |
| 5. Detailed inspection of manifolds, exhaust conditioners, and other parts of intake and exhaust systems | 150 |

| | |
|---|-----|
| 6. Detailed inspection of electrical units—each explosion-proof enclosure | 105 |
| <i>NOTE:</i> When less than 20 explosion tests are required, the inspection fee shall be \$60. | |
| 7. Explosion tests of electrical units—each explosion-proof enclosure... | 70 |
| <i>NOTE:</i> When less than 20 explosion tests are required, the fee shall be \$35. | |
| 8. Exhaust conditioner performance tests to determine rate of water consumption | 120 |
| 9. Surface temperature determinations and tests of safety controls | 220 |
| 10. Each field inspection of completely assembled machine..... | 450 |
| 11. Tests of exhaust-gas dilution not made concurrently with field inspections of completely assembled machine..... | 115 |
| 12. Final examination and recording of drawings and specifications preparatory to issuing an approval | 175 |
| 13. Examining and recording drawings and specifications for an extension of approval, each 4 hours or fraction thereof..... | 35 |

NOTE: When investigation, inspection, or testing is required to be performed at locations other than MESA's premises, the applicant shall reimburse MESA for traveling, subsistence, and incidental expenses of its representative(s) in accordance with standard Government travel regulations. Such reimbursement shall be in addition to the fee charged for investigation, inspection, or testing.

(d) *Drawings and specifications required.* (1) MESA will not undertake the inspection and test of locomotive equipment until a set of legible drawings, bill of material, and specifications sufficient in number and detail to identify the parts fully have been delivered to Approval and Testing, Pittsburgh Technical Support Center. No drawings or specifications should be sent to the Washington office of MESA. Drawings should be numbered and dated to facilitate identification and reference in the records.

(2) The drawings and specifications for locomotives that are to be submitted for approval shall include the following:

(i) An assembly drawing or drawings clearly showing the over-all dimensions of the locomotive, the character, size, and relative arrangement of the electrical parts and the wiring between them, also

the size and position of the fuel tank, engine flame arresters, the exhaust-gas cooling and dilution systems, and other protective features of the engine.

(ii) A drawing or drawings that shall specify the material and detailed dimensions of all parts that make up explosion-proof enclosures, also of those parts that form any portion of the joints through which possible flames might escape.

(iii) Any other drawings necessary to identify or explain any feature that is to be considered in the approval of the locomotive.

(iv) A wiring diagram for all electrical equipment and circuits on the locomotive shall be submitted.

(v) The complete rating of each starting motor and charging generator, also the capacity of all fuses, and the setting of overload protective devices shall be given. The size of conductors used in all the various circuits shall be specified.

(3) All drawings are to be handled as strictly confidential by MESA.

(e) *Factory inspection form.* Each locomotive shall be carefully inspected by the manufacturer before it leaves the factory. The manufacturer will be required to furnish MESA with a copy of the form to be used by him in this inspection. The form shall draw special attention to the points that must be checked in making certain that the safety features of the locomotive are in proper condition, are complete in all respects, and agree in every detail with the drawings and specifications filed with MESA.

(f) *Instruction manual.* The manufacturer shall furnish an instruction manual with each locomotive. This manual shall give complete instructions covering the operation and servicing of the locomotive, particularly with reference to proper adjustment and maintenance of the engine and its auxiliaries in minimizing the production of smoke and toxic gases in the exhaust, in reducing fire hazards, and in maintaining flame arresters and flame-proof equipment in proper condition.

A copy of this manual shall be submitted to MESA for review.

(g) *Material required for investigation.* Unless requested to do so, the manufacturer need not send a complete locomotive for the purposes of inspection and

test. Usually one engine with protective equipment, one fuel tank, one motor, starting switch or other electrical unit of a given design need be shipped to MESA for the investigation. Any special tools necessary to disassemble any parts for inspection or test shall be furnished with the equipment submitted.

(h) *Shipment of material.* All shipments must be prepaid. Before making any shipments the manufacturer shall obtain shipping instructions from MESA. He shall arrange and pay for any trucking that may be necessary between the freight depot and the testing station. He shall also take care of crating and removal of parts upon completion of the investigation.

Inspection and tests usually are undertaken in the order of receipt of parts, provided that application, fees, and drawings have been received.

(i) *Assistance required during investigation.* When requested to do so, the manufacturer shall provide one or more men to assist in disassembling parts for inspection and in preparing them for test. These persons may serve as witnesses of the tests.

(j) *Observers at formal investigations and demonstrations.* No one shall be present during any part of the formal investigation conducted by MESA which leads to approval for permissibility except the necessary Government personnel, representatives of the applicant, and such other persons as may be mutually agreed upon by the applicant and MESA. Upon granting approval for permissibility, MESA will announce that such approval has been granted to the device and may thereafter conduct, from time to time in its discretion, public demonstrations of the tests conducted on the approved device. Those who attend any part of the investigation, or any public demonstration, shall be present solely as observers; the conduct of the investigation and of any public demonstration shall be controlled by MESA. Results of chemical analyses of material and all information contained in the drawings, specifications, and instructions shall be deemed confidential and their disclosure will be appropriately safeguarded by MESA.

[Sched. 22, 9 F.R. 13743, Nov. 17, 1944, as amended by Supp. 1, 20 F.R. 2720, Apr. 23, 1955; 30 F.R. 3756, Mar. 23, 1965]

§ 31.4 General requirements.

(a) *Quality of material, workmanship, and design.* MESA reserves the right to refuse to test any equipment that, in the opinion of qualified representatives of MESA, is not constructed of suitable materials, or that gives evidence of faulty workmanship, or that is not designed upon sound engineering principles. This right shall apply to all parts of the equipment, and to the design thereof, whether or not the points in question are covered specifically by the requirements of this part.

(b) *Type of engine considered for approval.* Only locomotives equipped with engines of the compression-ignition type will be considered for approval. Such engines shall be designed to operate only on liquid fuel or flash point not less than 150° F. The starting mechanism shall consist of an explosion-proof electric motor or other device considered safe; engines using gasoline or other volatile fuel for starting will not be considered.

(c) *Fuel injection.* The fuel-injection system of the engine shall be so constructed that the mechanism controlling maximum fuel injection may be fixed definitely, permitting adjustment only by breaking a seal on a locked compartment, or by altering design. Provision shall be made in the fuel-injection system to permit suitable adjustment in maximum fuel injection for engine operation at different barometric pressures.

(d) *Engine intake system*—(1) *Construction of engine intake system.* The intake system of the engine (exclusive of the air cleaner) shall be of such construction that it will withstand internal pressures of 125 pounds per square inch, or such internal pressures as may be developed within it in explosion tests with gas-air mixtures, whichever is the greater. All joints in the intake system shall be formed by flanged metal-to-metal contacts designed in accordance with requirements for other types of explosion-proof equipment as outlined in paragraph (i) (6) (ii) of this section.

(2) *Intake flame arrester.* (i) The intake system of the engine shall be equipped with a flame arrester to prevent propagation of flame from the system to a surrounding inflammable atmosphere. The flame arrester shall be so designed

and attached to the intake system that it may be removed readily for inspection, repair, replacement, or cleaning. The flame arrester shall be so constructed that it may be cleaned readily. The flame arrester shall be of sufficiently rugged construction to withstand use in its intended application and shall be so situated in the locomotive assembly that it is protected from damage.

(ii) The component parts of any flame arrester must be positively positioned. If a flame arrester of the spaced-plate type is used, the thickness of the plates must be at least 0.125 inch; the space between plates must be no greater than 0.02 inch; and the width of plates must be at least 1 inch. The unsupported length of the plates shall be such that deformation in the intended application shall not exceed 0.002 inch. Plates shall be of material not subject to corrosion in the intended application.

(3) *Air shut-off valve in engine intake.* A valve shall be provided in the engine intake system so that the supply of air to the engine may be shut off. This valve shall be operable from the driver's compartment and shall be so arranged that it may be actuated only when the fuel supply to the engine is shut off.

(4) *Air cleaner on engine intake.* An air cleaner of automotive type shall be included in the engine intake system. The air cleaner shall be situated in the intake system so that the intake air shall pass through the cleaner before entering the intake flame arrester. The size and design of the air cleaner shall be such that resistance to air flow will not increase rapidly in dusty atmospheres.

(5) *Attachment of gage to engine intake system.* A vacuum gage shall be attached to the engine intake system at a point suitable for indicating total pressure drop through that system. The gage shall be graduated in inches of water and shall be situated in the driver's compartment.

(e) *Engine exhaust system*—(1) *Construction of engine exhaust system.* The exhaust system of the engine shall be of such construction that it will withstand internal pressures of 125 pounds per square inch or such internal pressures as may be developed within it in explosion tests with gas-air mixtures, whichever

pressure is the greater. All joints in the exhaust system shall be formed by flanged metal-to-metal contacts designed in accordance with requirements for other types of explosion-proof equipment as outlined in paragraph (1) (6) (i) of this section.

(2) *Exhaust flame arrester.* (1) The exhaust system of the engine shall be provided with a flame arrester to prevent propagation of egress of flame or heated particles from the exhaust system to a surrounding inflammable atmosphere. The flame arrester shall be so designed that it is readily accessible for inspection, repair, replacement, or cleaning. The flame arrester shall be of sufficiently rugged construction to withstand use in its intended application and shall be so situated in the locomotive assembly that it is protected from damage.

(i) The component parts of any flame arrester must be positively positioned. If a flame arrester of the spaced-plate type is used the thickness of the plates must be at least 0.125 inch; the space between plates must be no greater than 0.02 inch; and the width of plates must be at least 1 inch. The unsupported length of the plates shall be such that deformation in the intended application shall not exceed 0.002 inch. Plates shall be of material not subject to corrosion in the intended application.

(3) *Exhausts cooling system.* (a) A cooling system shall be provided for the exhaust gas of the engine. The heat-dissipation capacity of this cooling system shall be such that the temperature of the undiluted exhaust gas shall not exceed 160° F. at the point of discharge from the cooling system under any condition of operation. A device shall be provided which shall stop the engine automatically and immediately if the temperature of the exhaust gas reaches 160° F. at the point of discharge from the cooling system.

(i) Cooling preferably shall be obtained by a water spray entering the exhaust system at a point close to the outlet of the exhaust manifold or by passing the exhaust gas through water in suitable containers, or by a combination of the two. If a water spray is used, the water shall be delivered to the spray nozzle by a pump, and the water shall pass through a filtering device to protect the spray nozzle from clogging by extraneous material. Provision shall be made for draining and cleaning all ex-

haust cooling boxes included in the locomotive assembly.

(iii) If cooling equivalent to that obtained by the use of water can be provided by other means, such means will be considered acceptable.

(4) *Control of surface temperature of exhaust systems.* (i) Provisions shall be made for limiting the temperature attained by the external surfaces of the exhaust system. The temperature of such surfaces shall not exceed 400° F. under any condition of engine operation. If water-jacketed parts are used the jackets shall be integral with the parts in question. Insulating coverings that would absorb oil will not be considered acceptable.

(i) If a water spray is employed to reduce the temperature of the exhaust gas, as mentioned in subparagraph (3) of this paragraph, the spray shall be situated as closely as possible to the outlet of the exhaust manifold to aid in reducing surface temperature of this portion of the exhaust system.

(iii) Exterior surfaces of the exhaust system shall be designed to minimize accumulation and lodgment of combustible dusts and to permit ready access to these surfaces for cleaning.

(5) *Dilution of exhaust gas.* (1) Provision shall be made to dilute the exhaust gas with air before it is discharged from the locomotive into the surrounding atmosphere. The quantity of diluting air shall be such that the discharged mixture of exhaust gas and air shall not contain more than 100 parts per million by volume, of carbon monoxide; 25 parts per million, by volume, of oxides of nitrogen (as equivalent nitrogen peroxide); or 10 parts per million, by volume, of aldehydes (as equivalent formaldehyde) under any condition of operation.

(i) The final (diluted) exhaust of the locomotive shall be discharged in such manner that it is not directed toward the locomotive operator's compartment and shall be deflected downward so that persons alongside the locomotive do not encounter the exhaust at breathing level.

(6) *Temperature indicator in exhaust system.* A temperature-indicating device shall be provided in the exhaust system to indicate the temperature of the undiluted exhaust gas after its final contact with cooling water. The indicating portion of this device shall be situated in the operator's compartment of the locomotive.

(7) *Provision for attachment of gage or gas-sampling equipment to exhaust system.* A connection shall be provided in the engine exhaust system for temporary attachment of a gage at a point suitable for measuring the total back pressure in that system. This connection shall be suitable also for temporary attachment of gas-sampling equipment to the exhaust system. This opening into the exhaust system shall be provided with a locking closure.

(f) *Composition of exhaust gas.* Under normal operating conditions, and within the rated power output range, and undiluted exhaust gas of the engine shall not contain more than 0.25 percent, by volume, of carbon monoxide.

(g) *Locomotive fuel-supply system—*

(1) *Fuel tank.* (i) The fuel tank shall be fuel-tight and shall be of metal at least $\frac{1}{16}$ inch thick welded at all seams. The fuel tank shall be provided with a drain plug (not a valve or pet cock) that shall be locked in position when inserted. The fuel tank shall be provided with a vent opening of such design that atmospheric pressure is maintained inside the tank and that discharge of liquid fuel from the vent opening is prevented. Construction of the fuel tank shall be such that fuel may be added to the tank only through a self-closing valve situated at least 1 foot from the exhaust manifold of the engine and preferably below it. The self-closing valve shall constitute a fuel-tight closure when fuel is not being added. Any part of the self-closing valve that would be detached during the addition of fuel shall be secured to the locomotive to prevent loss.

(ii) The fuel tank shall be a built-in unit comprising part of the locomotive assembly, and no provision shall be made for attachment of separate or auxiliary fuel tanks to the locomotive.

(2) *Fuel lines.* All fuel lines to the engine and its accessory parts shall be installed so that they are not subject to damage in ordinary use and shall be designed to resist breakage from vibration.

(3) *Valve in fuel line.* A shut-off mechanism, operable from the driver's compartment, shall be provided in the fuel system so that the engine may be stopped immediately in an emergency.

(h) *Signal or warning devices.* All locomotives shall be equipped with a bell, horn, or other suitable warning device. This device shall not be electrically operated.

(i) *Electrical equipment—(1) Classification of electrical parts.* The electrical parts of a locomotive that may cause ignition of mine gas and coal dust are classified as follows:

(i) *Class 1.* Class 1 shall include motors, starting switches, fuses and all their parts that may produce sparks or flashes as the result of normal operation. Headlights, motors, rheostats, electromagnets, and similar parts which may become dangerous because of failure of electrical circuits in them are also included in this class. Parts in this classification shall be enclosed in explosion-proof casings.

(ii) *Class 2.* Class 2 shall include all parts, such as batteries and external connections and wiring between enclosures, that do not produce sparks or flashes as the result of normal operation but may do so as the result of accident. Parts in this classification shall have adequate shields or guards of a strength and character proportionate to the risk of injury, or else they shall be enclosed in explosion-proof casings.

(iii) *Class 3.* Class 3 shall include all parts such as plugs and receptacles that may produce sparks or flashes in normal operation, but are not of necessity operated while the locomotive is in a gassy place. Parts in this classification shall be enclosed in explosion-proof or adequately locked casings. If locked casings are used, they shall have adequate mechanical strength.

(2) *Type of electrical system.* The electrical system on the locomotives shall be completely insulated from the chassis, the engine, and all other metal parts.

(3) *Automatic protection of electrical circuits and equipment.* (i) On locomotives using storage batteries for starting of engines, each electrical conductor from the battery to the starting motor shall be protected against short circuit by fuses or other suitable automatic circuit-interrupting devices placed at the battery unless conductors of adequate size are provided.

(ii) Fuses or other automatic circuit-interrupting devices shall be inserted at the point where branch circuits are connected to the main circuit between the charging generator and battery. Headlight circuits and circuits for instruments and instrument-panel lights are construed as being branch circuits.

(iii) Fuses shall be enclosed in explosion-proof casings with locked or sealed covers.

(4) Conductors, conduits, and wiring.

(i) Every conductor shall have adequate insulation from "ground" and from conductors of opposite polarity. Insulation shall be selected with special reference to its ability to resist deterioration from engine heat and oil.

(ii) It is recommended that all conductors have a carrying capacity of not less than 110 percent of the total current rating of the motor or other load connected to them. The basis for determining such carrying capacity shall be that given by the National Electrical Code for "allowable carrying capacities of wires."

(iii) All wiring, particularly that outside of locked or explosion-proof enclosures, shall have adequate mechanical and electrical protection to minimize gas-ignition hazards as well as fire hazards. If for any reason rigid conduit is unsuitable or undesirable a good grade of rubber air hose or equivalent may be construed as meeting the requirement for mechanical protection if used where it will not be damaged by engine heat and oil. Flexible metal conduit is not acceptable. All conduit ends must be adequately clamped or otherwise secured to prevent their being pulled out. Inserts should be used to prevent collapse of hose conduit ends that are secured by external clamps.

(iv) Sharp edges and corners shall be removed at all points where there is possibility of damaging the insulation of wires, cables, or conduits by cutting or abrasion.

(v) Wiring and conduits shall be well-crested or otherwise held to prevent vibration and displacement.

(vi) The ends and terminal lugs of wires and cables shall be held or clamped in a manner that will minimize the possibility of the ends and lugs coming loose from their connections and swinging against sides of enclosing casings or against parts of opposite polarity.

(5) *Electrical clearances and insulation.* The clearance between live parts and casings of electrical equipment shall be such as to minimize the possibility of arcs striking to the casings, or if space is limited the casings shall be lined with adequate insulation.

(6) *Detailed requirements for class 1 electrical parts; enclosure casings—(1) Materials and construction.* The casings forming the enclosure for class 1 parts shall be of suitable material and especially durable in order that, with proper care and maintenance, the explosion-

proof qualities will remain unimpaired not only when subjected to pressures developed during explosion tests, but also under the severe conditions imposed by mining service. Sheet metal used in the fabrication of explosion-proof casings shall be at least $\frac{1}{4}$ inch thick for any wall or cover having an area of 216 square inches or more (12 by 18), unless adequate reinforcing ribs, or their equivalent, are used to prevent deformation. Less than $\frac{3}{16}$ -inch thickness is not recommended. If welding is employed to join the side and wall pieces, the joints shall be continuously welded gas tight both inside and out.

Casings may be either of the totally enclosed type, in which no provision is made for ventilation of the interior, or else the type having provision for ventilation or relief of pressure from internal explosions. Totally enclosed construction, however, is recommended by MESA. Complicated castings and fabricated housings should be pressure-tested at the factory to reveal blowholes and other weaknesses.

If provision is not made for pressure relief through special devices, the casing will need to be strong enough to withstand explosion pressures approaching 100 pounds per square inch. However, if a casing communicates with another through a small passage or is itself divided by a partition, the effect of "pressure-piling" may be produced, and pressures considerably in excess of 100 pounds per square inch may be anticipated.

The use of phenolic and other insulating materials that give off highly explosive gases when decomposed by electric arcs should be avoided in mounting live parts within explosion-proof enclosures.

(ii) *Joints and machining tolerances.* Where an explosion-proof enclosure consists of two or more metal parts that are held together by bolts or other suitable means, the flanges comprising the joints between parts shall have surfaces making metal-to-metal contact. Glass-to-metal joints are permitted in casings such as those for headlights and meters. Gaskets, if adequate may be used to obtain a firm seat for the glass, but not elsewhere. Rubber, putty, and plaster of paris are not acceptable as gasket materials.

The surfaces comprising a flange joint need not be all in one plane. For enclosures having an unoccupied volume (air space) of more than 60 cubic inches, the total width of joint measured along

the shortest path from inside to outside of the enclosure shall not be less than 1 inch, except as follows:

A rabbet joint having a total width of $\frac{3}{4}$ inch may be accepted if neither the cylindrical nor the plane fit is less than $\frac{3}{16}$ inch wide, with a maximum radial clearance of 0.002 inch for the cylindrical fit. When the unoccupied volume (air space) is less than 60 cubic inches, a minimum width of $\frac{3}{4}$ inch may be accepted for plane joints, but a 1-inch width of plane or rabbet joint is recommended.

The width of blow holes in joint surfaces will be deducted in measuring flange widths. Diameters of holes for bolts or screws required to maintain tight joints will also be deducted in such measurement: (a) If excessive clearance (over $\frac{1}{64}$ -inch radial) is allowed for the bolt in its hole, and (b) if the diameter of the bolt hole is more than half of the required metal-to-metal contact. It is recommended that such holes be located so that the shortest distance along the joint from the interior of the enclosure to the edge of the hole is not less than $\frac{7}{16}$ inch. However, less than $\frac{3}{4}$ inch will not be accepted for 1-inch joints, nor less than $\frac{7}{16}$ inch for joints under 1 inch. (Exception may be made for narrow interpoles, in which case the distance from the edge of pole piece to the bolt hole in the motor frame shall not be less than $\frac{1}{2}$ inch and the diametrical clearance around the bolt shall be as stated in the next paragraph of this subdivision. Furthermore, the pole piece shall seat against the frame surface.)

Bolts and screws shall be close-fitting in holes that cut through joint surfaces. If the edge of a bolt or screw hole is less than $\frac{7}{16}$ inch from the interior of the enclosure, the diametrical clearance around the bolt or screw shall not exceed $\frac{1}{64}$ inch and this clearance shall be maintained for a distance of at least $\frac{1}{2}$ inch as measured from the joint.

When the flanges of a joint cannot be brought into actual contact with each other owing to warping or faulty machining of parts or necessity for sliding fits, the requirement for metal-to-metal contact will be construed as having been met for plane flanges under the following conditions:

1. If the separation does not exceed 0.004 inch at any point.
2. If the 0.004-inch separation does not extend over 6 inches along the joint.
3. Provided the joint does not permit discharge of flame during the explosion tests.

When it is necessary in manufacture to provide for a running fit between cylindrical surfaces other than motor shafts, a shoulder shall be included in the design to provide a change in direction through the flame path between the parts. In joints of this type, the diametral clearance between cylindrical surfaces shall be kept as small as feasible, but in no case shall it exceed 0.01 inch.

Laminated motor frames having end rings assembled as an integral part under high pressure may be considered with less width of contact between the end rings and laminations than that specified in the preceding paragraphs of this subdivision. It is recommended that the metal-to-metal contact be kept as near the 1-inch standard as practical, but less than $\frac{3}{4}$ inch will not be accepted. If less than the 1-inch standard width is used for joints of this type, the construction must permanently preclude any separation between the end rings and lamination, and if a 0.0015-inch-thickness gage can be inserted $\frac{1}{8}$ inch at any point, the construction will be considered unsatisfactory. The joint should not open under explosion pressures.

(iii) *Bolts and similar fastenings.* Bolts and similar means of clamping flange joints together shall be generously proportioned to minimize stripping of threads and to give adequate strength. Steel inserts shall be used when it is necessary to thread screws or bolts into aluminum castings. Clamping bolts and screws should be at least $\frac{1}{4}$ inch in diameter and preferably not less than $\frac{1}{2}$ inch.

Unless the design permits especially rigid construction between bolts, spacings greater than 6 inches are not recommended for flange joints.

All bolts, nuts, and screws used in fastening flange joints, as well as those used in holding parts such as pole pieces, brush rigging, and bearing caps, shall be provided with lock washers or other suitable means to prevent loosening. The length of threads in bottomed holes and on bolts, screws, and studs shall be such that the joint can be made tight even though lock washers are omitted.

(iv) *Through holes for bolts, screws, and rivets.* Through holes into explosion-proof casings shall be kept to a minimum. Holes for bolts, screws, etc., shall be "blind" or bottomed if the omission of a bolt or screw would leave an unprotected opening into the casing. If unavoidable, holes may be made through casings for bolts, studs, or screws that

are necessary to hold essential parts such as pole pieces and brush rigging, providing the bolts, etc. have an adequate long close fit through the casing and providing at least two holes, studs, or screws are used for each part held. In addition one of the following optional conditions shall apply: (a) Each hole must be bottomed in the part held and adequate metal-to-metal contact provided between the part and the casing to insure an effective internal seal around the hole in the event that the bolt or screw is omitted or lost, or (b) if studs are used they must be permanently fastened in the part held, or (c) bolts passing entirely through pole pieces must be arranged so that they cannot be removed without removal of the armature, or (d) special nonremovable bolts must be adequate for the intended purpose.

Holes shall not be drilled through walls of explosion-proof casings for screws or rivets holding name plates or approval plates

(v) *Inspection openings and covers.* The number of openings in explosion-proof enclosures shall not exceed the minimum required for proper assembly and inspection of parts. Openings such as those necessary for inspection of motor commutator and brushes are permitted if suitable covers are provided. These covers must have the width of flange joint previously specified or a threaded joint with sufficient threads to give the required width of surface in contact. Screw covers and those held by special clamps and screws must be secured against unauthorized opening by means of a lock or a nonrusting wire and seal. Where the seal wire alone is of insufficient mechanical strength, an additional fastening such as a set screw or a pin secured by a seal should be used. The distance between the two holes through which the seal wire is threaded shall not exceed 3 inches.

(vi) *Bearing and shaft clearances.* Armature, controller, switch, and other shafts or rods carried through walls of explosion-proof enclosures do not require stuffing boxes. For plain journaled bearings the diametral clearance between the shaft and bearing shall not exceed 0.01 inch to provide for a running fit, and this running fit shall not be less than $\frac{3}{4}$ inch long for an enclosure having an internal air space under 60 cubic inches, nor less than 1 inch for enclosures having more than 60 cubic inches air space.

Roller and ball bearings are not accepted as suitable barriers for stoppage of flames, and therefore the flame path provided between a shaft and the inner parts of bearing housings shall not be less than 1 inch long for enclosures of more than 60 cubic inches air space. If the air space is 60 cubic inches or less, this part of the flame path may be reduced to $\frac{3}{4}$ inch. In either case the diametral clearance shall not be greater than 0.03 inch at any point in the $\frac{3}{4}$ - or the 1-inch path. This clearance is allowed providing it does not permit discharge of flame.

Reduced clearances may be required for the fit of bearing cartridges, collars and other parts forming cylindrical flame paths in bearing housings. Flame paths having radial clearances of more than 0.005 inch should have one change of direction in them.

Oil grooves in bearings and felt rings or oil grooves in bearing housings are not to be included in the measurement of the length of running fit along a shaft. Such grooves are not allowed if not of sufficient volume to reduce the effectiveness of the path. Openings made for purposes of filling and draining bearings shall be outside of the required length of path.

Labyrinths or other special arrangements may be accepted in place of straight paths if they provide equivalent lengths and clearances and are made up of rugged parts not likely to be readily omitted. A removable outer bearing cap is not considered as part of the required length of fit.

(vii) *Cable entrances.* All electrical conductors that pass through the walls of explosion-proof enclosures shall be provided with adequate insulation and guards at the point of entrance to the enclosure in accordance with one or more of the following:

(a) If stuffing-box cable entrances are used, the packing material shall be an untreated asbestos, such as woven valve-stem packing, and it shall be not less than $\frac{1}{16}$ inch in diameter. The size, length, and kind shall be specified on the drawings or bills of material. The amount of packing material used in each stuffing box shall be such that when compressed, it will completely surround the wire or cable for a distance of not less than $\frac{1}{2}$ inch measured axially.

The stuffing-box design and the amount of packing used shall be such

that, with the packing properly compressed, the gland still has a clearance distance of $\frac{1}{8}$ inch or more to travel before it meets interference by parts other than packing. The glands shall be secured against loosening. The use of insulating bushings in stuffing boxes is recommended, especially for voltages that exceed 250. When an outer braid insulation covering is used on wires and cables passing through stuffing boxes it should be made of asbestos or slow-burning material.

The width of space for packing material shall not exceed the diameter or width of the uncompressed material by more than 50 percent. At other points small clearance shall be maintained between the stuffing-box parts and the cables or wires passing through them. A clearance greater than $\frac{3}{64}$ inch (i.e., $\frac{3}{32}$ inch diametral clearance) will not be accepted.

Corners shall be well-rounded at all points where cables and wires emerge from bushings, glands, and stuffing boxes to prevent cutting of insulation. Stuffing boxes, if not made integral with enclosures, shall be securely held to enclosures on which they are used.

Stuffing boxes and the fittings connected to them shall be so placed or guarded that they are not likely to be damaged in derailment and other accidents.

The diameter of cables used in stuffing boxes and the dimensions of openings for cables in stuffing boxes shall be given in decimal rather than common fractions.

(b) If insulated studs are used they shall be designed and spaced to minimize the possibility of electrical creepage to parts of opposite polarity or to the casing. Terminal lugs shall be keyed to their studs or else shielded by insulating barriers so that they cannot come into contact with each other or with any metal not of the same potential or polarity. Adequate means shall be provided to prevent loosening of the studs and lugs by vibration or by expansion and contraction. Special attention shall be given to the shielding of external stud connections so that they cannot be short-circuited or grounded by accidental or careless contact or by water when the machine is properly assembled.

(c) Insulating tubes or bushings shall not be used alone to take wires and cables through walls and partitions or explosion-proof enclosures unless both ends of each tube are wholly within such

enclosures. The length of each tubes and the clearance around the wire or wires in it should be such as to prevent "pressure-pilling" in the event of flame passing through it. (In general, a diametral clearance of $\frac{1}{16}$ should not be exceeded for single cables in tubes.) Bushings and tubes shall be secured against loosening and shall be of incombustible material.

(d) If wires and cables are taken through openings which are closed with sealing compounds, the design of the opening and characteristics of the compounds shall be such as to hold the sealing material in place without tendency of the material to crack or flow out of its place.

(e) An explosion-proof connection box may be used to facilitate connection to external circuits, providing the wires are closely fitted or sealed in the opening between the casing and the connection box in a manner adequate to inhibit flame propagation from the box to the enclosure on which it is mounted. A short metal tube or length of rigid conduit permanently secured to both may be used between the casing and the connection box when necessary. The connection box shall comply with all requirements of this subparagraph (6) for class 1 compartments and the lead entrance for external connection shall comply with the preceding paragraphs of this subdivision.

(f) Lead entrances that are not designed to prevent passage of flame from enclosures may be used in making electrical connections between separated explosion-proof enclosures, provided the conductors are carried in rigid metal conduit or equivalent. This conduit shall be fastened securely to the enclosure and shall be sealed or sufficiently filled with conductors to prevent the propagation of flame through it.

(7) *Parts having special requirements*—(i) *Motors and generators.* The internal construction of bearings for motors and generators shall be capable of preventing the escape of flame during explosion tests with the outer bearing caps removed, unless the outer caps are essential to hold the bearing in place. If the outer caps are essential, they shall comply with the constructional requirements of subparagraph (6) of this paragraph for class 1 parts as to width of joints, fastenings, and through holes.

(ii) *Rheostats and resistors.* Particular attention shall be given to the choice

of conductors used both inside and outside of enclosures for rheostats and resistors and to the type of cable enclosures in order to prevent grounds and short circuits that might result from failure of insulation due to heat. Rheostats and resistors shall be so designed and proportioned that the temperature of the external surfaces of the enclosure does not exceed 400° F. at any point.

(iii) *Meters and instruments.* Meters and instruments that are actuated electrically shall be insulated from the explosion-proof casing in which they are enclosed. The glass in meter and instrument casings shall be at least $\frac{1}{2}$ inch thick for diameters of 5 inches or more. For diameters under 5 inches, safety glass shall be used and the thickness shall be at least $\frac{1}{4}$ inch. Meters and instruments shall be shielded by position or have a guard to protect the glass against damage.

(iv) *Headlights.* Headlights shall be mounted in protected positions where they are not likely to be damaged by passing objects. The glass in headlights shall be at least $\frac{1}{2}$ inch thick.

(v) *Push buttons and push-button stations.* Push rods passing through walls of explosion-proof casings shall not be less than $\frac{1}{4}$ inch in diameter. They shall have a shoulder, head, or equivalent at the inside end to prevent accidental loss or removal from the outside. Cotter pins or parts held by cotter pins are not acceptable as means of preventing this loss or removal.

The diametral clearance between the push rod and its hole shall not exceed 0.01 inch to provide for sliding fit, and this sliding fit shall not be less than $\frac{3}{4}$ inch long for an enclosure having an internal air space under 60 cubic inches, nor less than 1 inch for enclosures having more than 60 cubic inches air space. In either case, the required length of sliding fit shall not be decreased when the button is depressed.

When it is important that accidental operation of push buttons be prevented, MESA reserves the right to require suitable guards or shields for the protection of the external ends of push buttons.

(8) *Class 2 electrical parts having special requirements—(1) Battery boxes and batteries.* Battery boxes shall be made of material equivalent in strength to sheet steel not less than $\frac{3}{16}$ inch in thickness or of wood reinforced with steel, and shall have a substantial cover or covers lined with nonbrittle insula-

tion of adequate strength, quality, and dimensions. The cover or covers shall be provided with suitable means for locking them in the closed position to prevent opening by unauthorized persons.

Battery boxes shall be provided with means for ample ventilation to prevent accumulation of explosive hydrogen-air mixtures above the battery. Ventilating openings shall be guarded to prevent access to the cell terminals from the outside.

Unless the battery cells are insulated from the trays in an acceptable manner, the trays shall be insulated from the battery box with rubber or equivalent insulators of adequate dimensions. For cells in metal containers mounted in "open"-type trays a lining of wood or equally suitable insulation shall be provided for the bottom of the battery box. All wood and other insulating linings shall be treated or painted with suitable material to resist destruction by battery electrolyte.

The number, type, rating, and manufacturer of the cells comprising the battery shall be specified.

A diagram showing the connections between cells and between trays shall be submitted. The connections shall be such that the maximum total battery potential will not be placed between any two adjacent cells.

[Sched. 22, 9 F.R. 13744, Nov. 17, 1944]

§ 31.5 Methods of testing.

(a) *Tests of locomotive parts other than electrical—(1) Detailed inspection.* An inspection will be made by engineers of MESA of all parts of the locomotive covered by the requirements of this part or any other parts or features that are associated with safety in operation. This inspection will include the following items:

(i) A detailed inspection to determine the adequacy of materials, workmanship, and design.

(ii) A detailed check of parts or assemblies against drawings as to materials, dimensions, and position, making notations for necessary correction of any discrepancies that may exist between the drawings and the parts or assemblies.

(iii) Measurements of joints, flanges, and other possible flame paths in the intake and exhaust systems of the engine.

(iv) Measurement of specified dimensions of flame arresters for the intake and exhaust systems of the engine.

(2) *Determination of composition of exhaust gas.* (i) The exhaust gas of the

engine will be sampled while the engine is operating at minimum speed and at maximum rated speed. At both speeds the engine will be operated at minimum power output, at approximately one-half maximum rated power output, and at maximum rated power output. Under any of these test conditions the engine will be at temperature equilibrium before exhaust-gas samples are collected or other test data recorded. Under each test condition rate of fuel consumption will be determined, and atmospheric pressure and temperature will be noted.

(ii) The exhaust-gas samples will be analyzed for carbon dioxide, oxygen, carbon monoxide, hydrogen, methane, nitrogen, oxides of nitrogen, and aldehydes.

(iii) In connection with tests to determine composition of exhaust gas, the maximum permissible reduced pressure in the intake system of the engine and the maximum permissible positive pressure in the exhaust system will be determined. In such tests the engine will be operated at maximum rated speed and the intake and exhaust systems will be complete with all accessory equipment such as air cleaners, flame arresters, and exhaust cooling devices. These maximum pressures will be determined by gradually adding resistance to air flow in the intake system and by similarly adding resistance to exhaust gas flow in the exhaust system and noting the pressure, in each system, at which measurable increase occurs in the content of carbon monoxide (or other toxic constituent) in the exhaust gas. These data will be used, allowing a suitable margin of safety, in determining the maximum permissible reduced pressure and positive pressure, respectively, in the intake and exhaust systems of the engine.

(3) *Maximum permissible fuel:air ratio.* (i) If the carbon monoxide content of the engine exhaust does not exceed 0.25 percent by volume throughout the rate range of speeds and power outputs, the manufacturer's adjustment of the fuel-injection equipment will be considered acceptable. The maximum fuel:air ratio (pound of fuel per pound of air) attained under test will be calculated and will be designated as the maximum permissible fuel:air ratio.

(ii) If the carbon monoxide content of the exhaust is found to exceed 0.25 percent by volume only at or near maximum power output, the maximum fuel:air ratio will be determined at which the carbon monoxide content of the exhaust

does not exceed 0.25 percent by volume, and this fuel:air ratio will be designated as the maximum permissible fuel:air ratio. Adjustment of the fuel-injection system may be made in the course of these tests to meet the requirement of maximum permissible fuel:air ratio.

(iii) In connection with establishment of maximum permissible fuel:air ratio, the barometric pressure existing during the tests and the rate of fuel consumption at maximum permissible fuel:air ratio will be recorded as part of the requirements for operation of the locomotive under permissible conditions. As stated in § 31.9 operation at barometric pressures significantly lower than that existing during tests to determine the maximum permissible fuel:air ratio will necessitate readjustment of the fuel-injection system so that the maximum permissible fuel:air ratio is not exceeded as a result of the decrease in air density at the lower barometric pressure.

(4) *Adequacy tests of intake and exhaust flame arresters and determination of ability of intake and exhaust systems to withstand internal explosions.* (i) To test the adequacy of intake and exhaust flame arresters and to determine the ability of the intake and exhaust systems to withstand internal explosions, these systems with their respective flame arresters will be connected to the engine and will be filled and surrounded by inflammable gas-air mixtures containing different concentrations of Pittsburgh natural gas. The mixture within the intake and exhaust systems will be ignited by a spark or other suitable means and the pressure developed in the system will be determined. The igniting source will be placed in different locations to determine the maximum pressure developed by the explosion.

(ii) Explosion tests will be made both with quiescent inflammable gas-air mixtures in the intake and exhaust systems and with inflammable gas-air mixtures in motion. In the latter tests the engine will be driven at selected speeds throughout its operating range and no liquid fuel will be supplied to the injection valves.

(iii) Explosion tests will be made both with bituminous-coal dust introduced into the intake system and with oil fog introduced into the exhaust system. These tests will be made with quiescent mixtures in the intake and either quiescent or moving inflammable gas-air

mixtures in the exhaust. In tests with bituminous-coal dust in the intake, the intake system will be blanked off from the cylinder head to protect the interior of the engine.

(iv) The temperatures of the flame arresters on the intake and exhaust systems will be maintained at 212° F. or less. The water-spray cooling system will not be in operation, and no water will be present in the exhaust cooling boxes during explosion tests. At least 10 explosion tests will be made for each explosion-proof intake and exhaust system. If the intake and exhaust systems contain questionable construction features more than 10 explosion tests will be made.

(v) The explosion tests of an intake and exhaust system shall not result in: (a) Discharge of flame from any joint or opening; (b) ignition of surrounding inflammable gas-air mixture; (c) development of dangerous afterburning;¹ or (d) excessive pressures. (Pressures greater than 150 pounds per square inch gage are considered excessive.) An intake or exhaust system will be rejected if it fails to meet any one of the four conditions.

(vi) In addition to explosion tests, certain other tests may be made at the option of MESA's engineers to determine the adequacy of a part for the service intended:

(a) Spaced-plate flame arresters mounted in the intake and exhaust systems will be examined to determine the space between the plates. When spaced-plate flame arresters are used in the exhaust system the temperature of these plates will be 212° F. when the examination is made.

(b) Where the durability of flame arresters is in doubt, such mechanical tests are deemed necessary may be made to determine points requiring strengthening.

(5) *Determination of adequacy of exhaust-gas cooling system and accessory parts thereof.* (i) The adequacy of the exhaust-gas cooling system and its accessory parts will be determined with the engine operating at its maximum power output for a period sufficient for all parts of the engine and exhaust-gas

cooling system to reach their respective equilibrium temperatures. The cooling water spray will be in operation, and when equilibrium has been reached all compartments designed to hold cooling water will be filled with a measured quantity of water (at the equilibrium temperature) in accordance with the recommendations of the manufacturer. No cooling air will be circulated over the engine or its accessories during the test.

(ii) The following determinations will be made: (a) Exhaust-gas temperature at outlet of exhaust manifold but upstream from cooling water spray; (b) final exhaust-gas temperature;² (c) cooling water consumed; (d) temperature of water in all compartments; and (e) temperature of cooling water to spray.

(iii) The final exhaust-gas temperature shall not exceed 160° F.

(iv) The water consumed in cooling the exhaust gas under the test conditions of operation shall not exceed that required for the adiabatic saturation of the exhaust gas at the final temperature by more than 10 percent. The water consumed in excess of that required for adiabatic saturation at the final exhaust temperature will be considered as entrained water.

(v) The adequacy of the automatic fuel shut-off actuated by the exhaust temperature will be determined with the engine operating at its maximum power output and with the cooling spray initially in operation. The water to the cooling spray will be shut off, the water in all compartments designed to hold cooling water will be drained, and the final exhaust-gas temperature at which the fuel to the engine is automatically shut off will be noted. The temperature must be between 180° and 190° F.

(vi) Following this test the temperature at the control point will be permitted to drop to 160° F. At this temperature it must be possible to start the engine. If a manual reset is provided in the automatic fuel shut-off control it shall be possible to reset the control and start the engine when the temperature at the control point is 160° F.

(vii) At the option of MESA's engineers any other tests may be made to determine the adequacy of a part for the service intended.

¹ The term "afterburning" as used in this part is applied to combustion of an inflammable gas-air mixture drawn into the system under test by the cooling of the products from an explosion in the system.

² Temperature at point of discharge from exhaust cooling system and before exhaust gas is mixed with diluting air.

(6) *Determination of surface temperature of engine and accessories.* (i) The surface temperatures of the engine, the exhaust cooling system, and any accessories will be determined with the engine operating at its maximum power output for a period sufficient for all parts of the engine and its accessories to reach their respective equilibrium temperatures. The exhaust-gas cooling system will be in operation, but no air will be circulated over the engine or accessories. Under the foregoing conditions the following surface temperatures will be measured: (a) Exhaust-gas manifold at inlet; (b) exhaust-gas manifold at outlet; (c) engine-surface temperatures at various locations; (d) crankcase; (e) exhaust flame arrester; (f) intake flame arrester; and (g) at any other location considered necessary.

(ii) The temperature of any surface measured under the foregoing conditions shall not exceed 400° F.

(iii) At the option of MESA's engineers the engine may be operated under the foregoing test conditions while completely surrounded by an inflammable natural gas-air mixture. Combustible materials likely to be encountered in service may be placed on any surface. Operation under such conditions shall not cause an ignition of the surrounding inflammable atmosphere.

(iv) In addition to the foregoing tests any other tests may be made at the option of MESA's engineers to determine the adequacy of the cooling of surfaces of the engine and its accessories.

(7) *Tests of exhaust-gas dilution system.* The adequacy of the exhaust-gas dilution system will be determined by tests of the assembled locomotive. The engine will be operated in normal air, at minimum speed and at maximum rated speed, and will be at temperature equilibrium during the tests. Samples of the final (diluted) exhaust of the locomotive and of the undiluted engine exhaust will be collected simultaneously at both speeds. Analyses of these samples will serve as a basis for calculating the extent of dilution effected by the system. The dilution ratios thus obtained will be applied to the data obtained in tests described in subparagraph (2) of this paragraph to determine whether the concentrations of carbon monoxide, oxides of nitrogen, and aldehydes in the diluted exhaust of the locomotive are within the required limits.

(8) *Tests of fuel tank.* The fuel tank will be tested to determine that it is fuel-tight, that the vent will maintain atmospheric pressure within the tank, and that the vent and closure do not permit the egress of liquid fuel.

(b) *Tests of electrical equipment—(1) Detailed inspection of class 1 electrical parts.* In the investigation of any machine or equipment for approval and also in the investigation of separate electrical units (individual motors, controllers, etc.) as to suitability for use on permissible machines, explosion-proof casings shall be given careful inspection by MESA. This inspection will include the following items:

(i) A detailed check of parts against drawings as to materials, dimensions, and position, making notations for necessary correction of discrepancies between the drawings and the parts checked.

(ii) Measurement of joints, bearings, and other possible flame paths.

(iii) Examination for unnecessary through holes.

(iv) Examination for adequacy of lead entrance design and construction.

(v) Examination for adequacy of electrical clearance of insulation between live parts of opposite polarity and between live parts and ground.

(vi) Examination for adequacy and security of fastenings.

NOTE: For further information regarding the details of this inspection reference should be made to Bureau of Mines Information Circular 7185, Inspection and Testing of Mine-Type Electrical Equipment for Permissibility.

(2) *Explosion tests of class 1 electrical parts.* (i) To test enclosures for their ability to retain flame, they will be filled and surrounded with explosive mixtures containing varying percentages of Pittsburgh natural gas^{*} and air. The mixture within the enclosure will be ignited by a spark plug or other suitable means, and a record of explosion pressures developed will be taken. The point of ignition will be varied to determine the condition that gives the greatest pressure. For some of the tests, bituminous-coal dust will be introduced into enclosures, and the effects will be noted. Motor armatures and rotors will be stationary in some tests and revolving in others.

^{*} Investigation has shown that, for practical purposes, Pittsburgh natural gas (containing a high percentage of methane) is a satisfactory substitute for pure methane in these tests.

(ii) Not less than 10 tests will be made of each design of explosion-proof enclosure. If, on account of the size of enclosure or questionable construction features, it is the judgment of MESA's engineers that the explosion-proof qualities cannot be completely demonstrated in 10 tests, more than that number will be made.

(iii) The explosion tests of an enclosure shall not result in: (a) Discharge of flame from any joint, bearing, or opening; (b) rures; (c) development of dangerous ignition of surrounding explosive mix- afterburning; or (d) excessive pressures. (Indicated pressures of 150 pounds per square inch gage or over are considered as being excessive.) An enclosure will be rejected if failing to meet any one of the four above conditions.

(3) *Adequacy tests of electrical parts.* In addition to explosion tests, certain other tests may be made at the option of MESA's engineers to determine the adequacy of an accessory for the service intended:

(i) Where the durability of battery cells, headlights, or other parts is in doubt, such mechanical tests as are deemed necessary may be made to determine points requiring strengthening.

(ii) If there is any question on the efficacy of ventilation of battery boxes, tests may be made to check the ventilation.

(iii) Switches or circuit breakers and contactors intended to function as switches shall be capable of interrupting any overload currents that will flow without causing the protective devices to open the circuit. They also shall be capable of opening these overloads five times at 2-minute intervals without grounding or short-circuiting.

(iv) Fuses or other automatic circuit-interrupting devices may be tested to determine whether they provide the necessary protection without damaging the explosion-proof qualities of their enclosures.

(4) *Factory inspection and tests.* If necessary to expedite the investigation MESA will conduct inspections or tests of the locomotive assembly, or any part

⁴The term "afterburning" as used in this part is applied to combustion, immediately after an internal explosion, of a gaseous mixture that was not in the enclosure at the time of that explosion, but was drawn in as the result of the cooling of the products of the original explosion.

thereof, at the plant of the manufacturer.

(5) *Additional tests.* MESA reserves the right to make any additional tests, not covered by the provisions of this part, that may be considered necessary to determine the adequacy of the locomotive, or any part thereof.

[Sched. 22, 9 F.R. 13748, Nov. 17, 1944]

§ 31.6 Granting of approval.

(a) *Notification of approval or disapproval.* (1) After MESA has considered the results of the investigation, and suitable drawings and specifications have been placed on file, a formal written notification of approval or disapproval of the locomotive will be supplied to the applicant by letter from the MESA. If the locomotive meets all requirements, the notification of approval will not be accompanied by test date or detailed results of tests. If the locomotive fails to meet any of the requirements, notification of such failure will be accompanied by details of the failure with a view to possible remedy of defects. MESA will not otherwise release, or make public, results of tests of locomotives that fail to meet the requirements.

(2) No verbal reports of MESA's decisions concerning the investigation will be given, and no verbal or informal approvals will be granted.

(3) The manufacturer shall not be free to advertise his equipment as permissible or approved until he has received the formal notification of approval in which an approval number is assigned.

(4) All drawings and specifications that must be submitted to MESA in connection with the investigation will be retained by MESA. A drawing list numbered to correspond to the approval number will accompany the notification of approval. This list will include the drawings and specifications covering the details of construction upon which the approval is based. The applicant receiving an approval shall keep exact duplicates of the drawings and specifications retained by MESA. These are to be adhered to in commercial production of the approved locomotive.

(b) *Approval plate.* (1) With the notification of approval the applicant will receive a photograph of a design of approval plate. The plate will bear the emblem of the Mining Enforcement and Safety Administration, the approval

number, designation of the type of equipment for which the approval is granted, and the name of the manufacturer. The plate will bear also a statement regarding maintenance of the equipment in approved condition.

(2) The manufacturer shall have this design reproduced as a plate for attachment to each permissible locomotive. A sample plate and a sketch or description of its proposed mounting on the locomotive shall be sent to Approval and Testing, Pittsburgh Technical Support Center, Pittsburgh, Pa., 15213, for approval before final adoption.

(c) *Purpose and significance of approval plate.* (1) The approval plate identifies the equipment as having complied with the requirements of MESA for use in gassy and dusty mines.

(2) The use of the approval plate on his equipment obliges the manufacturer to maintain the quality of his product and to see that each locomotive is constructed according to drawings and specifications accepted by, and on file with, MESA. Equipment exhibiting changes in design that do not have official authorization from MESA are not permissible and therefore must not bear the approval plate.

[Sched. 22, 9 F.R. 13750, Nov. 17, 1944, as amended by Supp. 1, 20 F.R. 2720, Apr. 23, 1955]

§ 31.7 Withdrawal of approval.

MESA reserves the right to rescind for cause, at any time, an approval granted under this part.

[Supp. 22, 9 F.R. 13750, Nov. 17, 1944]

§ 31.8 Changes in design subsequent to approval.

All approvals are granted with the understanding that the manufacturer will make his equipment according to final drawings and specifications submitted to MESA. Therefore, before making any change in an approved locomotive the manufacturer shall first obtain MESA's approval of the change. This procedure is as follows:

(a) The manufacturer shall write to Approval and Testing, Pittsburgh Technical Support Center, requesting an extension of his original approval and stating the change or changes desired. With this letter he should submit a set of revised drawings and specifications showing the change or changes in detail.

(b) MESA will consider the application and inspect the drawings and

specifications to determine whether it will be necessary to make tests.

(c) If tests are unnecessary, the applicant will be advised by letter from MESA of the approval or disapproval of the change.

(d) If tests are necessary, the applicant will be advised of the fee and the material required for the tests.

[Sched. 22, 9 F.R. 13750, Nov. 17, 1944, as amended by Supp. 1, 20 F.R. 2720, Apr. 23, 1955]

§ 31.9 Recommendations on the use of diesel locomotives underground.

The approval of any type of equipment by MESA means only that the equipment has met certain specified requirements of design and performance, but the approval does not guarantee that it is impossible to use an approved device in an unsafe manner. The manufacturer must develop equipment that will meet the specified requirements of this part to be granted an approval, but it is the responsibility of the user to see that the equipment is maintained in permissible condition and is used in a permissible manner. The use of diesel locomotives underground involves, in addition to proper maintenance of the locomotive itself, certain other factors, such as ventilation, which are of equal importance in establishing safe operating conditions. The following recommendations on the use of diesel locomotives underground are included in this part as an expression by MESA of the conditions that should be enforced in the use of such equipment. Any locomotive used under conditions that do not comply with these recommendations shall not be considered by MESA as being permissible. The recommendations are as follows:

(a) *Ventilation—(1) Definition of ventilation requirements.* The use of diesel mine locomotives underground should be restricted to haulageways where positive ventilation is maintained by mechanical means. If possible haulage by diesel locomotives should be on the intake of a separate split of the ventilating air current or arrangements should be made in some manner so that air carrying exhaust gases from the engine is returned to the surface without traversing working places. The quantity of ventilating air supplied must be adequate to dilute all toxic or objectionable constituents of the engine exhaust to such extent that the composition of

the air of the haulageways, or any working place connected thereto, meets recognized hygienic standards for working environments. The air supplied for ventilation in haulageways where diesel locomotives are used should not contain combustible gas or other contaminants in such concentration that combustion processes in the engine may be altered, with resultant increase in production of toxic or objectionable constituents in the engine exhaust.

(2) *Quantity of ventilating air.* (i) The minimum quantity of ventilating air that must be supplied per unit time will be determined in the approval tests of each permissible locomotive, and this quantity will be shown upon all approval plates issued for diesel mine locomotives. This quantity shall apply to the use of one locomotive only; if more than one locomotive is used in any continuous course of air, then the air quantity required for one locomotive must be multiplied by the number of locomotives in use. Approved locomotives may be used only in places where at least this minimum quantity of ventilation is in effect. As this minimum required quantity of ventilation will be determined during the approval tests, with engines that are new and presumably in the best mechanical condition, it will be desirable always to supply ventilation in excess of the minimum quantity indicated on the approval plate, thus furnishing a factor of safety in operation.

(ii) Ventilation on haulageways should be measured at intervals sufficiently frequent to insure that the required air quantities are being maintained. Records should be kept of such measurements.

(3) *Quality of ventilating air.* The air supplied for ventilation in connection with the use of diesel locomotives underground should contain not less than 20 percent by volume of oxygen (dry basis) and should not contain more than 0.25 percent inflammable gas. This statement applies to the air current before the exhaust gases from the locomotive are added to it.

(4) *Examination of air of working places.* (i) The air of haulageways in which diesel locomotives are used should be examined at intervals sufficiently frequent to determine that the composition of the intake air conforms with the requirements given in subparagraph (3) of this paragraph and that the concentration of contaminants, such as carbon dioxide, carbon monoxide, and oxides of

nitrogen added to this air by the locomotive are within acceptable limits. Methods used in determining the concentrations of these contaminants and the composition of the intake air of the haulageways should be sufficiently sensitive and accurate to produce reliable results, as the interpretation of these results may in some instances depend on variations in concentration of as little as 0.01 percent or less. Concentrations of gases considered permissible in working environments are as follows:

Carbon dioxide (CO₂)—not more than 0.5 percent by volume.

Carbon monoxide (CO)—not more than 0.01 percent by volume.

Oxides of nitrogen (NO₂)—not more than 0.0025 percent by volume.

Oxygen (O₂)—not less than 20 percent by volume.

(ii) Ventilation and locomotive operating condition should be such that the composition of the air of haulageways, and working places connected thereto, always remains within these tolerable limits.

(iii) Aldehydes are self-evident if present in objectionable concentrations and need not be determined by analysis. Production of sulfur gases by the locomotive may be controlled by using a fuel oil of low sulfur content.

(iv) A smoky exhaust is a good practical indication of faulty operation and is usually accompanied by the production of excessive quantities of carbon monoxide. Therefore abnormal smoke production should be sufficient reason for removing a locomotive from service until this condition has been corrected.

(v) In the event that any of the foregoing conditions of air quality are not maintained, as determined by analysis of the air, or by observation, operation of locomotives should be stopped until proper conditions of air quality are established, either by increasing ventilation or by correcting mechanical imperfections in the locomotives, whichever is found to be the cause of the undesirable conditions.

(vi) Records should be kept of all air analyses and of any changes in ventilation or adjustments of locomotives made as a result of these analyses.

(b) *Maintenance*—(1) *General.* (i) The maintenance of diesel locomotives in permissible condition is absolutely essential if hazards in the use of such equipment are to be avoided. To insure adequate maintenance a qualified and

authorized person should be made responsible for all maintenance work. This person should be thoroughly familiar with the proper procedures for maintaining diesel locomotives in permissible condition and he should be assisted when necessary by competent mechanics.

(i) Inspection and maintenance procedures shall be in accordance with the instructions furnished by the manufacturer. When diesel locomotives are operated for the first time in any situation, daily inspections should be made of the intake and exhaust systems of the engine as outlined below and of other accessories of the locomotive to accumulate information on the frequency of inspections required. Records of all inspections should be kept and a routine inspection schedule should be drafted from experience and information obtained in daily inspections during the first several months of operation.

(ii) All maintenance work should be done in accordance with detailed instructions furnished by the manufacturer of the locomotive. These instructions should form the basis of a routine inspection and maintenance schedule. Some of the more important inspection and maintenance procedures are summarized below.

(2) *Engine fuel-injection system*—(i) *Injection valves.* Improperly functioning injection valves may cause incomplete combustion of some of the fuel and lead to increased production of smoke, carbon monoxide, and aldehydes. It is important therefore to maintain injection valves in proper operating condition. Particular attention should be paid to preventing leaking injection valves and to preventing imperfect atomization or distribution of the fuel.

The manufacturer's recommendations regarding inspection and maintenance of injection valves should be followed and periodic checks on injection pressure and spray pattern should be made as outlined in these recommendations.

(ii) *Fuel pump.* The fuel pump on the engine is set by the manufacturer in accordance with permissibility requirements of MESA. This setting is made to limit the fuel injected at full throttle and to prevent operation of the engine on the rich side (insufficient air for complete combustion) with the attendant production of dangerous quantities of carbon monoxide. After this adjustment is made the fuel pump is sealed or locked to prevent alteration.

It should not be necessary to reset the fuel pump unless some part breaks or unless the pump is disassembled for a complete overhaul. When it is necessary to set the fuel pump the seal or lock should be broken by an authorized person and the final adjustment should be made under the supervision of this person. After this adjustment has been made the fuel pump should be sealed or locked by an authorized person.

(iii) *Method of adjusting fuel pump.* When it is necessary to reset the stop limiting the fuel injector at full throttle, it is absolutely essential that some means be available for reproducing the original setting. Failure to reproduce the original setting might lead to the production of dangerous quantities of carbon monoxide if too much fuel were injected at full throttle.

Every shop in which diesel locomotives are serviced should have equipment for determining the fuel delivered by the fuel pump when operating in the full-throttle position. The fuel delivery at maximum throttle setting can be determined either by weight or by volume. If the determination is made by volume a suitable correction for the density of the fuel at the existing temperature must be made. The test procedure should be designed so that the maximum quantity of fuel delivered per revolution of the fuel pump can be determined. The fuel pump should be set to deliver a maximum weight of fuel per stroke corresponding to the value specified by the manufacturer for the particular engine and conditions of use.

(iv) *Adjustment of maximum fuel injection for permissible operation at different barometric pressures.* The average barometric pressure existing at the place where a diesel engine is to be used must be considered in setting the maximum fuel injected at full throttle. Barometric pressure affects the density of the air and therefore affects the weight of air drawn into the engine. Unless the quantity of fuel injected at full throttle is adjusted to maintain a constant fuel : air ratio, dangerous quantities of carbon monoxide might be produced at high altitude and low barometric pressure where the density of the air is low.

The maximum quantity of fuel for permissible operation at different barometric pressures will be determined in permissibility tests made by MESA. This information will be furnished the manu-

facturer and will be included on the approval plate. The fuel pump of the engine should be set in accordance with the values given for the barometric pressure existing at the place where the engine is to be operated.

(3) *Engine intake system.* (i) The intake system of the engine, including flame arrester, air cleaner, and all joints, should be inspected at periodic intervals. The frequency of these inspections shall be determined in accordance with the recommendations made under general maintenance instructions. Periodic measurements should be made of the reduced pressure in the intake system to determine when it is necessary to clean the flame arrester and air cleaner. The permissible maximum reduced pressure will be determined in permissibility tests made by MESA and will be shown on the approval plates.

(ii) Inspection of the intake system should include the determination of the tightness of all joints and of the cleanliness of all surfaces of the flame arrester.

(iii) The air cleaner should be maintained in accordance with the manufacturer's instructions.

(4) *Engine exhaust system.* (i) The exhaust system of the engine, including the flame arrester, cooling boxes, shut-off mechanism, water spray, and exhaust dilution system, shall be inspected at periodic intervals. The frequency of these inspections shall be determined in accordance with the recommendations made under general maintenance instructions. Periodic measurements should be made of the positive pressure in the system to determine when the exhaust flame arrester should be cleaned. The permissible maximum positive pressure will be determined in permissibility tests made by MESA and will be shown on the approval plates.

(ii) The locomotive operators should be made responsible for maintaining an adequate supply of water in the cooling boxes and in the tank supplying water to the spray. It is important that the water used in the exhaust system be substantially free of acid to prevent corrosion. In some situations this might necessitate chemical treatment of the water used in the locomotive.

(iii) The performance of the fuel shut-off mechanism actuated by the exhaust-gas temperature shall be checked periodically. This mechanism can be checked by operating the engine in the repair shop with no water in the cooling boxes

and with the water spray off, so that the exhaust-gas temperature at the control point is greater than the temperature required to actuate the control. The engine shall be operated under such conditions and the performance of the automatic fuel shut-off mechanism determined.

(iv) Periodic inspections should be made of all heated engine surfaces at intervals frequent enough to insure that those surfaces are kept free of combustible materials such as coal dust, fuel oil, lubricants, and rags or waste.

(v) The exhaust-gas dilution system should be inspected and cleaned frequently to insure adequate dilution of the exhaust gas before it is discharged from the locomotive. In order to maintain the proper flow of diluting air, it is important that passages through which diluting air flows be kept clean to prevent restriction of air flow.

(vi) If the exhaust from the engine appears smoky or if objectionable odors are evident in the exhaust the manufacturer's manual of instructions should be consulted immediately and the cause determined. Particular attention should be paid to inspecting the fuel injection valves, the pressure in the intake and exhaust system, and the quantity of fuel injected by the fuel pump at full throttle. Restrictions in the intake or excessive pressure in the exhaust can cause smoke and objectionable odor. This can be caused also by the injection of fuel in excess of the permissible maximum. A smoky exhaust usually is indicative of the presence of significant concentrations of carbon monoxide and therefore steps should be taken immediately to determine the cause and eliminate it.

(5) *Electrical equipment*—(1) *Locks and seals.* Certain electrical parts, such as battery boxes and headlights on the locomotive, are furnished with locks or seals to prevent opening for adjustments, repairs, etc., by anyone except authorized persons. Such locks and seals should be kept in place. Precautions should be taken to guard against unauthorized persons obtaining keys or sealing tools.

(ii) *Fastenings.* Joints in the casings of motors, starting switches, headlights, and any other parts subject to sparking during normal operation should be kept tightly closed. An opening greater than 0.004 inch for plane (flat) joints is considered unsafe. Accordingly, all bolts, cap screws, and other means of fasten-

ing casings together should always be kept in place and secured tightly. Openings caused by the omission of parts or by the burning resulting from arcs should be carefully avoided.

(iii) *Wiring.* Air hose, rigid steel, and other types of conduit should be firmly held at the ends and also between ends, when lengths are such as to require additional supports. Conduit and other means of affording mechanical protection of wiring should be kept intact and in place.

(iv) *Headlight and instrument lenses.* Lenses forming part of the explosion-proof casings of headlights and instruments should be held securely. Lenses with cracks entirely through them should be replaced immediately.

(v) *Overload protection.* Tampering with fuses, relays, and other means supplied by the manufacturer, for overload and short-circuit protection of wiring and equipment should not be permitted, nor should substitutes that defeat this protection be allowed.

(vi) *Battery.* Battery-cell tops should be kept free of electrolyte and dust. Connections between cells should be kept tight and free of corrosion.

(c) *Fuel.* (1) The fuel used for diesel locomotives in underground service should conform to the manufacturer's specifications for viscosity, pour point, cetane number, carbon residue, and water. The flash point must not be less than 140° F., and the sulfur content must not be greater than 0.5 percent by weight.

(2) Wherever possible the fuel tanks of the locomotives should be filled above ground. In situations where this is not feasible, fuel should be taken underground only in a strong, tight tank mounted on a car and equipped with a flexible hose and a suitable means for transferring the fuel from the tank car to the fuel tank of the locomotive. The flexible hose shall be grounded to the chassis of the fuel tank car. The valve on the end of the flexible hose of the fuel tank car shall be self-closing and designed so that it is open only when the fuel hose is connected to the fuel tank of the locomotive. The air vent on the tank car must be flameproof.

(3) Tank cars of fuel shall be taken underground only when it is necessary to fill the fuel tanks of the locomotives. After filling the fuel tanks of the locomotives the tank cars shall be removed immediately from the underground work-

ings. The full and empty tank cars must be accompanied during shipment by authorized persons. Under no conditions is fuel to be stored underground.

(4) The transfer of fuel from the tank car to the locomotive must be made in the underground diesel repair shop. During transfer of fuel the engine must not be in operation.

(5) If there is a drain at the bottom of a tank on a car, this drain must be closed by a screw cap which can be locked in position to prevent self-opening.

(6) Clean fuel is absolutely necessary to minimize maintenance of the fuel-injection systems. Therefore in handling the fuel all precautions should be taken to keep the fuel clean and free from water.

(d) *Fire extinguishers.* At least one fire extinguisher of the type containing liquid carbon dioxide should be carried at all times with each locomotive. Extinguishers of the same type should be installed at underground locomotive repair shops and locomotive barns.

(e) *Repair shops and locomotive barns.*

(1) Repair shops for diesel locomotives and storage of locomotives preferably should be above ground. If such arrangement is impracticable, such spaces should be situated close to the shaft or portal underground and between an intake and a return airway, so that persons in such spaces will be provided with fresh air and so that if engines are operated in the repair shop, or if fire should occur, products of combustion will enter the return air.

(2) Underground repair shops and storage spaces should be lined with incombustible material, and doors, or other closures, should be of incombustible material. The floor should be impervious to oil and should slope to a sump, so that spilled oil may be collected and removed. A supply of sand should be kept on hand to aid in fighting fires or to absorb spilled oil.

(3) Welding or other operations that might create fire hazards should not be carried on in the repair shop unless adequate precautionary measures are taken against the ignition of diesel fuel or lubricants.

[Sched. 22, 9 F.R. 13750, Nov. 17, 1944, as amended by Supp. 1, 20 F.R. 2720, Apr. 23, 1955]

§ 31.10 Revision of requirements and recommendations.

In the preparation of the requirements and recommendations embodied

in this part MESA has endeavored to provide a basis for the production of safe and practicable diesel mine locomotives that will meet the demands of existing conditions. However, as the use of such locomotives for underground haulage was an innovation in the United States at the time of preparing this part, it is possible that instances might arise in which the protection afforded would be inadequate. MESA with the cooperation of manufacturers and users of the locomotives, will be alert to such situations. When a situation arises in which inadequacy of protection or unusual hazard attending the use of approved equipment is established, the manufacturer of the equipment is requested to issue precautions, or if necessary to cease marketing the equipment for use in the particular situation or condition until such changes or provisions as will provide adequate protection are made. It shall be understood that any changes or provisions made must be submitted to MESA and have its approval before being adopted. Should the situation require a change in the basic requirements and tests provided in this part, or the recommendations contained therein, such change will be issued as an amendment to this part.

[Supp. 22, 9 F.R. 13753, Nov. 17, 1944]

PART 32—MOBILE DIESEL-POWERED EQUIPMENT FOR NONCOAL MINES

Sec.

- 32.1 Type of equipment that may be approved.
- 32.2 Definitions.
- 32.3 Conditions under which approvals may be granted or tests made; preliminary steps preceding approval tests and inspections.
- 32.4 General requirements.
- 32.5 Inspection and tests.
- 32.6 Granting of approval.
- 32.7 Withdrawal of approval.
- 32.8 Changes in design subsequent to approval; extension of approval.
- 32.9 Recommendations on the use of mobile diesel-powered equipment in noncoal mines.
- 32.10 Revision of requirements and recommendations.

AUTHORITY: The provisions of this Part 32 issued under secs. 2, 3, 5, 36 Stat. 370, as amended, sec. 212, 66 Stat. 709; 30 U.S.C. 3, 5, 7, 482.

NOTE: Nomenclature changes to this part appear at 39 FR 24004, June 28, 1974.

§ 32.1 Type of equipment that may be approved.

Safe operation of mobile diesel-powered equipment underground involves consideration of four possible hazards, namely, (1) toxic or objectionable gases discharged in the exhaust of the engine, (2) ignition of flammable atmospheres by the engine or by electrical equipment, (3) fire hazards presented by the engine fuel oil and by combustible material that might come in contact with the equipment, and (4) mechanical hazards. Equipment for use in coal mines where methane may be encountered, will be considered permissible only when proved by test to offer adequate protection against all these hazards. (See Part 31 of this subchapter.) Equipment for use in noncoal mines in which the underground atmosphere contains less than 0.25 percent by volume of flammable gas will be granted approval when proved by test to offer adequate protection against the production of toxic or objectionable gases, and when design and construction are such as to minimize the fire hazard presented by the engine fuel oil under normal operating conditions. Since the latter equipment is not to be used in coal mines or other situations where inflammable atmospheres may be encountered, equipment approved under this part will be referred to as "approved equipment" rather than as "permissible equipment", and will carry an "approval plate" rather than a "permissibility plate".

(a) *Approval.* Approvals will be granted for complete diesel-powered equipment units only and not for engines and other individuals parts used in the assembly of such units.

(b) *Inspection and tests of sub-assemblies.* The engine and exhaust gas cooling system may be supplied as a sub-assembly to the manufacturer of the complete unit. Under such conditions this sub-assembly may be submitted for inspection and test either by the manufacturer of the complete unit or directly by the manufacturer of the sub-assembly, consisting of engine and exhaust gas cooling system. All requirements to be met under either option are identical. Application by the manufacturer of a sub-assembly for such inspection and test shall be made as outlined in § 32.3 (b). If the sub-assembly meets all requirements applicable to it, MESA will inform the manufacturer of the sub-assembly by letter that further test or

inspection of the engine and exhaust gas cooling system will not be required after installation in a complete unit if the sub-assembly is constructed in accordance with the specifications on file at MESA. This letter may be cited to the manufacturer of the complete unit. The manufacturer of a sub-assembly, consisting of engine and exhaust gas cooling system, may not advertise his sub-assembly as approved by MESA, since only complete mobile units are granted approval. The manufacturer of a sub-assembly that meets the requirements of this part may state that the sub-assembly has been tested by MESA and meets the requirements of this part that pertain to the engine and exhaust gas cooling system.

[14 F.R. 1671, Apr. 8, 1949, as amended by Supp. 1, 20 F.R. 2720, Apr. 23, 1955]

§ 32.2 Definitions.

Certain terms used throughout this part are defined as follows:

(a) *Equipment*. Mobile diesel-powered equipment used to move or transport material underground.

(b) *Unit*. The complete assembly of engine, accessories, and chassis comprising one mobile diesel-powered unit.

(c) *Noncoal mine*. A mine in which the material being mined is incombustible or contains at least 65 percent by weight of incombustible material, and in which the underground atmosphere in any open workings contains less than 0.25 percent by volume of flammable gas. Tunneling operations in which underground conditions conform with the foregoing may be considered in the same category as noncoal mines.

(d) *Normal operations*. The performance by each part of the equipment of those functions for which the part was designed.

(e) *Toxic and objectionable gases*. Toxic and objectionable gases present in the exhaust of diesel engines are carbon monoxide, oxides of nitrogen, carbon dioxide, and aldehydes. The exhaust also will contain oxides of sulfur if the fuel contains sulfur.

(f) *Fuel: air ratio*. The ratio of fuel to air present, under a given condition of operation, in the combustion space of the engine, expressed in terms of weight, as pound of fuel per pound of air. Fuel: air ratio at any operating condition may be calculated from the composition of the exhaust gas and of the fuel.

(g) *Adequate*. Appropriate and sufficient as determined by tests and examinations by MESA.

(h) *Approved*. As used in this part the term "approved" relates to equipment formally designated by MESA as suitable for operation in atmospheres containing less than 0.25 percent by volume of flammable gases, and to have conformed to the requirements of this part.

(i) *Approval*. Official, formal, written notification by MESA stating that upon investigation the equipment has met satisfactorily the requirements of this part.

(j) *Extension of approval*. Official, written notification from MESA to the equipment manufacturer, by which the latter is authorized to make changes in approved equipment after the proposed changes have been duly examined, accepted, and recorded by MESA.

(k) "MESA" means the United States Department of the Interior, Mining Enforcement and Safety Administration.

[14 FR 1672, Apr. 8, 1949, as amended by Supp. 1, 20 FR 2720, Apr. 23, 1955; 39 FR 24004, June 28, 1974]

§ 32.3 Conditions under which approvals may be granted or tests made; preliminary steps preceding approval tests and inspections.

(a) *Consultation*. Upon appointment, manufacturers, engineers, or their representatives may visit Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213, to discuss the requirements of this part or to obtain criticisms of proposed design of equipment to be submitted for test. There is no charge for such consultation.

(b) *Application*. Before MESA will undertake the active investigation leading to approval of any equipment, the manufacturer shall make application by letter for an investigation leading to approval of that equipment. This application in duplicate, accompanied by a check, bank draft, or money order payable to the U.S. Mining Enforcement and Safety Administration, to cover all necessary fees, shall be sent to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213, together with the required drawings and specifications.

(c) Fees.

| | |
|---|-------|
| 1. Preliminary review of drawings, specifications, and related data—each new machine..... | \$40 |
| 2. Tests to determine composition of engine exhaust gases..... | 1,800 |

NOTE: For preliminary or check testing that requires only carbon dioxide and carbon monoxide determination, the fee shall be \$600.

| | |
|---|-----|
| 3. Detailed inspection of exhaust-gas cooling system..... | 120 |
| 4. Detailed inspection of electrical system..... | 30 |
| 5. Each field inspection of completely assembled machine..... | 265 |
| 6. Exhaust-gas-dilution tests independent of field inspection..... | 115 |
| 7. Final examination and recording of drawings and specifications preparatory to issuing an approval... | 110 |
| 8. Final examination and recording of drawings and specifications preparatory to issuing a certification of an engine subassembly..... | 55 |
| 9. Examining and recording of drawings and specifications for an extension of approval or certification of an engine subassembly, each 4 hours or fraction thereof... | 35 |

NOTE: When investigation, inspection, or testing is required to be performed at locations other than MESA's premises, the applicant shall reimburse MESA for traveling, subsistence, and incidental expenses of its representative(s) in accordance with standard Government travel regulations. Such reimbursement shall be in addition to the fee charged for investigation, inspection, or testing.

(d) *Drawings and specifications required.* (1) MESA will not undertake the inspection and test of equipment until a set of legible drawings, bill of material, and specifications sufficient in number and detail to identify the parts fully, have been delivered to Approval and Testing, Pittsburgh Technical Support Center. No drawings or specifications should be sent to the Washington Office of MESA. Drawings should be numbered and dated to facilitate identification and reference in the records.

(2) The drawings and specifications to be submitted shall include the following:

(i) Drawings clearly showing the over-all dimensions of the equipment, the character, size, and relative arrangement of the electrical parts and the wiring between them; also the size and position of the fuel tank and exhaust gas cooling system.

(ii) Any other drawings or illustrations necessary to identify or explain any feature that is to be considered in the approval of the equipment.

(iii) A wiring diagram for all electrical equipment and circuits on the equipment.

(iv) The complete rating of each starting motor and charging generator, also the capacity of all fuses and the setting of overload protective devices.

(v) The size of conductors used in all the various circuits.

(3) All drawings and specifications are to be considered confidential by MESA.

(e) *Factory inspection form.* Each unit shall be carefully inspected by the manufacturer before it leaves the factory. The manufacturer will be required to furnish MESA with a copy of the form to be used in this inspection. The form shall draw special attention to the points that must be checked in making certain that the safety features of the unit are in proper condition, complete in all respects, and agree in every detail with the drawings and specifications filed with MESA.

(f) *Instruction manual.* The manufacturer shall furnish an instruction manual with each unit. This manual shall give complete instructions covering the operation and servicing of the unit, particularly with reference to proper adjustment and maintenance of the engine and its auxiliaries to minimize production of smoke and toxic gases in the exhaust.

A copy of this manual shall be submitted to MESA for review when the reproduction of the approval plate is submitted (see § 32.6(b)).

(g) *Material required for investigation.* Unless requested to do so, the manufacturer need not send a complete mobile unit for the purpose of inspection and test. Usually only an engine, exhaust gas cooling system, required accessory equipment, fuel tank, starting motor and switch need be shipped to MESA for investigation. Any special tools necessary to disassemble any parts for inspection or test shall be furnished with the equipment submitted.

(h) *Shipment of material.* (1) All shipments must be prepaid. Before making any shipments, the manufacturer shall obtain shipping instructions from MESA. He shall arrange and pay for any trucking that may be necessary between the freight depot and the

testing station. He shall also take care of crating and removal of parts upon completion of the investigation.

(2) Inspection and tests usually are undertaken in the order of receipt of parts, provided that application, fees, and drawings have been received.

(i) *Assistance require during investigation.* When requested to do so, the manufacturer shall provide one or more men to assist in disassembling parts for inspection and in preparing them for test. These persons may serve as witnesses of the tests.

(j) *Observers at formal investigations and demonstrations.* No one shall be present during any part of the formal investigation conducted by MESA which leads to approval except the necessary Government personnel, representatives of the applicant, and such other persons as may be mutually agreed upon by the applicant and MESA. Upon granting approval, MESA will announce that such approval has been granted to the device and may thereafter conduct, from time to time in its discretion, public demonstrations of the tests conducted on the approved device.

Those who attend any part of the investigation, or any public demonstration, shall be present solely as observers; the conduct of the investigation and of any public demonstration shall be controlled by MESA. Results of chemical analyses of material and all information contained in the drawings, specifications, and instructions shall be deemed confidential and their disclosure will be appropriately safeguarded by MESA.

[14 F.R. 1672, Apr. 8, 1949, as amended by Supp. 1, 20 F.R. 2720, Apr. 23, 1955; Sched. 24, 30 F.R. 3756, Mar. 23, 1965]

§ 32.4 General requirements.

(a) *Quality of material, workmanship and design.* MESA reserves the right to refuse to test any equipment that, in the opinion of qualified representatives of MESA, is not constructed of suitable materials, or that gives evidence of faulty workmanship, or that is not designed upon sound engineering principles. This right shall apply to all parts of the equipment and to the design thereof, whether or not the points in question are covered specifically by the requirements of this part.

(b) *Type of engine considered for approval.* Only mobile equipment powered by engines of the compression-ignition type will be considered for approval.

Such engines shall be designed to operate only on liquid fuel of flashpoint not less than 140° F. The starting mechanism shall consist of an electric motor or other device considered safe; engines using gasoline or other volatile fuel for starting will not be considered.

(c) *Fuel injection.* The fuel injection system of the engine shall be so constructed that the mechanism controlling maximum fuel injection may be fixed definitely, permitting adjustment only by breaking a seal on a locked compartment, or by altering design. Provision shall be made in the fuel injection system to permit suitable adjustment in maximum fuel injection for engine operation at different barometric pressures.

(d) *Engine intake system—(1) Air-cleaner on engine intake.* An air-cleaner of automotive type shall be included in the engine intake system. The size and design of the air-cleaner shall be such that resistance to air-flow will not increase rapidly in dusty atmospheres.

(2) *Provision for attachment of gage to engine intake system.* A connection shall be provided to permit attachment of a gage to the engine intake system at a point suitable for indicating total pressure drop through that system. This connection shall be internally threaded with standard pipe threads of size not larger than half inch and is to be closed by a pipe plug when not in use.

(e) *Engine exhaust system—(1) Exhaust gas cooling system.* (i) A cooling system shall be provided for the exhaust gas of the engine. The heat-dissipation capacity of this cooling system shall be such that the temperature of the exhaust gas shall not exceed 160° F. at the point of discharge from the cooling system under any condition of operation.

(ii) Cooling may be obtained by a water-spray entering the exhaust system at a point close to the outlet of the exhaust manifold, or by passing the exhaust gas through water in suitable containers, or by a combination of the two. If a water-spray is used, the water shall be delivered to the spray-nozzle by a pump, and the water shall pass through a filtering device to protect the spray-nozzle from clogging by extraneous material. Provision shall be made for draining and cleaning all exhaust cooling boxes.

(2) *Discharge of exhaust gas.* (1) The final exhaust of the unit shall be discharged in such manner that it is not

directed toward the operator's compartment, and shall be deflected so that persons alongside the unit do not encounter the exhaust at breathing level.

(ii) Provisions shall be made to dilute the exhaust gas with air before it is discharged from the machine into the surrounding atmosphere.

(3) *Provision for attachment of gage or gas-sampling equipment to exhaust system.* A connection shall be provided in the engine exhaust system between engine and exhaust cooling box for temporary attachment of a gage or gas-sampling equipment. This connection shall be internally threaded with standard pipe threads of a size not larger than half-inch, and is to be closed by a pipe-plug when not in use.

(f) *Composition of exhaust gas.* (1) Under normal operating conditions, and within the rated power output range, the undiluted exhaust gas of the engine shall contain not more than 0.25 percent, by volume, of carbon monoxide.

(2) The exhaust gas after dilution with air shall contain not more than 100 parts per million, by volume, of carbon monoxide; 25 parts per million, by volume, of oxides of nitrogen (as equivalent nitrogen peroxide); or 10 parts per million, by volume, of aldehydes (as equivalent formaldehyde) under any condition of operation.

(g) *Fuel supply system—(1) Fuel tank.* (i) The fuel tank shall be fuel-tight and shall be of metal at least $\frac{1}{16}$ inch thick welded at all seams. The fuel tank shall be provided with a drain-plug (not a valve or pet cock) that shall be locked in position when inserted. The fuel tank shall be provided with a closure of such design that atmospheric pressure is maintained inside the tank and that discharge of liquid fuel is prevented. The closure shall be secured to the unit.

(ii) The fuel tank shall be mounted in the assembly of the unit in a position such that the tank is not subject to damage in ordinary use. No provision shall be made for attachment of separate or auxiliary fuel tanks to the unit.

(2) *Fuel lines.* All fuel lines to the engine and its accessory parts shall be installed so that they are not subject to damage in ordinary use, and shall be designed to resist breakage from vibration.

(3) *Valve in fuel line.* A readily accessible shut-off valve shall be included in the fuel line from the fuel tank.

(h) *Electrical equipment—(1) Automatic protection of electric circuits and parts.* (i) On equipment using storage batteries for starting of engines, each electric conductor from the battery to the starting motor shall be protected against short circuit by fuses or other suitable automatic circuit-interrupting devices placed at the battery unless conductors of adequate size are provided.

(ii) Fuses or other suitable automatic circuit-interrupting devices shall be inserted in each conductor of all branch circuits that are connected to the main circuit between the battery and charging generator. Headlight circuits and circuits for instruments and instrument panel lights are construed as being branch circuits.

(2) *Conductors, conduits, and wiring.* (i) Every ungrounded conductor shall have adequate insulation from "ground" and from conductors of opposite polarity. Insulation shall be selected with special reference to its ability to resist deterioration from engine heat and oil.

(ii) It is recommended that all conductors have a current-carrying capacity of not less than 110 percent of the total current rating of the motor or other load connected to them. The basis for determining such carrying capacity shall be that given by the National Electrical Code for "allowable carrying capacities of wires."

(iii) All wiring shall have adequate mechanical and electrical protection to minimize fire hazards. If for any reason rigid conduit is unsuitable or undesirable, a good grade of rubber or equivalent air hose may be construed as meeting the requirement for mechanical protection if used where it will not be damaged by engine heat and oil. Flexible metal conduit is not recommended. All conduit ends must be adequately clamped or otherwise secured to prevent their being pulled out. Inserts should be used to prevent collapse of conduit ends that are secured by external clamps.

(iv) Sharp edges and corners shall be removed at all points where there is a possibility of damaging wires, cables, or conduits by cutting or abrasion.

(v) Wiring and conduits shall be well-created or otherwise held to prevent vibration and displacement.

(vi) The ends and terminal lugs of wires and cables shall be held or clamped in a manner that will minimize the possibility of the ends and lugs coming loose from their connections and swinging

against metal walls or against parts of different potential.

(3) *Electrical clearances and insulation.* The clearance between live parts and casings of electric equipment shall be such as to minimize the possibility of arcs striking to the casings or, if space is limited, the casings shall be lined with adequate insulation.

(4) *Parts having special requirements—(i) Battery boxes and batteries.* Batteries that are not protected by position shall be enclosed in boxes or trays of material equivalent in strength to sheet steel not less than $\frac{3}{16}$ inch in thickness or of wood reinforced with steel. Battery terminals shall be covered or shielded to prevent short circuiting by material falling on them while the equipment is in operation.

(ii) Covers, if used, shall be substantially constructed and, if made of metal, MESA reserves the right to require nonbrittle insulating linings of adequate strength, quality, and dimensions, should the clearance over the battery terminals be in question. Ample openings for ventilation shall be provided to prevent accumulation of explosive hydrogen-air mixtures above the battery.

(iii) Unless the battery cells are insulated from the trays in an acceptable manner, the trays shall be insulated from any metal box or holder by means of rubber or equivalent insulators of adequate dimensions. For cells in metal containers mounted in "open" trays, a lining of wood or equally suitable insulation shall be provided under the trays. All wood and other insulating linings susceptible to damage by battery electrolyte shall be treated or painted with suitable material to resist such damage.

(iv) The number, type, rating, and manufacturer of the cells comprising the battery shall be specified.

(v) A diagram showing the connections between cells and between trays shall be submitted. The connections between cells and between trays shall be such that the maximum total battery potential will not be placed between any two adjacent cells.

[14 F.R. 1673, Apr. 8, 1949; 14 F.R. 3201, June 14, 1949, as amended by Supp. 1, 20 F.R. 2721, Apr. 23, 1955]

§ 32.5 Inspection and tests.

(a) *Inspection and tests of parts other than electrical—(1) Detailed inspection.* An inspection will be made by engineers of MESA of all parts of the

equipment covered by the requirements of this part or any other parts or features that are associated with safety in operation. This inspection will include the following items:

(i) A detailed inspection to determine the adequacy of materials, workmanship, and design.

(ii) A detailed comparison of parts or assemblies with drawings to check materials, dimensions, and position. Notes will be made of significant discrepancies that may exist between the drawings and the parts or assemblies. Satisfactory adjustment and correction of these discrepancies will be required before approval is granted.

(2) *Determination of composition of exhaust gas.* (i) The exhaust gas of the engine will be sampled while the engine is operating at minimum speed and at maximum rated speed. At both speeds the engine will be operated at minimum power output, at approximately one-half maximum rated power output, and at maximum rated power output. Under any of these test conditions the engine will be at temperature equilibrium before exhaust gas samples are collected or other test data recorded. Under each test condition rate of fuel consumption will be determined, and atmospheric pressure and temperature will be noted.

(ii) The exhaust gas samples will be analyzed for carbon dioxide, oxygen, carbon monoxide, hydrogen, methane, nitrogen, oxides of nitrogen, and aldehydes.

(3) *Maximum allowable fuel:air ratio.* (i) If the carbon monoxide content of the engine exhaust does not exceed 0.25 percent by volume throughout the rated range of speeds and power outputs, the manufacturer's adjustment of the fuel injection equipment will be considered acceptable. The maximum fuel:air ratio (lb. of fuel/lb. of air) determined under this condition will be the maximum allowable fuel:air ratio.

(ii) If the carbon monoxide content of the exhaust exceeds 0.25 percent by volume only at or near maximum power output, the maximum fuel:air ratio will be determined at which the carbon monoxide content of the exhaust does not exceed 0.25 percent by volume, and this fuel:air ratio will be the maximum allowable fuel:air ratio. Adjustment of the fuel injection system may be made in the course of these tests to meet the requirement of maximum allowable fuel:air ratio.

(iii) In connection with establishment of maximum allowable fuel:air ratio, the barometric pressure existing during the tests and the maximum rate of fuel consumption at maximum allowable fuel:air ratio will be recorded as part of the requirements for operation of the equipment under recommended conditions. As stated in § 32.9, operation at barometric pressures significantly lower than that existing during tests to determine the maximum allowable fuel:air ratio will necessitate readjustment of the fuel injection system so that the maximum allowable fuel:air ratio is not exceeded as a result of the decrease in air density at the lower barometric pressure.

(4) *Determination of adequacy of exhaust gas cooling system.* The adequacy of the exhaust gas cooling system and its accessory parts will be determined with the engine operating at its maximum power output for a period sufficient for all parts of the engine and exhaust gas cooling system to reach their respective equilibrium temperatures.

The following determinations will be made:

(i) Exhaust gas temperature at outlet of exhaust manifold but upstream from cooling system;

(ii) Temperature at outlet of exhaust gas cooling system;

(iii) Cooling water consumed;

(iv) Temperature of water in all compartments.

The final exhaust gas temperature shall not exceed 160° F.

The water consumed in cooling the exhaust gas under the test conditions shall not exceed by more than approximately 15 percent that required for the adiabatic saturation of the exhaust gas at the outlet temperature of the exhaust gas cooler. The water consumed in excess of that required for adiabatic saturation at the outlet temperature of the cooler will be considered as entrained water.

(b) *Factory inspection and tests.* MESA reserves the right to conduct inspections or tests of the mobile equipment, or any part thereof, at the plant of the manufacturer.

(c) *Additional tests.* MESA reserves the right to make any additional tests, not covered by the provisions of this part, that may be considered necessary to determine the adequacy of the equipment, or any part thereof.

[14 F.R. 1674, Apr. 8, 1949, as amended by Supp. 1, 20 F.R. 2721, Apr. 23, 1955]

§ 32.6 Granting of approval.

(a) *Notification of approval or disapproval.* (1) After MESA has considered the results of the investigation, and suitable drawings and specifications have been placed on file, a formal written notification of approval or disapproval of the equipment will be supplied to the applicant by MESA. If the equipment meets all requirements, the notification of approval will not be accompanied by test data or detailed results of tests. If the equipment fails to meet any of the requirements, notification of such failure will be accompanied by details of the failure with a view to possible remedy of defects. MESA will not otherwise release, or make public, results of tests of equipment that fails to meet the requirements.

(2) No verbal reports of MESA's decisions concerning the investigation will be given, and no verbal, temporary, or informal approvals will be granted.

(3) The manufacturer shall not advertise his equipment as approved until he has received the formal notification of approval in which an approval number is assigned.

(4) All drawings and specifications that must be submitted to MESA in connection with the investigation will be retained in confidential status by MESA. A drawing list numbered to correspond to the approval number will accompany the notification of approval. This list will include the drawings and specifications covering the details of construction upon which the approval is based. The applicant receiving an approval shall keep exact duplicates of the drawings and specifications retained by MESA. These are to be adhered to in commercial production of the approved equipment.

(b) *Approval plate.* (1) With the notification of approval the applicant will receive a photograph of a design of approval plate. The plate will bear the emblem of the Mining Enforcement and Safety Administration, the approval number, designation of the type of equipment for which the approval is granted, and the name of the manufacturer. The plate will bear also a statement regarding proper operation and maintenance of the equipment.

(2) The manufacturer shall have this design reproduced as a plate for attachment to each approved unit. A sample

plate and sketch or description of its proposed mounting on the unit shall be sent to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213, for approval before final adoption.

(c) *Purpose and significance of approval plate.* (1) The approval plate identifies the equipment as having met the requirements of MESA for use in noncoal mines in which the concentration of flammable gas in the underground atmosphere is less than 0.25 percent by volume.

(2) The use of the approval plate on his equipment obliges the manufacturer to maintain the quality of his product and to see that each unit is constructed according to drawings and specifications accepted by, and on file with, MESA. Each unit sold as approved shall carry an approval plate permanently attached to the unit. Equipment exhibiting changes in design that do not have official authorization from MESA are not approved and therefore must not bear the approval plate.

[14 F.R. 1674, Apr. 8, 1949, as amended by Supp. 1, 20 F.R. 2721, Apr. 23, 1955]

§ 32.7 Withdrawal of approval.

MESA reserves the right to rescind for cause, at any time, any approval granted under this part.

[14 F.R. 1675, Apr. 8, 1959]

§ 32.8 Changes in design subsequent to approval; extension of approval.

All approvals are granted with the understanding that the manufacturer will make his equipment according to final drawings and specifications submitted to MESA. Therefore, before changing any feature of the equipment considered in the original approval, the manufacturer shall first obtain MESA's approval of the change. This procedure is as follows:

(a) The manufacturer shall write to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213, requesting an extension of his original approval and describing the changes proposed. With this request he should submit a revised drawing or drawings and specifications showing the changes in detail.

(b) MESA will consider the application and inspect the drawings and specifications to determine whether tests of the modified part or parts will be necessary.

(c) If tests are necessary, the applicant will be informed by MESA of

the amount of the fee and the material or parts required for the tests, and also will be informed, on the basis of the results of such tests, of the approval or disapproval of the proposed modification.

(d) If tests are unnecessary, the applicant will be informed by MESA of the approval or disapproval of the proposed modification.

(e) If the proposed modification complies with the requirements of this part, under the provisions of either paragraph (c) or (d) of this section, formal written authorization, known as an extension of approval, allowing the modification will be issued to the applicant by MESA. The letter notifying the applicant of extension of approval will be accompanied by a list of new and corrected drawings to be added to the list of official drawings relating to the equipment.

[14 F.R. 1675, Apr. 8, 1949, as amended by Supp. 1, 20 F.R. 2721, Apr. 23, 1955]

§ 32.9 Recommendations on the use of mobile diesel-powered equipment in noncoal mines.

The approval of any type of equipment by MESA means that the equipment has met certain specified requirements of design, and performance, but the approval does not guarantee that it is impossible to use an approved device in an unsafe manner. The manufacturer must develop equipment that will meet these specified requirements to be granted an approval, but it is the responsibility of the user to see that the equipment is maintained in proper condition and is used in a proper manner.

The use of diesel equipment underground involves, in addition to proper maintenance of the equipment itself, certain other factors, such as ventilation, which are of equal importance in establishing safe operating conditions. The following recommendations on the use of diesel-powered equipment underground in noncoal mines are included in this part as an expression by MESA of the conditions under which approved equipment should be used. The recommendations are as follows:

(a) *Ventilation*—(1) *Definition of ventilation requirements.* The use of diesel-powered equipment underground should be restricted to haulageways or other workings where positive ventilation is maintained by mechanical means. If possible the ventilation in places where diesel equipment is used should be ar-

ranged so that air carrying exhaust gases from the engine is returned to the surface without traversing working places. The quantity of ventilating air supplied must be adequate to dilute all toxic or objectionable constituents of the engine exhaust to such extent that the composition of the air of the haulageways, or any working place connected thereto, meets recognized hygienic standards for working environments. The air supplied for ventilation in places where diesel equipment is used should not contain combustible gas or other contaminant in such concentration that combustion processes in the engine may be altered, with resultant increase in production of toxic or objectionable constituents in the engine exhaust.

(2) *Quantity of ventilating air.* In the described approval tests of a diesel-powered unit, data will be obtained on the rate of production (cubic feet per minute) of toxic constituents of the exhaust gas, such as carbon dioxide, carbon monoxide, and oxides of nitrogen, under conditions representing the range of rated engine speed and power output. These data will provide a basis for calculating the rate at which ventilating air should be supplied in the place where that diesel unit is used, so that under any normal operating condition the toxic gases produced by the engine will be diluted to limits acceptable in the air of working places. This recommended rate of ventilating (in cubic feet of air per minute) will be shown upon the approval plate issued for the diesel unit. This rate applies to the use of one unit only; if more than one unit is used at a given location, or in any continuous course of air, then the rate of ventilation should be the sum of the requirements for the individual units. As this recommended rate of ventilation will be determined during the approval tests, with engines that are new and presumably in the best mechanical condition, it will be desirable to supply ventilation in excess of the rate indicated on the approval plate, thus furnishing a factor of safety in operation.

Measurements of air-flow should be made at intervals sufficiently frequent to insure that adequate ventilation is being maintained. Records should be kept of such measurements.

(3) *Quality of ventilating air.* The air supplied for ventilation in connection with the use of diesel-powered equipment underground should contain at least 20

percent, by volume, of oxygen (dry basis); less than 0.25 percent flammable gas; and less than 0.5 percent carbon dioxide. This statement applies to the air current before the exhaust gases from the diesel equipment are added to it.

(4) *Examination of air at working places.* The air of places in which diesel-powered equipment is used should be examined at frequent intervals to determine that the composition of the intake air is within the limits given in subparagraph (3) of this paragraph, and that the concentration of contaminants, such as carbon dioxide, carbon monoxide, and oxides of nitrogen added to this air by the equipment, are within acceptable limits. Methods used in determining the concentrations of these contaminants and the composition of the intake air should be sufficiently sensitive and accurate to produce reliable results, as the interpretation of these results may in some instances depend on variations in concentrations of as little as 0.01 percent or less. Concentrations of gases considered permissible in working environments are as follows:

Carbon dioxide (CO₂)—not more than 0.5 percent, by volume.

Carbon monoxide (CO)—not more than 0.01 percent, by volume.

Oxides of nitrogen (NO_x)—not more than 0.0025 percent, by volume.

Oxygen (O₂)—not less than 20 percent, by volume.

Ventilation and operating condition of diesel-powered equipment should be such that the composition of the air of haulageways, and working places connected thereto, always remains within these tolerable limits.

Aldehydes and smoke are self-evident if present in objectionable concentrations and need not be determined by analysis. Production of sulfur gases by the engine may be controlled by using a fuel-oil of low sulfur content.

A smoky exhaust is a good practical indication of faulty operation and usually accompanied by the production of excessive quantities of carbon monoxide. Therefore, abnormal production of smoke should be sufficient reason for removing diesel-powered equipment from service until this condition has been corrected.

In the event that any of the foregoing conditions of air quality are not maintained, as determined by analysis of the air or by observation, operation of the equipment should be stopped until proper

conditions of air quality are established, either by increasing ventilation or by correcting mechanical imperfections in the equipment, whichever is found to be the cause of the undesirable conditions.

Records should be kept of all air analyses, and of any changes in ventilation or adjustments of equipment made as a result of these analyses.

(b) *Maintenance*—(1) *General*. The maintenance of diesel-powered equipment in approved condition is essential if undesirable conditions in the use of such equipment are to be avoided. To insure adequate maintenance, a person thoroughly familiar with the proper procedures for maintaining diesel-powered equipment in approved condition should be responsible for all maintenance work.

Inspection and maintenance procedures should be in accordance with the instructions furnished by the manufacturer. Records of all inspections should be kept and a routine inspection schedule should be drafted from experience and information obtained in the inspections during the first several months of operation.

All maintenance work should be done in accordance with detailed instructions furnished by the manufacturer of the equipment. These instructions should form the basis of a routine inspection and maintenance schedule. Some of the more important inspection and maintenance procedures are summarized below.

(2) *Engine fuel-injection system*—(i) *Injection valves*. Improperly functioning injection valves may cause incomplete combustion of some of the fuel and lead to increased production of smoke, carbon monoxide, and aldehydes. It is important, therefore, to maintain injection valves in proper operating condition. Particular attention should be paid to injection valves to prevent leaking and to prevent imperfect atomization or distribution of the fuel.

The manufacturer's recommendations regarding inspection and maintenance of injection valves should be followed.

(ii) *Fuel pump*. The fuel pump on the engine is set by the manufacturer in accordance with approval requirements of MESA. This setting is made to limit the fuel injected at full throttle and to prevent operation of the engine with insufficient air for complete combustion with the attendant production of dangerous quantities of carbon monoxide. After this adjustment is made, the fuel

pump is sealed or locked to prevent alteration.

It should not be necessary to reset the fuel pump unless some part breaks or unless the pump is disassembled for a complete overhaul or unless the unit is to be operated at a barometric pressure significantly less than that for which the pump was set. When it is necessary to set the fuel pump, the seal or lock should be broken by an authorized person and the final adjustment should be made under the supervision of this person. After this adjustment has been made, the fuel pump should be sealed or locked by an authorized person.

(iii) *Method of adjusting fuel pump*. Adjustment of the fuel pump should be made preferably by the manufacturer of the engine. A spare pump should be available to permit this to be done. If this procedure is not followed and it becomes necessary to reset the stop limiting the fuel injected at full throttle, it is essential that some means be available for reproducing the original setting. Failure to reproduce the original setting may lead to the production of dangerous quantities of carbon monoxide if too much fuel is injected at full throttle. The fuel delivered at maximum throttle setting can be determined either by weight or by volume. If the determination is made by volume, a suitable correction for the density of the fuel at the existing temperature must be made. The test procedure should be designed so that the maximum quantity of fuel delivered per revolution of the fuel pump drive shaft can be determined. The fuel pump should be set to deliver no more than the maximum weight of fuel per revolution corresponding to the value specified by the manufacturer and shown on the approval plate for the particular engine and conditions of use.

(iv) *Adjustment of maximum fuel injection for operation at different barometric pressures*. The average barometric pressure existing at the place where a diesel engine is to be used must be considered in setting the maximum fuel injected. Barometric pressure affects the density of the air and therefore affects the weight of air drawn into the engine. Unless the quantity of fuel injected at full throttle is adjusted to maintain a constant fuel : air ratio, dangerous quantities of carbon monoxide may be produced at high altitude and low barometric pressure where the density of the air is low.

The maximum rate of fuel consumption for approved operation at different barometric pressures will be determined in approval tests made by MESA. This information will be furnished the manufacturer and will be included on the approval plate. The fuel pump of the engine should be set in accordance with the values given for the barometric pressure existing at the place where the engine is to be operated.

(3) *Engine intake system.* The air cleaner should be maintained in accordance with the manufacturer's instructions. Abnormal reduced pressure in the intake system is likely to increase production of toxic or objectionable gases in the exhaust.

(4) *Engine exhaust system.* The exhaust system of the engine, including the cooling system, should be inspected at periodic intervals. The frequency of these inspections should be determined in accordance with the recommendations made under general maintenance instructions.

Operators of the equipment should be made responsible for maintaining an adequate supply of water in the exhaust gas cooling system. It is important that the water used in the exhaust gas cooling system be substantially free of acid to prevent corrosion. In some situations this might necessitate chemical treatment of the water used.

If the exhaust from the engine appears abnormally smoky or odorous, the manufacturer's manual of instructions should be consulted immediately and the cause determined. Particular attention should be paid to inspection of the fuel injection valves, the pressure in the intake and exhaust systems, and to the possibility of excessive injection of fuel at full throttle. Restrictions in the intake or excessive pressure in the exhaust can cause smoke and objectionable odor. This can be caused also by the injection of fuel in excess of the allowable maximum. A smoky exhaust usually is indicative of the presence of significant concentrations of carbon monoxide, and therefore steps should be taken immediately to determine the cause and eliminate it.

(5) *Electrical equipment*—(1) *Wiring.* Air hose, rigid steel, and other types of conduit should be firmly held at the ends, and also between ends when lengths are such as to require additional supports. Conduit and other means of affording

mechanical protection of wiring should be kept intact and in place.

(ii) *Headlight and instrument lenses.* Lenses forming part of the casings of headlights and instruments should be held securely and protected to prevent damage to them.

(iii) *Overload protection.* Tampering with fuses, relays, and other means supplied by the manufacturer for overload and short-circuit protection of wiring and equipment should not be permitted, nor should substitutes that defeat this protection be allowed.

(iv) *Battery.* Battery cell tops should be kept free of electrolyte and dust. Connections between cells should be kept tight and free of corrosion.

(c) *Fuel.* The fuel used for diesel-power equipment in underground service should conform to the manufacturer's specifications for viscosity, pour point, cetane number, carbon residue, and water. The flash point must not be less than 140° F. and the sulfur content should not be greater than 0.5 percent by weight.

Wherever possible fuel storage should be on the surface, and the fuel tanks of the diesel units should be filled above ground. In situations where this is not feasible, fuel stored underground should be limited in quantity to that required for one day's operation of the units. The fuel should be transported and stored in strong, tight containers provided with positive closing devices. All fuel taken underground, and awaiting transfer to the fuel tanks of the units, should be stored in a closed compartment, constructed of incombustible materials, and situated in well-ventilated places, the return air from which does not pass through any active workings. The walls of the compartment should form a liquid-tight joint with the floor, and no openings through the walls should be at a height less than that necessary to form a reservoir of greater capacity than the maximum volume of fuel that may be stored in the compartment. Fuel tanks of units should be filled only at the fuel storage compartment. A supply of sand or other suitable incombustible material should be at hand to absorb fuel that may be spilled accidentally in the filling operation.

Clean fuel is necessary to minimize the possibility of damage to the fuel-injection systems. Therefore in handling the fuel all precautions should be taken to keep the fuel clean and free from water.

(d) *Fire extinguishers.* At least one fire extinguisher of the type containing liquid carbon dioxide should be carried at all times with each unit. Extinguishers of the same type should be installed at underground fuel storage compartments, repair shops, and barns.

(e) *Repair shops and barns.* Repair shops for diesel-powered equipment and storage of such equipment preferably should be above ground. If such arrangement is impracticable, such spaces should be situated close to the shaft or portal underground and between an intake and a return air-way, so that persons in such places will be provided with fresh air, and so that if engines are operated in the repair shop, or if fire should occur, products of combustion will enter the return air.

Underground repair shops and storage spaces should be lined with incombustible material, and doors, or other closures, should be of incombustible material. The floor should be impervious to oil and should slope to a sump, so that spilled oil may be collected and removed. A supply of sand or other suitable incombustible material should be kept on hand to aid in fighting fires or to absorb spilled oil.

Welding or other operations that might create fire hazards should not be carried on in the repair shop unless adequate precautionary measures are taken against the ignition of diesel fuel or lubricants.

[14 F.R. 1675, Apr. 8, 1949]

§ 32.10 Revision of requirements and recommendations.

In the preparation of the requirements and recommendations embodied in this part MESA has endeavored to provide a basis for the production of safe and practicable diesel-powered equipment that will meet the demands of existing conditions. However, it is possible that instances might arise in which the protection afforded would be inadequate. MESA, with the cooperation of manufacturers and users of the equipment, will be alert to such situations. When a situation arises in which inadequacy of protection or unusual hazard attending the use of approved equipment is established, the manufacturer of the equipment will be requested to issue precautions or, if necessary, to cease marketing the equipment for use in the particular situation or condition until such changes or provisions as will provide adequate

protection are made. It shall be understood that any changes or provisions made must be submitted to MESA and have its approval before being adopted. Should the situation require a change in the basic requirements and tests provided in this part, or the recommendations contained therein, such change will be issued as a supplement to this part.

[14 F.R. 1677, Apr. 8, 1949]

PART 33—DUST COLLECTORS FOR USE IN CONNECTION WITH ROCK DRILLING IN COAL MINES

Subpart A—General Provisions

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- 33.38 Electrical parts.

AUTHORITY: The provisions of this Part 33 issued under secs. 2, 3, 5, 36 Stat. 370, as amended, secs. 201, 209, 212(a), 66 Stat. 692, 703, 709; 30 U.S.C. 3, 5, 7, 471, 479 482(a).

SOURCE: The provisions of this Part 33 contained in Schedule 25B, 25 F.R. 6473, July 9, 1960, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 39 FR 24005, June 28, 1974.

Subpart A—General Provisions**§ 33.1 Purpose.**

The regulations in this part set forth the requirements for dust collectors used in connection with rock drilling in coal mines to procure their certification as permissible for use in coal mines; procedures for applying for such certification; and fees.

§ 33.2 Definitions.

As used in this part:

(a) "Permissible," as applied to a dust collector, means that it conforms to the requirements of this part, and that a certificate of approval to that effect has been issued.

(b) "Bureau" means the United States Bureau of Mines.

(c) "Certificate of approval" means a formal document issued by MESA stating that the dust collector unit or combination unit has met the requirements of this part, and authorizing the use and attachment of an official approval plate or a marking so indicating.

(d) "Certificate of performance" means a formal document issued by MESA stating that a dust-collecting system has met the test requirements of Subpart C of this part and therefore is suitable for use as part of permissible units.

(e) "Dust-collector unit" means a complete assembly of parts comprising apparatus for collecting the dust that results from drilling in rock in coal mines, and is independent of the drilling equipment.

(f) "Combination unit" means a rock-drilling device with an integral dust-collecting system, or mining equipment with an integral rock-drilling device and dust-collecting system.

(g) "Dust-collecting system" means an assembly of parts comprising apparatus for collecting the dust that results from drilling in rock and is dependent upon attachment to other equipment for its operation.

(h) "Applicant" means an individual, partnership, company, corporation, association, or other organization that designs and manufactures, assembles or controls the assembly of a dust-collecting system, dust-collector unit, or a combination unit, and seeks certification thereof.

(i) "MESA" means the United States Department of the Interior, Mining Enforcement and Safety Administration. [Sched. 25B, 25 FR 6473, July 9, 1960, as amended at 39 FR 24005, June 28, 1974]

§ 33.3 Consultation.

By appointment, applicants or their representatives may visit Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pennsylvania 15213, and discuss with qualified Bureau representative proposed designs of equipment to be submitted in accordance with the requirements of the regulations of this part. No charge is made for such consultation and no written report thereof will be submitted to the applicant.

§ 33.4 Types of dust collectors for which certificates of approval may be granted.

(a) Certificates of approval will be granted only for completely assembled dust-collector or combination units; parts or subassemblies will not be approved.

(b) The following types of equipment may be approved: Dust-collector or combination units having components designed specifically to prevent dissemination of airborne dust generated by drilling into coal-mine rock strata in concentrations in excess of those hereinafter stated in § 33.33 as allowable, and to confine or control the collected dust in such manner that it may be removed or disposed of without dissemination into the mine atmosphere in quantities that would create unhygienic conditions.

§ 33.5 Fees for investigation.

(a) The following fees are charged for inspecting, testing, and certifying dust collectors:

| | |
|--|------|
| 1. Preliminary review of drawings, specifications, and related data, each unit or system..... | \$60 |
| 2. Detailed inspection to determine adequacy of design and materials, each unit or system..... | 60 |
| 3. Detailed inspection to determine adequacy of design and materials relating to changes subsequent to an initial investigation, per manday or fraction thereof..... | 1 55 |
| 4. Drilling each set of 10 test holes: | |
| (1) First set of 10 test holes drilled, per investigation... | 170 |
| (11) Each additional set of 10 test holes drilled, per investigation | 95 |

- 5. Final examination and recording of drawings and specifications, and issuing certificate of approval or certificate of performance..... 80
- 6. Examination and recording of drawings and specifications, and issuing extension of certificate of approval or certificate of performance 60
- 7. Design of approval plate or P/T label for certified equipment..... 25

¹ In addition the applicant shall reimburse MESA for necessary travel and subsistence expenses of its representative(s) according to "Standardized Government Travel Regulations" when such MESA representative(s) is required to be away from official headquarters.

² If only a nominal amount of work is required, the fee will be \$40.

(b) Additional fees shall be charged in accordance with the provisions of Part 18 of Subchapter D of this chapter (Bureau of Mines Schedule 2, revised, the current revision of which is Schedule 2F) for examining and testing electrical parts of dust collectors required under § 33.38.

(c) The full fee must accompany an application for certification of a unit or dust-collecting system. The fees charged for each investigation will be in proportion to the work done, and any surplus will be refunded to the applicant.

(d) The fee for an extension of certification to cover modifications of equipment will be determined according to the work required and the applicant will be notified accordingly. The fee must be paid in advance before the investigation will be undertaken.

(e) If the applicant is uncertain as to the amount of fee that should be sent with his application, the information will be furnished him in writing upon request addressed to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213.

[Sched. 25B, 25 F.R. 6473, July 9, 1960, as amended at 30 F.R. 3757, Mar. 23, 1965]

§ 33.6 Applications.

(a) No investigation or testing will be undertaken by MESA except pursuant to a written application, in duplicate (except as otherwise provided in paragraph (e) of this section), accompanied by a check, bank draft, or money order, payable to the U.S. Mining Enforcement and Safety Administration, to cover the fees; and all prescribed drawings, specifications, and all related materials. The

application and all related matters and all correspondence concerning it shall be sent to the Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213.

(b) The application shall specify the operating conditions (see § 33.22) for which certification is requested.

(c) Shipment of the equipment to be tested shall be deferred until MESA has notified the applicant that the application will be accepted. Shipping instructions will be issued by MESA and shipping charges shall be prepaid by the applicant. Upon completion of the investigation and notification thereof to the applicant by MESA, the applicant shall remove his equipment promptly from the test site (see § 33.30).

(d) Drawings and specifications shall be adequate in number and detail to identify fully the design of the unit or system and to disclose its materials and detailed dimensions of all component parts. Drawings must be numbered and dated to insure accurate identification and reference to records, and must show the latest revision. Specifications and drawings, including a complete assembly drawing with each part that affects dust collection identified thereon, shall include:

(1) Details of all dust-collector parts. A manufacturer who supplies the applicant with component parts or subassemblies may submit drawings and specifications of such parts or subassemblies direct to MESA instead of to the applicant. If the unit or system is certified, MESA will supply the applicant with a list, in duplicate, of drawing numbers pertaining to such parts or subassemblies for identification purposes only.

(2) Details of the electrical parts of units designed to operate as face equipment (see § 33.38) in accordance with the provisions of Part 18 of Subchapter D of this chapter. (Bureau of Mines Schedule 2, revised, the current revision of which is Schedule 2F).

(3) Storage capacity of the various stages of dust collection in the dust separator.

(4) Net filter area in the dust separator, and complete specifications of the filtering material.

(e) If an application is made for certification of a dust-collector unit or a combination unit that includes electrical parts, and is designed to operate as electric face equipment, as defined in § 33.38, the application shall be in triplicate.

(f) The application shall state that the unit or system is completely developed and of the design and materials which the applicant believes to be suitable for a finished marketable product.

(g) The applicant shall furnish a complete unit or system for inspection and testing. Spare parts, such as gaskets and other expendable components subject to wear in normal operation, shall be supplied by the applicant to permit continuous operation during test periods. If special tools are necessary to disassemble any part for inspection or test, they shall be furnished by the applicant.

(h) Each unit or system shall be carefully inspected before it is shipped from the place of manufacture or assembly and the results of the inspection shall be recorded on a factory-inspection form. The applicant shall furnish MESA with a copy of the factory-inspection form with his application. The form shall direct attention to the points that must be checked to make certain that all parts are in proper condition, complete in all respects, and in agreement with the drawings and specifications filed with MESA.

(i) With the application the applicant shall furnish MESA with complete instructions for operating and servicing the unit or system and information as to the kind of power required. After MESA's investigation, if any revision of the instructions is required a revised copy thereof shall be submitted to MESA for inclusion with the drawings and specifications.

§ 33.7 Date for conducting tests.

The date of acceptance of an application will determine the order of precedence for testing when more than one application is pending, and the applicant will be notified of the date on which tests will begin. If a unit or system fails to meet any of the requirements, it shall lose its order of precedence. If an application is submitted to resume testing after correction of the cause of failure, it will be treated as a new application and the order of precedence for testing will be so determined.

§ 33.8 Conduct of investigations, tests, and demonstrations.

(a) Prior to the issuance of a certificate of approval or performance, necessary government personnel, representatives of the applicant, and such other persons as may be mutually agreed upon,

may observe the investigations or tests. MESA shall hold as confidential and shall not disclose principles or patentable features, nor shall it disclose any details of drawings, specifications, and related materials. After the issuance of a certificate, MESA may conduct such public demonstrations and tests of the unit or system as it deems appropriate. The conduct of all investigations, tests, and demonstrations shall be under the direction and control of MESA, and any other persons shall be present only as observers, except as noted in paragraph (b) of this section.

(b) When requested by MESA, the applicant shall provide assistance in disassembling parts for inspection, preparing parts for testing, and operating combination units.

[Sched. 25B, 25 FR 6473, July 9, 1960, as amended at 39 FR 24005, June 28, 1974]

§ 33.9 Certification of dust-collecting systems.

Manufacturers of dust-collecting systems that are designed for integral use on machines with drilling equipment may apply to MESA to issue a certificate of performance for such systems. To qualify for a certificate of performance, the dust-collecting system shall have met satisfactorily the test requirements of Subpart C under specified operating conditions (such as type of drilling equipment, drilling speed, and power requirements) and the construction thereof shall be adequately covered by specifications and drawings officially recorded and filed with MESA. Individual parts of dust-collecting systems will not be certified for performance. Certificates of performance may be cited to fabricators of combination units as evidence that further inspection and testing of the dust-collecting system will not be required, provided the dust-collecting requirements of the drilling equipment do not exceed the limits of performance for which the system was certified. Since MESA does not sanction the use of the words "permissible" or "approved" except as applying to completely assembled equipment, dust-collecting systems, which have been certified only as to performance, shall not be advertised or labeled in a manner inferring that such systems themselves are permissible or approved by MESA. However, a certified system may be advertised as suitable for use on combination units for which certification

may be desired if the limits of its performance are cited. Certified dust-collecting systems shall bear labels or tags which shall contain the following: "Performance-tested Dust Collecting, System, MESA File No. P/T-----," and name of manufacturer, identifying numbers of the dust-collector parts, and description of the limitations for which performance is certified. MESA will assign a P/T file number in the certification letter.

§ 33.10 Certificates of approval or performance.

(a) Upon completion of an investigation, MESA will issue to the applicant either a certificate or a written notice of disapproval, as they case may require. No informal notification of approval will be issued. If a certificate is issued, no test data or detailed results of tests will accompany it. If a notice of disapproval is issued, it will be accompanied by details of the defects, with a view to possible correction. MESA will not disclose, except to the applicant, any information on a unit or system upon which a notice of disapproval has been issued.

(b) A certificate will be accompanied by a list of the drawings and specifications covering the details of design and construction of the unit or system, including the electrical parts, if applicable, upon which the certificate is based. Applicants shall keep exact duplicates of the drawings and specifications submitted and the list of drawing numbers referred to in § 33.6(d)(1) that relate to the certified unit or system, and these are to be adhered to exactly in production.

§ 33.11 Approval plates.

(a) A certificate of approval will be accompanied by a photograph of a design for an approval plate, bearing the emblem of the Mining Employment and Safety Administration, the name of the applicant, the name of the unit, the approval number or space for the approval number (or numbers if permissibility of electrical parts is involved), spaces for the type and the serial numbers of the unit, conditions of approval, and identifying numbers of the dust-collector parts. When deemed necessary by MESA, an appropriate statement shall be added, giving the precautions to be observed in maintaining the unit in an approved condition.

(b) An approval plate for a unit designed for use in a nongassy coal mine

shall state that any electrical parts are not certified for use in a gassy coal mine. (See § 33.38(c).)

(c) The applicant shall reproduce the design either as a separate plate or by stamping or molding it in some suitable piece on each unit to which it relates. The size, type, and method of attaching and location of an approval plate are subject to the approval of MESA. The method of affixing the plate shall not impair the dust-collection or explosion-proof features of the unit.

(d) The approval plate identifies the unit, to which it is attached, as permissible, and is the applicant's guarantee that the unit complies with the requirements of this part. Without an approval plate, no unit has the status of "permissible" under the provisions of this part.

(e) Use of the approval plate obligates the applicant to whom the certificate of approval was granted to maintain the quality of each unit bearing it and guarantees that it is manufactured and assembled according to the drawings and specifications upon which a certificate of approval was based. Use of the approval plate is not authorized except on units that conform strictly with the drawings and specifications upon which the certificate of approval was based.

§ 33.12 Changes after certification.

If an applicant desires to change any feature of a certified unit or system, he shall first obtain MESA's approval of the change, pursuant to the following procedure:

(a) Application shall be made as for an original certificate, requesting that the existing certification be extended to cover the proposed changes, and shall be accompanied by drawings, specifications, and related data showing the changes in detail.

(b) The application will be examined by MESA to determine whether inspection and testing will be required. Testing will be necessary if there is a possibility that the modification may affect adversely the performance of the unit or system. MESA will inform the applicant whether such testing is required, the components or materials to be submitted for that purpose, and the fee.

(c) If the proposed modification meets the requirements of this part and Part 18 of Subchapter D of this chapter (Bureau of Mines Schedule 2, revised,

the current revision of which is Schedule 2F) if applicable, a formal extension of certification will be issued, accompanied by a list of new and corrected drawings and specifications to be added to those already on file as the basis for the extension of certification.

§ 33.13 Withdrawal of certification.

MESA reserves the right to rescind for cause, at any time, any certification granted under this part.

Subpart B—Dust-Collector Requirements

§ 33.20 Design and construction.

(a) MESA will not test or investigate any dust collector that in its opinion is not constructed of suitable materials, that evidences faulty workmanship, or that is not designed upon sound engineering principles. Since all possible designs, arrangements, or combinations of components and materials cannot be foreseen, MESA reserves the right to modify the tests specified in this part in such manner to obtain substantially the same information and degree of protection as provided by the tests described in Subpart C of this part.

(b) Adequacy of design and construction of a unit or system will be determined in accordance with its ability (1) to prevent the dissemination of objectionable or harmful concentrations of dust into a mine atmosphere, and (2) to protect against explosion and/or fire hazards of electrical equipment, except as provided in § 33.38(b).

§ 33.21 Modification of test equipment.

For test purposes the unit or system may be modified, such as by attaching instruments or measuring devices, at MESA's discretion; but such modification shall not alter its performance.

§ 33.22 Mode of use.

(a) A unit or system may be designed for use in connection with percussion and/or rotary drilling in any combination of the following drilling positions:

(1) Vertically upward, (2) upward at angles to the vertical, (3) horizontally, and (4) downward.

(b) Dust-collector units may be designed for use with specific drilling equipment or at specific drilling speeds.

§ 33.23 Mechanical positioning of parts.

All parts of a unit that are essential to the dust-collection feature shall be

provided with suitable mechanical means for positioning and maintaining such parts properly in relation to the stratum being drilled.

Subpart C—Test Requirements

§ 33.30 Test site.

Tests shall be conducted at an appropriate location determined by MESA. [39 FR 24005, June 28, 1974]

§ 33.31 Test space.

(a) Drilling tests shall be conducted in a test space formed by two curtains suspended across a mine opening in such a manner that the volume of the test space shall be approximately 2,000 cubic feet.

(b) No mechanical ventilation shall be provided in the test space during a drilling test, except such air movement as may be induced by operation of drilling- or dust-collecting equipment.

(c) All parts of a unit or system shall be within the test space during a drilling test.

§ 33.32 Determination of dust concentration.

(a) Concentrations of airborne dust in the test space shall be determined by sampling with a midget impinger apparatus, and a light-field microscopic technique shall be employed in determining concentrations of dust in terms of millions of particles (5 microns or less in diameter) per cubic foot of air sampled.

(b) Before a drilling test is started the surfaces of the test space shall be wetted; the test space shall be cleared of airborne dust insofar as practicable by mechanical ventilation or other means; and an atmospheric sample, designated as a control sample, shall be collected during a 5-minute period to determine residual airborne dust in the test space.

(c) A sample of airborne dust, designated as a test sample, shall be collected in the breathing zone of the drill operators during the drilling of each test hole. Time consumed in changing drill steel shall not be considered as drilling time and sampling shall be discontinued during such periods.

[Sched. 25B, 25 F.R. 6473, July 9, 1960, as amended at 26 F.R. 2599, Mar. 28, 1961]

§ 33.33 Allowable limits of dust concentration.

(a) The concentration of dust determined by the control sample shall be

subtracted from the average concentration of dust determined by the test samples collected at each drill operator's position, and the difference shall be designated as the net concentration of airborne dust. Calculations of the average concentration of dust determined from the test samples shall be based upon the results of not less than 80 percent of each set of test samples.

(b) Under each prescribed test condition, the net concentration of airborne dust at each drill operator's position shall not exceed 10 million particles (5 microns or less in diameter) per cubic foot of air when determined in accordance with the method given in § 33.32(a).

[Sched. 25B, 25 F.R. 6473, July 9, 1960, as amended at 26 F.R. 2599, Mar. 28, 1961]

§ 33.34 Drilling test.

(a) A drilling test shall consist of drilling a set of 10 test holes, without undue delay, under specified operating conditions. When the test involves the control of dust from more than one drill, all the drills shall be used in the intended manner to complete the set of test holes.

(b) Holes shall be drilled to a depth of 4 feet plus or minus 2 inches and shall be spaced so as not to interfere with adjacent holes. Each hole may be plugged after completion.

(c) Receptacles and filters for collecting drill cuttings shall be emptied and cleaned before each drilling test is started.

(d) Holes designated as "vertical" shall be drilled to incline not more than 10 degrees to the vertical. Holes designated as "angle" shall be drilled to incline not less than 30 and not more than 45 degrees to the vertical. Holes designated as "horizontal" shall be drilled to incline not more than 15 degrees to the horizontal.

[Sched. 25B, 25 F.R. 6473, July 9, 1960, as amended at 26 F.R. 2599, Mar. 28, 1961]

§ 33.35 Methods of drilling; dust-collector unit.

(a) *General.* All drilling shall be done with conventional, commercial drilling equipment—pneumatic-percussion, hydraulic-rotary, and/or electric-rotary types—in accordance with the applicant's specifications.

(b) *Pneumatic-percussion drilling.* A stoper-type drill with a piston diameter of 2½ to 3 inches shall be used for roof drilling. A hand-held, sinker-type drill

with a piston diameter of 2½ to 3 inches shall be used for down drilling and also for horizontal drilling, except that the drill shall be supported mechanically. Compressed air for operating the drill shall be supplied at a gage pressure of 85–95 pounds per square inch. Drill bits shall be detachable, cross type with hard inserts, and shall be sharp when starting to drill each set of 10 holes. In roof drilling, 1¼- and 1½-inch diameter drill bits shall be used; in horizontal and down drilling, 1¾-inch diameter bits shall be used. The drill steel shall be ⅞-inch hexagonal and of hollow type to permit the introduction of compressed air through the drill steel when necessary to clean a hole during drilling.

(c) *Rotary drilling.* A hydraulic-rotary drill with a rated drilling speed of 18 feet per minute free lift, capable of rotating drill steel at 900 revolutions per minute with 100 foot-pounds torque, and having a feed force of 7,000 pounds, shall be used for roof drilling. An electric-rotary drill, supported by a post mounting, with a rated drilling speed of 30 inches per minute and powered by a 2.25 horsepower motor, shall be used for horizontal drilling. For roof drilling, the bits shall be hard-tipped, 1½ and 1½ inches outside diameter, and 1¼-inch auger-type drill steel shall be used. For horizontal drilling, the bits shall be hard-tipped, 2 inches outside diameter, and 1¾-inch auger-type drill steel shall be used. Drill bits shall be sharp when starting to drill each set of 10 holes.

§ 33.36 Method of drilling; combination unit or dust-collecting system.

Drilling shall be conducted in accordance with the applicant's specifications and operating instructions. If special drill bits or drill steel are required, they shall be furnished to MESA by the applicant. Otherwise the drill bit and drill steel requirements stated in paragraphs (b) and (c) of § 33.35 shall be complied with for all types of combination units or dust-collecting systems.

§ 33.37 Test procedure.

(a) *Roof drilling:* Drilling shall be done in friable strata, similar to the roof in the Bureau's Experimental Mine, which tends to produce large scale-like cuttings.

(b) *Horizontal drilling:* Drilling shall be done in strata comparable in hardness to that of coal-mine draw slate. Holes shall be started near the roof of the test

space under conditions simulating the drilling of draw slate in coal mining.

(c) Down drilling: Drilling shall be done in typical mine floor strata with a pneumatic percussion-type drill. Five holes shall be drilled vertically and five holes shall be drilled at an angle.

(d) At MESA's discretion drilling in "on site" strata may be acceptable in lieu of strata requirements in paragraphs (a), (b), and (c) of this section. (See § 33.20(a).)

§ 33.38 Electrical parts.

(a) Units with electrical parts and designed to operate as electric face equipment (see definition, § 45.44-1 of this chapter) in gassy coal mines shall meet the requirements of Part 18 of Subchapter D of this chapter (Bureau of Mines Schedule 2, revised, the current revision of which is Schedule 2F), and the examination and testing of the electrical parts shall be entirely separate from the examination and testing of dust-collecting equipment as such.

(b) Units with electrical parts designed to operate only outby the last open crosscut in a gassy coal-mine entry, room, or other opening (including electric-drive units with their controls and push buttons) are not required to comply with the provisions of Part 18 of Subchapter D of this chapter (Bureau of Mines Schedule 2, revised, the current revision of which is Schedule 2F).

(c) Units with electrical parts and designed for operation only in nongassy coal mines are not required to comply with the provisions of Part 18 of Subchapter D of this chapter (Bureau of Mines Schedule 2, revised, the current revision of which is Schedule 2F). (See § 33.11(b).)

PART 35—FIRE-RESISTANT HYDRAULIC FLUIDS

Subpart A—General Provisions

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Subpart B—Test Requirements

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| 35.23 | Performance required for certification. |

AUTHORITY: The provisions of this Part 35 issued under secs. 2, 3, 5, 36 Stat. 370, as amended, secs. 201, 209, 212(a), 66 Stat. 692, 703, 709; 30 U.S.C. 3, 5, 7, 471, 479, 482(a).

SOURCE: The provisions of this Part 35 contained in Schedule 30, 24 F.R. 10201, Dec. 17, 1959, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 39 FR 24005, June 23, 1974.

Subpart A—General Provisions

§ 35.1 Purpose.

The regulations in this part set forth the requirements for fire-resistant hydraulic fluids and concentrates for the production thereof to procure their certification as approved for use in machines and devices that are operated in coal mines; procedures for applying for such certification; and fees.

§ 35.2 Definitions.

As used in this part—

(a) "Permissible," as applied to hydraulic fluids, means that the fluid conforms to the requirements of this part, and that a certificate of approval to that effect has been issued.

(b) "MESA" means the United States Department of the Interior, Mining Enforcement and Safety Administration.

(c) "Certificate of approval" means a formal document issued by MESA stating that the fluid has met the requirements of this part for fire-resistant hydraulic fluids and authorizing the use of an official identifying marking so indicating.

(d) "Fire-resistant hydraulic fluid" means a fluid of such chemical composition and physical characteristics that it will resist the propagation of flame.

(e) "Concentrate" means a substance in concentrated form that might not be fire resistant as such but when mixed with water or other vehicle in accordance with instructions furnished by the applicant will constitute a fire-resistant hydraulic fluid.

(f) "Applicant" means an individual, partnership, company, corporation, association, or other organization that manufactures, compounds, refines, or otherwise produces, a fire-resistant hydraulic fluid or a concentrate for the production thereof, and seeks a certificate of approval.

[Sched. 30, 24 FR 10201, Dec. 17, 1959, as amended at 39 FR 24005, June 28, 1974]

\$ 35.3 Consultation.

By appointment, applicants or their representatives may visit Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pennsylvania, 15213, to discuss with qualified MESA personnel proposed fluids to be submitted in accordance with the regulations of this part. No charge is made for such consultation and no written report thereof will be submitted to the applicant.

\$ 35.4 Types of hydraulic fluid for which certificates of approval may be granted.

Certificates of approval will be granted for completely compounded or mixed fluids and not for individual ingredients; except that when a concentrate is submitted for testing, complete instructions for mixing with water or other vehicle shall be furnished to MESA, together with the vehicle other than water, and the approval will cover only the specific mixture that constitutes the hydraulic fluid for use in coal mines.

\$ 35.5 Fees for investigation.

(a) The full fee must accompany an application for testing a hydraulic fluid or for retesting a fluid that has been previously tested and disapproved. If less work is involved than for a complete investigation, the charge will be in proportion to the work done. Any surplus will be refunded to the applicant.

(b) The fee for tests covering only part of a complete investigation will be charged according to the work involved and will be in proportion to that charged for a complete investigation. The fee for such tests shall be determined in advance by MESA and the applicant notified accordingly in writing.

(c) The fee for an extension of certification will be determined according to the work required and the applicant will be notified accordingly. The fee must be paid in advance before the investigation will be undertaken.

(d) The following fees are charged for testing a hydraulic fluid—concentrate or emulsion:

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| 1. Autogenous-ignition temperature test, each----- | \$55 |
| 2. Temperature-pressure spray-ignition test, each----- | 100 |
| 3. Test to determine effect of exaporation on flammability, each----- | 65 |
| 4. Fees for other tests not included in the above list will be determined in advance by MESA. The applicant will be notified accordingly, and the fee shall be paid before such tests are begun. | |

[Sched. 30, 24 FR 10201, Dec. 17, 1959, as amended at 30 FR 3757, Mar. 23, 1965]

\$ 35.6 Applications

(a) No investigation or testing will be undertaken by MESA except pursuant to a written application, in duplicate, accompanied by a check, bank draft, or money order, payable to the U.S. Mining Enforcement and Safety Administration, to cover the fees; and all descriptions, specifications, test samples, and related materials. The application and all related matters and correspondence concerning it shall be sent to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213.

(b) Descriptions and specifications shall be adequate in detail to identify fully the composition of the hydraulic fluid and to disclose its characteristics. Descriptions and specifications shall include:

(1) An identifying name or number of the fluid or concentrate for the production thereof.

(2) Four point, ° F.; freezing point, ° F.; color; neutralization number or pH; viscosity at 100° F., 150° F., 175° F. (Saybolt or Furol); viscosity index; specific gravity.

(3) A statement of the water or other vehicle content in percent by weight or volume and how it affects fire resistance of the hydraulic fluid. If water is the vehicle, the statement shall include the applicant's method for determining water content quickly in the field.

(c) The application shall state whether the fluid submitted for test is toxic or irritating to the skin and what precautions are necessary in handling it.

(d) The application shall state that the applicant has tested the fluid which he believes to have fire-resistant properties, the basis for such determination,

and submit with his application the data resulting from the applicant's use or laboratory tests to determine the fire-resistant properties of the fluid.

(e) The application shall contain evidence that the fluid has lubricating and hydraulic properties and is satisfactory for use in underground mining machinery; and shall state that the fluid, or concentrate for the production thereof, is fully developed and is of the composition that the applicant believes to be a suitable marketable product.

(f) The application shall state the nature, adequacy, and continuity of control of the constituents of the fluid to maintain its fire-resistant characteristics and how each lot will be sampled and tested to maintain its protective qualities. MESA reserves the right to have its qualified representative(s) inspect the applicant's control-test equipment, procedures, and records, and to interview the personnel who conduct the control tests to satisfy MESA that the proper procedure is being followed to insure that the fire-resistant qualities of the hydraulic fluid are maintained.

(g) When MESA notifies the applicant that the application will be accepted, it will also notify him as to the number of samples and related materials that will be required for testing. Ordinarily a 5-gallon sample of hydraulic fluid will be required provided that it is a finished product or, if in concentrate form, enough shall be furnished to make a 5-gallon sample when mixed with water or other vehicle according to the applicant's instructions. All samples and related materials required for testing must be delivered (charges prepaid) to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pennsylvania 15213.

§ 35.7 Date for conducting tests.

The date of acceptance of an application will determine the order of precedence for testing when more than one application is pending, and the applicant will be notified of the date on which tests will begin. However, not more than two fluids will be tested consecutively for one applicant provided other applications are pending. If a fluid fails to meet any of the requirements, it shall lose its order of precedence. If an application is submitted to resume testing after correction of the cause of failure, it will be treated as a new appli-

cation and the order of precedence for testing will be so determined.

§ 35.8 Conduct of investigations, tests, and demonstrations.

Prior to the issuance of a certificate of approval, necessary Government personnel, representatives of the applicant, and such other persons as may be mutually agreed upon, may observe the investigations or tests. MESA shall hold as confidential and shall not disclose features of this hydraulic fluid such as the chemical analysis, specifications, descriptions, and related material. After issuing a certificate of approval MESA may conduct such public demonstrations and tests of the approved hydraulic fluid as it deems appropriate. The conduct of all investigations, tests, and demonstrations shall be under the direction and control of MESA, and any other persons shall be present only as observers.

[Sched. 30, 24 FR 10201, Dec. 17, 1959, as amended at 39 FR 24005, June 23, 1974]

§ 35.9 Certificates of approval.

(a) Upon completion of an investigation of a hydraulic fluid MESA will issue to the applicant either a certificate of approval or a written notice of disapproval as the case may require. No informal notification of approval will be issued. If a certificate of approval is issued, no test data or detailed results of tests will accompany it. If a notice of disapproval is issued, it will be accompanied by details of the defect(s), with a view to possible correction. MESA will not disclose, except to the applicant, any information on a fluid upon which a notice of disapproval has been issued.

(b) A certificate of approval will be accompanied by a list of specifications covering the characteristics of a hydraulic fluid upon which the certificate of approval is based. In addition to the applicant's record of control in maintaining the fire-resistant characteristics, applicants shall keep exact duplicates of the specifications that have been submitted to MESA and that relate to any fluid which has received a certificate of approval; and these are to be adhered to exactly in production of the certified fluid for commercial purposes.

§ 35.10 Approval labels or markings.

(a) A certificate of approval will be accompanied by a photograph of a design for an approval label or marking, which shall bear the emblem of the

Mining Enforcement and Safety Administration and shall be inscribed substantially as follows:

PERMISSIBLE FIRE-RESISTANT HYDRAULIC FLUID
 MESA Approval No. -----
 Issued to -----
 (Name of Applicant)

(b) A label so inscribed shall be attached to each fluid container in such a manner that it cannot be easily removed or containers may be so marked with a metal stencil. The letters and numbers shall be as least ½ inch in height and of a color which contrasts with that of the container.

(c) For a concentrate the label or marking shall clearly indicate that the certification thereof applies only when the concentrate is used in exact conformance with the instructions on such label or marking. The label or marking shall clearly indicate the exact amount of water or other vehicle to make the fire-resistant hydraulic fluid upon which the certificate of approval was based.

(d) Appropriate instructions and caution statements on the handling of the hydraulic fluid or concentrate shall be included on the approval label or marking.

(e) Use of MESA's approval label or marking obligates the applicant to whom the certificate of approval was granted to maintain the fire-resistant characteristics of the hydraulic fluid and guarantees that it is manufactured according to the specifications upon which the certificate of approval was based. Use of the approval label or marking is not authorized except on containers of hydraulic fluids that conform strictly with the specifications and characteristics upon which the certificate of approval was based.

§ 35.11 Material required for record.

MESA may retain for record all or part of the material submitted for testing. Any material that MESA does not require will be returned to the applicant at his expense upon receipt of his written request and shipping instructions not more than 6 months after the termination or completion of the tests. Thereafter MESA will dispose of such surplus material as it deems appropriate.

§ 35.12 Changes after certification.

If an applicant desires to change any specification or characteristic of a certified hydraulic fluid, he shall first obtain

MESA's approval of the change, pursuant to the following procedures:

(a) Application shall be made, as for an original certificate of approval, requesting that the existing certification be extended to cover the proposed change. The application shall be accompanied by specifications and related material(s) as in the case of an original application.

(b) The application and related material(s) will be examined by MESA to determine whether testing of the modified hydraulic fluid will be required. Testing will be necessary if there is a possibility that the modification may affect adversely the performance characteristics of the fluid. MESA will inform the applicant in writing whether such testing is required, and the fee.

(c) If the proposed modification meets the requirements of this part, a formal extension of certification will be issued, accompanied by a list of new and corrected specifications to be added to those already on file, as the basis for the extension of certification.

§ 35.13 Withdrawal of certification.

MESA reserves the right to rescind for cause, at any time, any certificate of approval granted under this part.

Subpart B—Test Requirements

§ 35.20 Autogenous-ignition temperature test.

(a) *Purpose.* The purpose of this test, referred to hereinafter as the ignition-temperature test, is to determine the lowest autogenous-ignition temperature of a hydraulic fluid at atmospheric pressure when using the syringe-injection method.

(b) *Description of apparatus—(1) test flask.* The test flask, which is heated and into which the test sample is injected, shall be a commercial 200 ml. borosilicate glass Erlenmeyer flask.

(2) *Thermocouples.* Calibrated thermocouples—iron-constantan or chromel-alumel—and a potentiometer shall be used for all temperature measurements.

(3) *Syringe.* A hypodermic syringe (0.25 or 1 cc. capacity) equipped with a 2-inch No. 18 stainless steel needle and calibrated in hundredths of a cubic centimeter (0.01 cc.) shall be used to inject samples into the heated test flask.

(4) *Timer.* An electric timer or stopwatch calibrated in not more than 0.2

second intervals shall be used to determine the time lag before ignition.

NOTE: Time lag is the time that elapses between the instant of injection and that of ignition of the test sample, as evidenced by flame.

(5) *Furnace.* The furnace in which the ignition-temperature test is conducted shall consist of a refractory (alundum or equivalent) cylinder 5 inches in internal diameter and 5 inches in height; a transite-ring top and a transite-disk bottom, each of which is attached to a metal cylinder. The furnace is heated by three elements as follows: (i) A circumferential heater embedded in the refractory cylinder; (ii) a top or toroidal-neck heater that surrounds the neck of the test flask; and (iii) a flat base heater on which the test flask rests. The temperature of each heating element shall be controlled independently by an autotransformer. Means shall be provided for applying thermocouples at the neck, mid-section, and base of the test flask, which shall be inserted upright in the furnace.

(c) *Test procedures*—(1) *Temperature control.* Each autotransformer shall be so adjusted that the temperature at the neck, mid-section, and base of the test flask is uniform within $\pm 2^\circ$ F. of the desired test temperature.

(2) *Sample injection and timing.* A 0.07 cc. test sample shall be injected into the heated test flask with the hypodermic syringe, and the syringe shall be withdrawn immediately. Measurement of time shall start at the instant the sample is injected.

(3) *Observations.* (i) If flame does not result in 5 minutes or more after injection of the test sample, the sample shall be considered nonflammable at the test temperature, and the timer shall be stopped. The test flask shall then be flushed well with clean dry air and, after a lapse of 15 minutes or more, the test shall be repeated with the test flask temperature raised 50° F. $\pm 2^\circ$ F. above the first test temperature.

(ii) If ignition (flame) is observed in 5 minutes or less after the injection of the test sample (0.07 cc.), the time lag (time interval) shall be noted. After an ignition occurs the temperature of the test flask shall be reduced 5° F., and the test procedure repeated in decrements of 5° F. until ignition no longer occurs and this temperature shall be

noted as the first nonignition test temperature for the 0.07 cc. sample.

(iii) The temperature shall be increased 50° F. $\pm 2^\circ$ F. above the first nonignition test temperature, and the ignition-temperature test procedure shall be repeated with a 0.10 cc. test sample injected into the heated test flask.

(iv) If the lowest temperature at which ignition occurs with the 0.10 cc. sample (in decrements of 5° F.) is lower than that obtained with the 0.07 cc. sample, the ignition-temperature test procedure shall be repeated using a test sample of 0.12 cc., then 0.15 cc., and so on by increments of 0.03 cc. until the lowest ignition temperature is obtained.

(v) If the lowest temperature at which ignition is obtained with the 0.10 cc. sample is greater than that obtained with the 0.07 cc. sample, the ignition temperature test procedure shall be repeated by reducing the test sample to 0.05 cc. and then to 0.03 cc. until the lowest ignition temperature is obtained.

(d) *Appraisal of test.* A fluid shall be considered fire-resistant, according to the test requirements of this section: *Provided,* That in no instance of the ignition-temperature test procedure, as stated in this section, shall the ignition temperature of the test sample be less than 600° F.

§ 35.21 Temperature-pressure spray-ignition tests.

(a) *Purpose.* The purpose of this test shall be to determine the flammability of a hydraulic fluid when it is sprayed over three different sources of ignition which are described in paragraph (b) (4) of this section.

(b) *Description of apparatus.* (1) A 3-quart pressure vessel, with the necessary connections, valves, and heating elements, shall be used for containing and heating the fluid under the test conditions as specified hereinafter.

(2) An atomizing round-spray nozzle, having a discharge orifice of 0.025-inch diameter, capable of discharging 3.28 gallons of water per hour with a spray angle of 90 degrees at a pressure of 100 p.s.l., shall be connected to the pressure vessel.

(3) A commercial pressurized cylinder, containing nitrogen with the customary regulators, valves, tubing, and connectors, shall be used to supply nitrogen to the pressure vessel described in subparagraph (1) of this paragraph.

(4) Three igniting devices shall provide three different sources of ignition as follows:

(i) A metal trough with a metal cover in which cotton waste soaked in kerosene is ignited.

(ii) An electric arcing device in which the arc is produced by a 12,000-volt transformer.

(iii) A propane torch—Bernzomatic or equivalent.

(5) A means of measuring distances from the nozzle tip to the igniting device shall be provided.

(c) *Test procedures.* (1) A 2½-quart sample of the fluid shall be poured into the pressure vessel and heated to a temperature of 150° F. The temperature shall be maintained at not less than 145° F. or not more than 155° F. during the test.

(2) Nitrogen shall be introduced into the vessel at 150 p.s.i.g.

(3) The fluid shall be sprayed at each igniting device, described in subparagraph (4) of paragraph (b) of this section, which is moved along the trajectory of the spray. Each igniting device shall be held in the spray at different distances from the nozzle tip for one minute or until the flame or arc is extinguished (if less than one minute) to determine this fire-resistant characteristic of the fluid.

(d) *Appraisal of tests.* If the test procedures in paragraph (c) of this section do not result in an ignition of any sample of fluid or if an ignition of a sample does not result in flame propagation for a time interval not exceeding 6 seconds at a distance of 18 inches or more from the nozzle tip to the center of each igniting device, it shall be considered fire resistant, according to the test requirements of this section.

§ 35.22 Test to determine effect of evaporation on flammability.

(a) *Purpose.* The purpose of this test shall be to determine the effect of evaporation on the reduction of fire resistance of a hydraulic fluid.

(b) *Description of apparatus—*(1) *Petri dish.* Standard laboratory Petri dishes, approximately 90 mm. by 16 mm., shall be used to contain the test samples.

(2) *Oven.* A gravity convection air oven, capable of maintaining the specified evaporation temperature constant within $\pm 2^\circ$ F., shall be used in the test.

(3) *Pipe cleaner.* An ordinary smoker's pipe cleaner (U.S. Tobacco Co.,

Dill's or equivalent) shall be used in the test procedure, described in paragraph (c) of this section.

(c) *Test procedures.* (1) Three 30-milliliter samples of the fluid shall be placed in uncovered Petri dishes. Two of these samples shall be inserted in the oven, that shall have been heated to a temperature of 150° F., $\pm 2^\circ$ F., which shall be maintained throughout this test. The third sample shall remain at room temperature.

(2) An electrically operated cycling device, such as an automobile windshield wiper mechanism, shall be oscillated in a horizontal plane, 25 ± 2 cycles per minute. A pipe cleaner shall be attached to the device so that it will enter and leave a flame of a standard (Bunsen or equivalent) laboratory burner, which is adjusted to provide a nonluminous flame approximately 4 inches in height without forming a sharp inner cone. The cycling device shall be so arranged that when a 2-inch length of pipe cleaner is attached thereto the exposed end shall describe an arc with a radius of 4 inches $\pm \frac{1}{8}$ inch. The cycling device shall be so arranged that when the 2-inch length of pipe cleaner is attached thereto, its midpoint shall be in the center of the flame at one extreme end of the cycle.

(3) Each of five 2-inch lengths of pipe cleaner shall be soaked separately for a period of 2 minutes in the test sample that remained at room temperature. Each pipe cleaner shall then be removed from the test sample and permitted to drain freely until all excess fluid is expelled from it. Each soaked pipe cleaner shall be attached to the cycling device, the mechanism started, and the pipe cleaner permitted to enter and leave the burner flame, as described in subparagraph (2) of this paragraph, until a self-sustaining flame shall be observed on the pipe cleaner. The number of cycles necessary to obtain a self-sustaining flame shall be noted and averaged for each of the five soaked pipe cleaners.

(4) After one test sample has remained in the oven for a period of 2 hours, the Petri dish containing it shall be removed from the oven and allowed to cool to room temperature, after which 5 lengths of 2-inch pipe cleaner shall be soaked separately in the test sample for a period of 2 minutes. Then the test procedure stated in subparagraph (3) of this paragraph shall be repeated.

(5) After one test sample has remained in the oven for a period of 4 hours, the Petri dish containing it shall be removed from the oven and allowed to cool to room temperature, after which 5 lengths of 2-inch pipe cleaner shall be soaked separately in the test sample for a period of 2 minutes. Then the test procedure stated in subparagraph (3) of this paragraph shall be repeated.

(d) *Appraisal of tests.* To be determined as fire resistant according to the test requirements of this section, the three following results shall be achieved:

(1) The average number of cycles before attaining a self-sustaining flame in the test described in paragraph (c) (3) of this section shall be 24 or more.

(2) The average number of cycles before attaining a self-sustaining flame in the test described in paragraph (c) (4) of this section shall be 18 or more.

(3) The average number of cycles before attaining a self-sustaining flame in the test described in paragraph (c) (5) of this section shall be 12 or more.

§ 35.23 Performance required for certification.

To qualify as fire-resistant under the regulations of this part, a hydraulic fluid shall meet each performance requirement and stated in §§ 35.20(d), 35.21(d), and 35.22(d).

PART 36—MOBILE DIESEL-POWERED TRANSPORTATION EQUIPMENT FOR GASSY NONCOAL MINES AND TUNNELS

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AUTHORITY: The provisions of this Part 36 issued under secs. 2, 3, 5, 36 Stat. 370, as amended; 30 U.S.C. 3, 5, 7.

SOURCE: The provisions of this Part 36 contained in Schedule 31, 26 F.R. 645, Jan. 24, 1961, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 39 FR 24006, June 28, 1974.

Subpart A—General Provisions

§ 36.1 Purpose.

The regulations in this part set forth the requirements for mobile diesel-powered transportation equipment to procure their approval and certification as permissible for use in gassy noncoal mines and tunnels; procedures for applying for such certification; and fees.

§ 36.2 Definitions.

As used in this part:

(a) "Mobile diesel-powered transportation equipment" means equipment that is (1) used for transporting the product being mined or excavated, or for transporting materials and supplies used in mining or excavating operations; (2) mounted on wheels or crawler treads (tracks); and (3) powered by a diesel engine as the prime mover.

(b) "Permissible", as applied to mobile diesel-powered transportation equipment, means that the complete assembly

conforms to the requirements of this part, and that a certificate of approval to that effect has been issued.

(c) "MESA" means the United States Department of the Interior, Mining Enforcement and Safety Administration.

(d) "Certificate of approval" means a formal document issued by MESA stating that the complete assembly has met the requirements of this part for mobile diesel-powered transportation equipment and authorizing the use and attachment of an official approval plate so indicating.

(e) "Applicant" means an individual, partnership, company, corporation, association, or other organization, that designs, manufactures, assembles, or controls the assembly and that seeks a certificate of approval or preliminary testing of mobile diesel-powered transportation equipment for use in gassy noncoal mines and tunnels.

(f) "Noncoal mine" means an underground mine or tunnel in which the product being mined or excavated is incombustible.

(g) "Gassy noncoal mine" means a noncoal mine or tunnel in which flammable gas has been ignited, or in which a concentration of 0.25 percent or more, by volume, of flammable gas has been detected in the atmosphere of any open workings.

(h) "Diesel engine" means a compression-ignition, internal-combustion engine that utilizes a low-volatile hydrocarbon (diesel) fuel.

(i) "Low-volatile hydrocarbon (diesel) fuel" means a liquid fuel which has an open-cup flash point of 140° F. or more and a sulfur content of 0.5 percent or less by weight.

(j) "Component" means a piece, part, or fixture of mobile diesel-powered transportation equipment that is essential to its operation as a permissible assembly.

(k) "Subassembly" means a group or combination of components.

(l) "Explosion proof" means that a component or subassembly is so constructed and protected by an enclosure and/or flame arrester(s) that if a flammable mixture of gas is ignited within the enclosure it will withstand the resultant pressure without damage to the enclosure and/or flame arrester(s). Also the enclosure and/or flame arrester(s) shall prevent the discharge of flame or ignition of any flammable mixture that surrounds the enclosure.

(m) "Flammable mixture" means a mixture of gas, such as methane, natural gas, or similar hydrocarbon gas with normal air, that will propagate flame or explode violently when initiated by an incendive source.

(n) "Flame arrester" means a device so constructed that flame or sparks from the diesel engine cannot propagate an explosion of a flammable mixture through it.

(o) "Normal operation" means that each component and the entire assembly of the mobile diesel-powered transportation equipment performs the functions for which they were designed.

(p) "Fuel-air ratio" means the composition of the mixture of fuel and air in the combustion chamber of the diesel engine expressed as weight—pound of fuel per pound of air.

[Sched. 31, 26 FR 645, Jan. 24, 1961, as amended at 39 FR 24006, June 28, 1974]

§ 36.3 Consultation.

By appointment, applicants or their representatives may visit Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pennsylvania 15213, to discuss with qualified MESA personnel proposed mobile diesel-powered transportation equipment to be submitted in accordance with the regulations of this part. No charge is made for such consultation and no written report thereof will be submitted to the applicant.

§ 36.4 Mobile diesel-powered transportation equipment for which certificates of approval may be granted.

Certificates of approval will be granted for completely assembled mobile diesel-powered transportation equipment only. Subassemblies or components may be granted letters of certification in accordance with § 36.5.

§ 36.5 Letters of certification.

When a component or subassembly meets all of the applicable requirements of Subparts B and C of this part, and also its normal operation will not be affected by connection to adjacent components or subassemblies, MESA will issue to the applicant, upon his request, a letter of certification informing him that additional inspection or tests of the component or subassembly will not be required when it is incorporated without modification in a piece of completely assembled mobile diesel-powered trans-

portation equipment. The applicant may cite this letter of certification to another applicant who seeks approval and certification of his completely assembled mobile diesel-powered transportation equipment and who desires to incorporate the component or subassembly in such equipment.

§ 36.6 Applications.

(a) No investigation or testing will be undertaken by MESA except pursuant to a written application, in duplicate, accompanied by a check, bank draft, or money order, payable to the U.S. Mining Enforcement and Safety Administration, to cover the fees; and all drawings, specifications, descriptions, and related materials. The application and all related matters and correspondence concerning it shall be addressed to the Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213.

(b) Drawings, specifications, and descriptions shall be adequate in detail to identify fully the complete assembly, components, and subassemblies. Drawings, specifications, and descriptions shall include:

(1) Assembly drawing(s) showing the overall dimensions of the equipment, location and capacity of the fuel tank, location of flame arresters, exhaust-gas conditioner and its water-supply tank, if applicable, exhaust-gas dilution system, and other details that are essential to the functioning of the equipment.

(2) Detailed drawings showing the intake, combustion, and exhaust systems of the diesel engine, including joints and gaskets; the turbulence or precombustion chamber, if applicable; injector assembly and nozzle details; and any surfaces that form the combustion chamber or part thereof, such as the cylinder head, piston and cylinder liner; and other features that may affect permissibility, such as exhaust-gas conditioner and flame arresters.

(3) A schematic drawing of the fuel system showing piping, connections, fuel filters, fuel-injection pump, and mechanical governor assembly. All components shall be identified to permit adjustment, as necessary, and the location of seals or locks to prevent tampering shall be indicated.

(4) Drawing(s) specifying the kind of material and detailed dimensions of the components of explosion-proof enclosures, including joints and openings.

(5) Drawing(s) showing the construction of headlights, battery boxes, including seals or locks, and method of mounting.

(6) Other drawings, specifications, or descriptions identifying any feature that MESA considers necessary for certification of the particular mobile diesel-powered transportation equipment.

(c) Shipment of the mobile diesel-powered transportation equipment or component part or subassembly as the case may be, shall be deferred until MESA has notified the applicant that the application will be accepted. Shipping instructions will be issued by MESA and shipping charges shall be prepaid by the applicant. Upon completion of the investigation and notification thereof to the applicant by MESA, the applicant shall remove his equipment promptly from the test site (see § 36.40).

(d) The application shall state that the equipment is completely developed and of the design and materials that the applicant believes to be suitable for a finished marketable product or is a completely developed component or subassembly suitable for incorporation in a finished marketable complete assembly of mobile diesel-powered transportation equipment. If the final design of a component depends upon results of MESA's tests, this shall be so stated in the application.

(e) For a complete investigation leading to approval and certification, the applicant shall furnish a complete operable assembly for inspecting and testing. Spare parts and expendable components, subject to wear in normal operation, shall be supplied by the applicant to permit continuous operation of the equipment during test periods. If special tools are necessary to disassemble any component for inspection or test, the applicant shall furnish these with the equipment to be tested.

(f) With each application, the applicant shall submit evidence of how he proposes to inspect his completely assembled mobile diesel-powered transportation equipment at the place of manufacture or assembly before shipment to purchasers. Ordinarily such inspection is recorded on a factory inspection form and the applicant shall furnish to MESA a copy of his factory inspection form or equivalent with his application. The form shall direct attention to the points that must be checked to make certain that all components of the assembly are

in proper condition, complete in all respects, and in agreement with the drawings, specifications, and descriptions filed with MESA.

(g) With the application, the applicant shall furnish to MESA complete instructions for operating and servicing his equipment. After completing MESA's investigation, if any revision of the instructions is required, a revised copy thereof shall be submitted to MESA for inclusion with the drawings and specifications.

§ 36.7 Fees.

(a)

| | |
|---|-------|
| 1. Preliminary review of drawings, specifications, descriptions, and related data, each complete assembly | \$50 |
| 2. Complete tests to determine composition of exhaust gas from diesel engine under various load and speed conditions ¹ | 2,400 |
| 3. Tests to determine the effectiveness of air intake or exhaust flame arrester in an intake or exhaust system..... | 325 |
| 4. Check tests on redesigned components or equipment in item 3 above requiring less than 20 tests | 165 |
| 5. Complete inspection of an intake or exhaust flame arrester..... | 100 |
| 6. Complete inspection of manifolds, exhaust conditioners, and other components that comprise the intake and exhaust systems..... | 150 |
| 7. Complete investigation of headlight, storage-battery type ² | 525 |
| 8. Complete investigation of headlight, dry-cell type ² | \$280 |
| 9. Tests to determine the cooling efficiency of an exhaust conditioner and rate of water consumption | 120 |
| 10. Surface temperature determinations and tests of safety controls | 220 |
| 11. Each final inspection of completely assembled equipment.... | 375 |
| 12. Tests of exhaust-gas dilution not made concurrently with final inspection of completely assembled equipment | 115 |
| 13. Final examination and recording of drawings and specifications requisite to the issuance of a certificate of approval..... | 175 |
| 14. Final examination and recording of drawings and specifications requisite to the issuance of a letter of certification..... | 100 |
| 15. Examining and recording drawings and specifications requisite to the issuance of an extension of certification, each 4 hours or fraction thereof..... | 35 |

16. Tests conducted in the field shall require the same fee as when conducted on MESA's premises. In addition the applicant shall reimburse MESA for such travel, subsistence, and incidental expenses as may be required by its representative(s) in accordance with the allowances stated in the "Standardized Government Travel Regulations."

¹ Fee for partial tests shall be in proportion to the work done but the minimum shall be \$500. If the applicant requests discontinuation of the investigation after preparations for engine tests have begun, the minimum fee shall be \$500 regardless of the progress of the tests.

² Maximum normal fee; actual fee as detailed in Part 20 of Subchapter D of this Chapter (Schedule 10, revised, the latest revision of which is Schedule 10C).

(b) If an applicant is unable to determine the exact fee that should be submitted with his application, the information will be provided, upon request, addressed to Approval and Testing, Pittsburgh Technical Support Center, 4800 Forbes Avenue, Pittsburgh, Pa. 15213. The surplus from any fee submitted in excess of requirements will be refunded to the applicant upon completion or termination of the investigation.

[Sched. 31, 26 F.R. 645, Jan. 24, 1961, as amended at 30 F.R. 3757, Mar. 23, 1965]

§ 36.8 Date for conducting tests.

The date for acceptance of an application will determine the order of precedence for testing when more than one application is pending, and the applicant will be notified of the date on which tests will begin. If a complete assembly, or component, or subassembly fails to meet any of the requirements, it shall lose its order of precedence. However, if the cause of failure is corrected, testing will be resumed after completing such test work as may be in progress.

§ 36.9 Conduct of investigations, tests, and demonstrations.

(a) Prior to the issuance of a certificate of approval or a letter of certification, as the case may require, necessary Government personnel, representatives of the applicant, and such other persons as may be mutually agreed upon may observe the investigations or tests. MESA shall hold as confidential and shall not disclose principles or patentable features prior to certification, nor shall it disclose any details of drawings, specifications, descriptions, or related materials. After

the issuance of a certificate of approval, MESA may conduct such public demonstrations and tests of the approved mobile diesel-powered transportation equipment for gassy noncoal mine and tunnels as it deems appropriate. The conduct of all investigations, tests, and demonstrations shall be under the direction and control of MESA, and any other persons shall be present only as observers, except as noted in paragraph (b) of this section.

(b) When requested by MESA, the applicant shall provide assistance in disassembling parts for inspection, preparing parts for testing, and operating equipment during the tests.

[Sched. 31, 26 FR 645, Jan. 24, 1961, as amended at 39 FR 24006, June 28, 1974]

§ 36.10 Certificate of approval.

(a) Upon completion of investigation of a complete assembly of mobile diesel-powered transportation equipment, MESA will issue to the applicant either a certificate of approval or a written notice of disapproval, as the case may require. No informal notification of approval will be issued. If a certificate of approval is issued, no test data or detailed results of tests will accompany it. If a notice of disapproval is issued, it will be accompanied by details of the defects, with a view to possible correction. MESA will not disclose, except to the applicant, any information on mobile diesel-powered transportation equipment upon which a notice of disapproval has been issued.

(b) A certificate of approval will be accompanied by a list of drawings, specifications, and related material covering the details of design and construction of equipment upon which the certificate of approval is based. Applicants shall keep exact duplicates of the drawings, specifications, and descriptions that relate to equipment which has received a certificate of approval, and these are to be adhered to exactly in production of the certified equipment.

(c) A certificate of approval will be accompanied by an appropriate caution statement specifying the conditions to be observed for operating and maintaining the equipment and to preserve its permissible status.

§ 36.11 Approval plates.

(a) A certificate of approval will be accompanied by a photograph of an approval plate, bearing the emblem of the Mining Enforcement and Safety Admin-

istration and spaces for the approval number, the type, the serial number, and ventilation requirement; the name of the complete assembly; and the name of the applicant.

(b) The applicant shall reproduce the design as a separate plate, which shall be attached, in a suitable place, on each complete assembly to which it relates. The size, type, and method of attaching and location of an approval plate are subject to MESA's approval. The method of affixing the approval plate shall not impair the permissibility (explosion-proof) features of the complete assembly of mobile diesel-powered transportation equipment.

(c) The approval plate identifies the equipment, to which it is attached, as permissible and is the applicant's guarantee that the equipment complies with the requirements of this part. Without an approval plate no equipment is considered permissible under the provisions of this part.

(d) Use of the approval plate obligates the applicant to whom the certificate of approval was granted to maintain in his plant the quality of each complete assembly bearing it and guarantees that it is manufactured and assembled according to the drawings, specifications, and descriptions upon which a certificate of approval was based.

§ 36.12 Changes after certification.

If an applicant desires to change any feature of certified equipment, he shall first obtain MESA's approval of the change, pursuant to the following procedure:

(a) Application shall be made as for an original certificate of approval, requesting that the existing certification be extended to cover the proposed changes and shall be accompanied by drawings, specifications, and related data, showing the changes in detail.

(b) The application will be examined by MESA to determine whether inspection and testing of the modified equipment or component or subassembly will be required. Testing will be necessary if there is a possibility that the modification may affect adversely the performance of the equipment. MESA will inform the applicant whether such testing is required; the component, subassembly, and related material to be submitted for that purpose; and the fee.

(c) If the proposed modification meets the requirements of this part, a

formal extension of certification will be issued, accompanied by a list of new and corrected drawings and specifications to be added to those already on file as the basis for the extension of certification.

§ 36.13 Withdrawal of certification.

MESA reserves the right to rescind for cause any certificate of approval granted under this part.

Subpart B—Construction and Design Requirements

§ 36.20 Quality of material, workmanship, and design.

(a) MESA will test only equipment that in the opinion of its qualified representatives is constructed of suitable materials, is of good quality workmanship, based on sound engineering principles, and is safe for its intended use. Since all possible designs, arrangements, or combinations of components and materials cannot be foreseen, MESA reserves the right to modify the construction and design requirements of subassemblies or components and tests thereof to obtain the same degree of protection as provided by the tests described in Subpart C of this part.

(b) The quality of material, workmanship, and design shall conform to the applicable requirements of § 18.24 of Part 18 of Subchapter D of this chapter (Schedule 2, revised, the latest revision of which is Schedule 2F), titled "Detailed requirements for Class I parts."

§ 36.21 Engine for equipment considered for certification.

Only equipment powered by a compression-ignition (diesel) engine and burning diesel fuel (see § 36.2(1)) will be considered for approval and certification. The starting mechanism shall be actuated pneumatically, hydraulically, or by other methods acceptable to MESA. Electric starting shall not be accepted. Engines burning other fuels or utilizing volatile fuel starting aids will not be investigated.

§ 36.22 Fuel-injection system.

This system shall be so constructed that the quantity of fuel injected can be controlled at a desired maximum value and shall be so arranged that this adjustment can be changed only after breaking a seal or unlocking a compartment. Provision shall be made for convenient adjustment of the maximum fuel-injection rate to that required for

safe operation at different altitudes (elevations above sea level). The governor, controlling engine speed and fuel injection, shall not directly affect airflow to the engine and provision shall be made to seal or lock its adjustment compartment. Filters shall be provided to insure that only clean fuel will reach the injection pump or injectors.

§ 36.23 Engine intake system.

(a) *Construction.* The intake system (exclusive of the air cleaner) shall be designed to withstand an internal pressure equal to 4 times the maximum pressure observed in explosion tests, which are described in § 36.46, or a pressure of 125 pounds per square inch, whichever is the lesser. Joints in the intake system shall be formed by metal flanges fitted with metal or metal-clad gaskets, positively positioned by through bolts or other suitable means for secure assembly, or shall meet the requirements for flanged metal-to-metal flame-proof joints as required in § 36.20(b). Either type of joint shall withstand repeated explosions within the intake system without permanent deformation and shall prevent the propagation of flame through the joint into a surrounding flammable mixture.

(b) *Intake flame arrester.* (1) The intake system shall include a flame arrester that will prevent an explosion within the system from propagating to a surrounding flammable mixture. This flame arrester shall be between the air cleaner and the intake manifold and shall be attached so that it may be removed for inspecting, cleaning, or repairing. Its construction shall be such that it may be cleaned readily. The flame arrester shall be of rugged construction to withstand the effects of repeated explosions within the intake system, and the material of construction shall resist deterioration in service. It shall be so mounted in the equipment assembly that it is protected from accidental external damage.

(2) The parts of any flame arrester shall be positively positioned to produce a flame path that will arrest the propagation of an explosion and shall be so designed that improper assembly is impossible. In flame arresters of the spaced-plate type, the thickness of the plates shall be at least 0.125 inch; spacing between the plates shall not exceed 0.018 inch; and the plates forming the flame path shall be at least 1 inch wide.

The unsupported length of the plates shall be short enough that deformation during the explosion tests shall not exceed 0.002 inch. Corrosion-resistant metal shall be used to construct flame arresters.

(c) *Air shutoff valve.* The intake system shall include a valve, operable from the operator's compartment, to shut off the air supply to the engine. This valve shall be constructed to permit its operation only after the fuel supply to the engine is shut off. In reverse operation the valve must open fully before fuel can be supplied to the engine.

(d) *Air cleaner.* An air cleaner shall be included in the engine intake system and so arranged that only clean air will enter the flame arrester. The resistance to airflow shall not increase rapidly in dusty atmospheres. Filters of the self-cleansing (oil-bath) type will be considered satisfactory for this application. Provision, satisfactory to MESA, shall be made to prevent overfilling the oil-bath air cleaner.

(e) *Vacuum-gage connection.* A connection shall be provided in the intake system for temporary attachment of a vacuum gage to indicate the pressure drop under flow conditions. This opening shall be closed by a plug or other suitable device that is sealed or locked in place except when a gage is attached.

§ 36.24 Engine joints.

(a) *Cylinder head.* The joint between the cylinder head and block of the engine shall be fitted with a metal or metal-clad gasket satisfactory to MESA held securely in position by through bolts or other suitable means to prevent a change in alignment. This joint shall provide an adequate flame barrier with the gasket in place.

(b) *Valve guides.* Valve guides shall be long enough to form an adequate flame barrier along the valve stem.

(c) *Gaskets.* All metal or metal-clad gaskets shall maintain their tightness during repeated explosions within the engine and its intake and exhaust systems to prevent the propagation of flame.

§ 36.25 Engine exhaust system.

(a) *Construction.* The exhaust system of the engine shall be designed to withstand an internal pressure equal to 4 times the maximum pressure observed in explosion tests, which are described in § 36.46, or a pressure of 125 pounds per square inch, whichever is the lesser.

The system shall withstand repeated internal explosions without permanent deformation or deterioration.

(b) *Exhaust flame arrester.* (1) The exhaust system of the engine shall be provided with a flame arrester to prevent propagation of flame or discharge of heated particles to a surrounding flammable mixture. The flame arrester shall be so positioned that only cooled exhaust gas will discharge through it and shall be so designed and attached that it can be removed for inspecting, cleaning, or repairing. Its construction shall be such that it can be cleaned readily. The flame arrester shall be of rugged construction to withstand the effects of repeated explosions within the exhaust system, and the material of construction shall resist deterioration in service. It shall be so mounted in the equipment assembly that it is protected from accidental external damage.

(2) A spaced-plate flame arrester for the exhaust system shall meet the same requirements as flame arresters for the intake system (see § 36.23(b)(2)).

(3) In lieu of a space-plate flame arrester, an exhaust-gas cooling box or conditioner may be used as the exhaust flame arrester provided that explosion tests demonstrate that the cooling box will arrest flame. When used as a flame arrester the cooling box shall be equipped with a device to shut off automatically the fuel supply to the engine at a safe minimum water level. A cooling box used as a flame arrester shall withstand repeated explosion tests without permanent deformation. It shall be constructed of material, satisfactory to MESA, that will resist deterioration in service.

(c) *Exhaust cooling system.* (1) A cooling system shall be provided for the engine exhaust gas. The heat-dissipation capacity shall be capable of reducing the temperature of the undiluted exhaust gas to less than 170° F. at the point of discharge from the cooling system under any condition of engine operation acceptable to MESA. A device shall be provided that will automatically shut off the fuel supply to the engine immediately if the temperature of the exhaust gas exceeds 185° F. at the point of discharge from the cooling system. Provision shall be made, acceptable to MESA, to prevent restarting the engine after the fuel supply has been shut off automatically until the water

supply in the cooling box has been replenished. When the cooling box is used as a flame arrester, one safety device may be accepted provided it controls a safe minimum water level in the cooling box and also prevents the final exhaust temperature from exceeding 185° F.

(2) Cooling shall be obtained by passing the exhaust gas through water or a dilute aqueous chemical solution held in a cooling box or conditioner, or by a spray of water or a dilute aqueous chemical solution that will enter the exhaust system near the outlet of the exhaust manifold, or a combination of the two methods. When a spray is used it shall be provided with a filtering device to protect the nozzle from clogging. Provisions shall be made for draining and cleaning all parts of the exhaust cooling system. Openings for draining and cleaning shall be closed and sealed or locked by a method satisfactory to MESA.

(3) The cooling system shall be constructed of corrosion-resistant metal suitable for the intended application.

(4) The cooling system shall store enough water or aqueous solution to permit operation of the engine at one-third load factor for eight hours. The minimum quantity of usable water or aqueous solution available for cooling shall equal the consumption for one hour with the engine operating at maximum load and speed multiplied by 8 and this product divided by 3.

(d) *Surface temperature of engine and exhaust system.* (1) The temperature of any external surface of the engine or exhaust system shall not exceed 400° F. under any condition of engine operation prescribed by MESA. Water-jacketed components shall have integral jackets and provision shall be made for positive circulation of water in the jackets and to automatically shut off the engine when the temperature in the cooling jacket(s) exceeds 212° F. Insulated coverings to control surface temperature are not acceptable.

(2) When a spray is used to reduce the temperature of the exhaust gas, it shall be located as near as practicable to the outlet of the exhaust manifold.

(3) Exterior surfaces of the exhaust system shall be designed to minimize accumulation and lodgement of dust or combustible substances and to permit ready access for cleaning.

(e) *Tightness of exhaust system.* All joints in the exhaust system shall be tight to prevent the flow of exhaust gas

through them under any condition of engine operation prescribed by MESA. A tight system shall be obtained by the use of ground joints, or thin metal or metal-clad gaskets. All such joints shall be fitted with adequate through bolts and all gaskets shall be aligned and held firmly in position by the bolts or other suitable means. Such joints shall remain tight to prevent passage of flame or propagation of repeated internal explosions to a surrounding flammable mixture.

(f) *Dilution of exhaust gas.* (1) Provision shall be made to dilute the exhaust gas with and before it is discharged into the surrounding atmosphere. The discharged exhaust gas shall be so diluted with air that the mixture shall not contain more than 0.5 percent, by volume, of carbon dioxide; 0.01 percent, by volume, of carbon monoxide; 0.0025 percent, by volume, of oxides of nitrogen (calculated as equivalent nitrogen dioxide); or 0.0010 percent, by volume, of aldehydes (calculated as equivalent formaldehyde) under any condition of engine operation prescribed by MESA.

(2) The final diluted exhaust mixture shall be discharged in such a manner that it is directed away from the operator's compartment and also away from the breathing zones of persons required to be alongside the equipment.

(g) *Pressure-gage connection.* A connection shall be provided in the exhaust system for convenient, temporary attachment of a pressure gage at a point suitable for measuring the total back pressure in the system. The connection also shall be suitable for temporary attachment of gas-sampling equipment to the exhaust system. This opening shall be closed by a plug or other suitable device that is sealed or locked in place except when a gage or sampling tube is attached.

§ 36.26 Composition of exhaust gas.

(a) *Preliminary engine adjustment.* The engine shall be submitted to MESA by the applicant in such condition that it can be tested immediately at full load and speed. The preliminary liquid-fuel-injection rate shall be such that the exhaust will not contain black smoke and the applicant shall adjust the injection rate promptly to correct any adverse conditions disclosed by preliminary tests.

(b) *Final engine adjustment.* The liquid fuel supply to the engine shall be

adjusted so that the undiluted exhaust gas shall contain not more than 0.30 percent, by volume, of carbon monoxide or 0.20 percent, by volume, of oxides of nitrogen (calculated as equivalent nitrogen dioxide, NO_2) under any conditions of engine operation prescribed by MESA when the intake air mixture to the engine contains 1.5 ± 0.1 percent, by volume, of Pittsburgh natural gas.⁸

(c) *Coupling or adapter.* The applicant shall provide the coupling or adapter for connecting the engine to MESA's dynamometer.

NOTE: Preferably this coupling or adapter should be attached to the flywheel of the engine.

Clutches, transmissions, or torque converters ordinarily are not required in the coupling train.

§ 36.27 Fuel-supply system.

(a) *Fuel tank.* (1) The fuel tank shall not leak and shall be fabricated of metal at least $\frac{1}{16}$ inch thick, welded at all seams, except that tanks of 5 gallons or less capacity may have thinner walls which shall be preformed or reinforced to provide good resistance to deflection. A drain plug (not a valve or petcock) shall be provided and locked in position. A vent opening shall be provided in the fuel filler cap of such design that atmospheric pressure is maintained inside the tank. The size of the vent opening shall be restricted to prevent fuel from splashing through it. The filler opening shall be so arranged that fuel can be added only through a self-closing valve at least 1 foot from the exhaust manifold of the engine, preferably below it. The self-closing valve shall constitute a fuel-tight closure when fuel is not being added. Any part of the self-closing valve that might become detached during the addition of fuel shall be secured to the tank by a chain or other fastening to prevent loss.

(2) The fuel tank shall have a definite position in the equipment assembly, and no provision shall be made for attachment of separate or auxiliary fuel tanks.

(3) Capacity of the fuel tank shall not exceed the amount of fuel necessary to operate the engine continuously at full load for approximately four hours.

⁸ Investigation has shown that for practical purposes, Pittsburgh natural gas (containing a high percentage of methane) is a satisfactory substitute for pure methane in these tests.

(b) *Fuel lines.* All fuel lines shall be installed to protect them against damage in ordinary use and they shall be designed, fabricated, and secured to resist breakage from vibration.

(c) *Valve in fuel line.* A shutoff valve shall be provided in the fuel system, installed in a manner acceptable to MESA.

NOTE: This shutoff valve is in addition to the normal shutoff provided in the fuel-injection system and also in addition to the air-shutoff valve.

§ 36.28 Signal or warning device.

All mobile diesel-powered transportation equipment shall be provided with a bell, horn, or other suitable warning device convenient to the operator. Warning devices shall be operated manually or pneumatically.

§ 36.29 Brakes.

All mobile diesel-powered transportation equipment shall be equipped with adequate brakes acceptable to MESA.

§ 36.30 Rerailing device.

All mobile diesel-powered transportation equipment designed to travel on rails in haulage service shall carry a suitable rerailing device.

§ 36.31 Fire extinguisher.

Each unit of mobile diesel-powered transportation equipment shall be fitted with a fire extinguisher carried in a location easily accessible to the operator and protected by position from external damage. Liquid carbon dioxide extinguishers shall contain an active charge of not less than 4 pounds. Pressurized dry chemical extinguishers shall contain an active charge of not less than $2\frac{1}{2}$ pounds.

§ 36.32 Restriction of electrical components.

Mobile diesel-powered transportation equipment for gassy noncoal mines and tunnels will not be investigated for approval and certification unless the electrical components of the equipment are restricted to headlight units, as hereinafter described in § 36.33.

§ 36.33 Headlight units.

(a) A headlight and its source of electrical energy shall be constructed as a unit. The component parts of a headlight unit shall be locked or sealed by a device, acceptable to MESA, so that in normal use the parts are inseparable.

(b) A headlight and its source of energy shall conform to the applicable requirements of Part 20 of Subchapter D of this chapter (Schedule 10, revised, the latest revision of which is Schedule 10C) pertaining to Class 1 lamps or is constructed with equivalent safeguards that are acceptable to MESA.

(c) The headlight unit shall be so mounted on mobile diesel-powered transportation equipment that it is in a fixed position and protected from external damage by recessing in the equipment frame or otherwise guarded in a manner acceptable to MESA.

(d) At least one headlight unit shall be provided on the front and rear of each piece of mobile diesel-powered transportation equipment.

Subpart C—Test Requirements

§ 36.40 Test site.

Tests shall be conducted at MESA's Diesel Testing Laboratory, Bruceton, Pennsylvania, or other appropriate place(s) determined by MESA.

[39 FR 24006, June 28, 1974]

§ 36.41 Testing methods.

Mobile diesel-powered transportation equipment submitted for certification and approval shall be tested to determine its combustion, explosion-proof, and other safety characteristics. MESA shall prescribe the tests and reserves the right to modify the procedure(s) to attain these objectives (see § 36.20).

§ 36.42 Inspection.

A detailed inspection shall be made of the equipment and all components and features related to safety in operation. The inspection shall include:

(a) Investigating the materials, workmanship, and design to determine their adequacy.

(b) Checking the parts and assemblies against the drawings and specifications with respect to materials, dimensions, and locations to verify their conformance.

(c) Inspecting and measuring joints, flanges, and other possible flame paths in the intake and exhaust systems to determine whether they will prevent the issuance of flame or propagation of an internal explosion.

(d) Inspecting and measuring flame arresters to determine whether they will prevent the issuance of flame or propagation of an internal explosion.

§ 36.43 Determination of exhaust-gas composition.

(a) Samples shall be taken to determine the composition of the exhaust gas while the engine is operated at loads and speeds prescribed by MESA to determine the volume of air (ventilation) required to dilute the exhaust gas (see § 36.45). The engine shall be at temperature equilibrium before exhaust-gas samples are collected or other test data are observed. At all test conditions the intake mixture shall contain 1.5 ± 0.1 percent, by volume, of Pittsburgh natural gas (see footnote 3) in the air. Test observations shall include the rate of fuel consumption, pressures, temperatures, and other data significant in the safe operation of diesel equipment in underground gassy noncoal mines and tunnels.

(b) Exhaust-gas samples shall be analyzed for carbon dioxide, oxygen, carbon monoxide, hydrogen, methane, nitrogen, oxides of nitrogen, and aldehydes, or any other constituent prescribed by MESA.

(c) The intake and exhaust systems shall be complete with all component equipment such as air cleaners, flame arresters, and exhaust cooling systems. The performance of component equipment shall be observed to determine whether it functions properly.

§ 36.44 Maximum allowable fuel: air ratio.

(a) When an engine is delivered to MESA with the fuel-injection system adjusted by the applicant and tests of the exhaust-gas composition (see § 36.43) show not more than 0.30 percent, by volume, of carbon monoxide, the applicant's adjustment of the fuel-injection system shall be accepted. The maximum fuel: air ratio determined from the exhaust-gas composition shall be designated as the maximum allowable fuel: air ratio. The maximum liquid fuel rate (pounds per hour) that produces the maximum allowable fuel: air ratio shall be designated as the maximum allowable fuel rate for operating the equipment at elevations not exceeding 1,000 feet above sea level.

(b) When the carbon monoxide content of the exhaust exceeds 0.30 percent, by volume, only near maximum power output, the maximum fuel: air ratio at which carbon monoxide does not exceed 0.30 percent shall be calculated and designated as the maximum allowable fuel: air ratio. The corresponding cal-

culated liquid fuel rate shall be designated as the maximum allowable fuel rate at elevations not exceeding 1,000 feet above sea level.

NOTE: The applicant may be requested to adjust the liquid fuel rate during tests to determine the maximum allowable fuel:air ratio.

(c) The maximum allowable fuel:air ratio and maximum liquid fuel rates shall be used to calculate a liquid fuel rate-altitude table that shall govern the liquid fuel rate of engines operated at elevations exceeding 1,000 feet above sea level.

§ 36.45 Quantity of ventilating air.

(a) Results of the engine tests shall be used to calculate ventilation (cubic feet of air per minute) that shall be supplied by positive air movement when the permissible mobile diesel-powered transportation equipment is used underground. This quantity shall be stamped on the approval plate. The quantity so determined shall apply when only one machine is operated.

(b) Determination of the ventilation rate shall be based upon dilution of the exhaust gas with normal air. The most undesirable and hazardous condition of engine operation prescribed by MESA shall be used in the calculations. The concentration of any of the following individual constituents in the diluted mixture shall not exceed:

0.25 percent, by volume, of carbon dioxide (CO_2).

0.005 percent, by volume, of carbon monoxide (CO).

0.00125 percent, by volume, of oxides of nitrogen (calculated as equivalent nitrogen dioxide, NO_2).

The oxygen (O_2) content of the diluted mixture shall be not less than 20 percent, by volume. The maximum quantity of normal air to produce the above dilution shall be designated the ventilation rate.

NOTE: This ventilation rate will provide a factor of safety for exposure of persons to air mixtures containing harmful or objectionable gases and for minor variations in engine performance.

§ 36.46 Explosion tests of intake and exhaust systems.

(a) Explosion tests to determine the strength of the intake and exhaust systems to withstand internal explosions and the adequacy of the flame arresters to prevent the propagation of an explosion shall be made with the systems con-

nected to the engine or the systems simulated as connected to the engine. The system shall be filled with and surrounded by an explosive natural gas-air mixture. The mixture within the intake and exhaust systems shall be ignited by suitable means and the internal pressure developed by the resultant explosion shall be determined. Tests shall be conducted with the ignition source in several different locations to determine the maximum pressure developed by an internal explosion.

(b) Explosion tests shall be made with the engine at rest and with the flammable natural gas-air mixtures in the intake and exhaust systems. In other tests with the flammable mixture in motion, the engine shall be driven (externally) at speeds prescribed by MESA but no liquid fuel shall be supplied to the injection valves.

(c) The temperature of the flame arresters in the intake or exhaust systems shall not exceed 212°F . when an explosion test is conducted. Any water-spray cooling for the exhaust system shall not be operated and water shall not be present in the exhaust cooling boxes except when water is the cooling agent for a cooling box designed to act as a flame arrester, in which case MESA will prescribe the test conditions.

(d) The explosion tests of the intake and exhaust systems shall not result in:

(1) Discharge of visible flame from any joint or opening.

(2) Ignition of surrounding flammable gas-air mixture.

(3) Development of dangerous afterburning.⁴

(4) Excessive pressures.

§ 36.47 Tests of exhaust-gas cooling system.

(a) The adequacy of the exhaust-gas cooling system and its components shall be determined with the engine operating at the maximum allowable liquid fuel rate and governed speed with 0.5 ± 0.1 percent, by volume, of natural gas in the intake air mixture. All parts of the engine and exhaust-gas cooling system shall be at their respective equilibrium temperatures. The cooling spray, if any, shall be operated, and all compartments designed to hold cooling water shall be

⁴ The term "afterburning" as used in this part is applied to combustion of a flammable gas-air mixture drawn into the system under test by the cooling of the products from an explosion in the system.

filled with the quantity of water recommended by the applicant. No cooling air shall be circulated over the engine or components in the cooling system during the test.

(b) Determinations shall be made during the test to establish the cooling performance of the system, the cooling water consumption, high-water level when the system sprays excess water, and low-water level when the cooling system falls.

(c) The final exhaust-gas temperature at discharge from the cooling system, and before the exhaust gas is diluted with air, shall not exceed 170° F. or the temperature of adiabatic saturation, if this temperature is lower.

(d) Water consumed in cooling the exhaust gas under the test conditions shall not exceed by more than 15 percent that required for adiabatic saturation of the exhaust-gas at the final temperature. Water in excess of that required for adiabatic saturation shall be considered as entrained water. Enough water shall be available in the cooling system or in reserve supply compartments for sustained satisfactory operation for at least 2½ hours under the test conditions.

NOTE: This amount is enough to cool the exhaust for an 8-hour shift at one-third load factor.

(e) The adequacy of the automatic fuel shutoff actuated by the temperature of the final exhaust shall be determined with the engine operating under test conditions by withdrawing water until the cooling system fails to function. The final exhaust-gas temperature at which the liquid fuel to the engine is automatically shut off shall be noted. This temperature shall not exceed 185° F.

(f) Following the automatic fuel shut-off test in paragraph (e) of this section, the temperature of the control point shall be allowed to fall to 170° F. At this temperature and with the water replenished in the cooling system, it shall be possible to start the engine.

NOTE: If the cooling system includes a reserve supply water tank, the line or lines connecting it to the cooling compartment may require a suitable flame arrester.

(g) The effectiveness of the automatic engine shut-off, which will operate when the water in the cooling jacket(s) exceeds 212° F., shall be determined by causing the jacket temperature to exceed 212° F.

§ 36.48 Tests of surface temperature of engine and components of the cooling system.

(a) The surface temperatures of the engine, exhaust cooling system, and other components subject to heating by engine operation shall be determined with the engine operated as prescribed by MESA. All parts of the engine, cooling system, and other components shall have reached their respective equilibrium temperatures. The exhaust cooling system shall be operated, but air shall not be circulated over the engine or components. Surface temperatures shall be measured at various places prescribed by MESA to determine where maximum temperatures develop.

(b) The temperature of any surface shall not exceed 400° F.

NOTE: The engine may be operated under test conditions prescribed by MESA while completely surrounded by a flammable mixture. MESA reserves the right to apply combustible materials, likely to be found in gassy noncoal mines or tunnels, to any surface for test. Operation under such conditions shall not ignite the flammable mixture.

§ 36.49 Tests of exhaust-gas dilution system.

The performance and adequacy of the exhaust-gas dilution system shall be determined in tests of the complete equipment. The engine, at temperature equilibrium, shall be operated in normal air as prescribed by MESA. Samples of the undiluted exhaust gas and of the diluted exhaust gas, at location(s) prescribed by MESA, shall be considered with the data obtained from the engine test (see § 36.43) to determine that the concentrations of carbon dioxide, carbon monoxide, oxides of nitrogen, and aldehydes in the diluted exhaust shall be below the required concentrations specified in § 36.25(f) (1).

§ 36.50 Tests of fuel tank.

The fuel tank shall be inspected and tested to determine whether: (a) It is fuel-tight, (b) the vent maintains atmospheric pressure within the tank, and (c) the vent and closure restrict the outflow of liquid fuel.

§ 36.51 Inspection and tests of headlight units.

Headlight units shall be inspected and tested according to the applicable requirements of Part 20 of Subchapter D of this chapter (Schedule 10, revised, the latest revision of which is Schedule 10C).

SUBCHAPTER N—METAL AND NONMETALLIC MINE SAFETY¹

PART 55—HEALTH AND SAFETY STANDARDS—METAL AND NON-METALLIC OPEN PIT MINES

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AUTHORITY: The provisions of this Part 55 issued under sec. 6, 80 Stat. 774; 30 U.S.C. 725.

SOURCE: The provisions of this Part 55 appear at 34 F.R. 12504, July 31, 1969, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 38 FR 18665, July 13, 1973.

§ 55.1 Purpose and scope.

The regulations in this part are promulgated pursuant to section 6 of the Federal Metal and Nonmetallic Mine Safety Act (30 U.S.C. 725) and prescribe health and safety standards for the purpose of the protection of life, the promotion of health and safety, and the prevention of accidents in open pit metal and nonmetallic mines which are subject to that Act. Each standard which is preceded by the word "Mandatory" is a mandatory standard. The violation of a mandatory standard will subject an operator to an order or notice under section 8 of the Act (30 U.S.C. 727).

§ 55.2 Definitions.

As used in this part:

"American Table of Distances" means the current edition of "The American Table of Distances for Storage of Explosives"

published by the Institute of Makers of Explosives.

"Approved" means tested and accepted for a specific purpose by a nationally recognized agency.

"Authorized person" means a person approved or assigned by mine management to perform a specific type of duty or duties or to be at a specific location or locations in the mine.

"Barricaded" means obstructed to prevent the passage of persons, vehicles, or flying materials.

"Berm" means a pile or mound of material capable of restraining a vehicle.

"Blasting agent" means any material consisting of a mixture of a fuel and oxidizer which—

(a) Is used or intended for use in blasting;

(b) Is not classed as an explosive by the Department of Transportation;

(c) Contains no ingredient classed as an explosive by the Department of Transportation; and

(d) Cannot be detonated by a No. 8 blasting cap when tested as recommended in Bureau of Mines Informational Circular 8179.

"Blasting area" means the area near blasting operations in which concussion or flying material can reasonably be expected to cause injury.

"Blasting cap" means a detonator containing a charge of detonating compound, which is ignited by electric current or the spark of a fuse. Used for detonating explosives.

"Blasting circuit" means electric circuits used to fire electric detonators or to ignite an igniter cord by means of an electric starter.

"Blasting switch" means a switch used to connect a power source to a blasting circuit.

"Capped fuse" means a length of safety fuse to which a detonator has been attached.

"Capped primer" means a package or cartridge of explosives which is specifically designed to transmit detonation to other explosives and which contains a detonator.

"Combustible" means capable of being ignited and consumed by fire.

"Company official" means a member of the company supervisory or technical staff.

¹ 35 F.R. 19244, Dec. 19, 1970.

"Competent person" means a person having abilities and experience that fully qualify him to perform the duty to which he is assigned.

"Detonating cord" or **"detonating fuse"** means a flexible cord containing a core of high explosives.

"Detonator" means a device containing a small detonating charge that is used for detonating an explosive, including, but not limited to, blasting caps, exploders, electric detonators, and delay electric blasting caps.

"Distribution box" means a portable apparatus with an enclosure through which an electric circuit is carried to one or more cables from a single incoming feed line, each cable circuit being connected through individual overcurrent protective devices.

"Electric blasting cap" means a blasting cap designed for and capable of being initiated by means of an electric current.

"Electrical grounding" means to connect with the ground to make the earth part of the circuit.

"Employee" means a person who works for wages or salary in the service of an employer.

"Employer" means a person or organization which hires one or more persons to work for wages or salary.

"Explosive" means any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion. Explosives include, but are not limited to black powder, dynamite, nitroglycerin, fulminate, ammonium nitrate when mixed with a hydrocarbon, and other blasting agents.

"Face or bank" means that part of any mine where excavating is progressing or was last done.

"Flammable" means capable of being easily ignited and of burning rapidly.

"Flash point" means the minimum temperature at which sufficient vapor is released by a liquid or solid to form a flammable vapor-air mixture at atmospheric pressure.

"Highway" means any public street, public alley, or public road.

"High potential" means more than 650 volts.

"Hoist" means a power driven windlass or drum used for raising ore, rock, or other material from a mine, and for lowering or raising men and material.

"Igniter cord" means a fuse, cordlike in appearance, which burns progressively along its length with an external

flame at the zone of burning, and is used for lighting a series of safety fuses in the desired sequence.

"Lay" means the distance parallel to the axis of the rope in which a strand makes one complete turn about the axis of the rope.

"Low potential" means 650 volts or less.

"Major electrical installation" means an assemblage of stationary electrical equipment for the generation, transmission, distribution or conversion of electrical power.

"Man trip" means a trip on which men are transported to and from a work area.

"Mill" includes any ore mill, sampling works, concentrator, and any crushing, grinding, or screening plant used at, and in connection with, an excavation or mine.

"Misfire" means the complete or partial failure of a blasting charge to explode as planned.

"Overburden" means material of any nature, consolidated or unconsolidated, that overlies a deposit of useful materials or ores that are to be mined.

"Permissible" means a machine, material, apparatus, or device which has been investigated, tested, and approved by the Bureau of Mines or the Mining Enforcement and Safety Administration and maintained in permissible condition.

"Potable" means fit for drinking.

"Powder chest" means a substantial, nonconductive portable container equipped with a lid and used at blasting sites for explosives other than blasting agents.

"Primer or Booster" means a package or cartridge of explosive which is designed specifically to transmit detonation to other explosives and which does not contain a detonator.

"Reverse-current protection" means a method or device used on direct-current circuits or equipment to prevent the flow of current in the reverse direction.

"Roll protection" means a framework safety canopy or similar protection for the operator when equipment overturns.

"Safety can" means an approved container, of not more than 5 gallons capacity, having a spring-closing lid and spout cover.

"Safety fuse" means a train of powder enclosed in cotton, jute yarn, and waterproofing compounds, which burns at a uniform rate; used for firing a cap containing the detonating compound which in turn sets off the explosive charge.

“Safety switch” means a sectionalizing switch that also provides shunt protection in blasting circuits between the blasting switch and the shot area.

“Scaling” means removal of insecure material from a face or highwall.

“Secondary safety connection” means a second connection between a conveyance and rope, intended to prevent the conveyance from running away or falling in the event the primary connection fails.

“Shaft” means a vertical or inclined shaft; a slope, incline, or winze.

“Stray current” means that portion of a total electric current that flows through paths other than the intended circuit.

“Substantial construction” means construction of such strength, material, and workmanship that the object will withstand all reasonable shock, wear, and usage, to which it will be subjected.

“Suitable” means that which fits, and has the qualities or qualifications to meet a given purpose, occasion, condition, function, or circumstances.

“Travelway” means a passage, walk or way regularly used and designated for persons to go from one place to another.

“Trip light” means a light displayed on the opposite end of a train from the locomotive or engine.

“Wet drilling” means the continuous application of water through the central hole of hollow drill steel to the bottom of the drill hole.

“Working place” means any place in or about a mine where work is being performed.

[34 F.R. 12504, July 31, 1969, as amended at 35 F.R. 3661, Feb. 25, 1970; 37 F.R. 14868, July 19, 1972]

§ 55.3 Ground control.

55.3-1 *Mandatory.* Standards for the safe control of pit walls, including the overall slope of the pit wall, shall be established and followed by the operator. Such standards shall be consistent with prudent engineering design, the nature of the ground and the kind of material and mineral mined, and the ensuring of safe working conditions according to the degree of slope. Mining methods shall be selected which will ensure wall and bank stability, including benching as necessary to obtain a safe overall slope.

55.3-2 *Mandatory.* Loose, unconsolidated material shall be stripped for a safe distance, but in no case less than 10 feet, from the top of pit or quarry walls, and the loose, unconsolidated material shall be sloped to the angle of repose.

55.3-3 *Mandatory.* To ensure safe operation, the width and height of benches shall be governed by the type of equipment to be used and the operation to be performed.

55.3-4 *Mandatory.* Safe means for scaling pit banks shall be provided. Hazardous banks shall be scaled before other work is performed in the hazardous bank area.

55.3-5 *Mandatory.* Men shall not work near or under dangerous banks. Overhanging banks shall be taken down immediately and other unsafe ground conditions shall be corrected promptly, or the areas shall be barricaded and posted.

55.3-6 *Mandatory.* Men shall approach from above loose rock and areas to be scaled and shall scale from a safe location.

55.3-7 *Baffleboards, screens, cribbing, or other suitable barriers should be provided where movement of material into cuts constitutes a safety hazard.*

55.3-8 *Mandatory.* The supervisor, or a competent person designated by him, shall examine working areas and faces for unsafe conditions at least at the beginning of each shift and after blasting. Any unsafe condition found shall be corrected before any further work is performed at the immediate area or face at which the unsafe condition exists.

55.3-9 *Mandatory.* Men shall examine their working places before starting work and frequently thereafter, and any unsafe condition shall be corrected.

55.3-10 *Banks, benches, and terrain sloping into the working areas should be examined after every rain, freeze, or thaw, before men work in such areas.*

55.3-11 *Before large boulders are drilled or broken, the boulder should be—*

- (a) Moved to a safe location; or
- (b) Positioned securely, and prevented from rolling and moving; or

(c) The men who do the drilling or breaking should be positioned so that movement of the boulder will not endanger the men.

55.3-12 *Mandatory.* Men shall not work between equipment and the pit wall or bank where the equipment may hinder escape from falls or slides of the bank.

55.3-13 *Rock-bolt installations, where used, should be in accordance with recommendations of the Mining Enforcement and Safety Administration or other competent agency.*

55.3-14 through 55.3-19 [Reserved]

[34 F.R. 12504, July 31, 1969, as amended at 35 F.R. 3661, Feb. 25, 1970; 35 F.R. 18588, Dec. 8, 1970]

§ 55.4 Fire prevention and control.

55.4-1 *Mandatory.* No person shall smoke or use an open flame—

(a) Where flammable solvents, liquids, fluids, or other flammable materials are stored, transported, handled, or used; or

(b) Where oil or grease is stored, transported, handled, or used, if smoking or the use of an open flame may cause a fire; or

(c) Within an unsafe distance of any area where smoking or the use of an open flame may cause a fire or an explosion.

55.4-2 *Mandatory.* Signs warning against smoking and open flames shall be posted so they can be readily seen in areas or places where fire or explosion hazards exist.

55.4-3 Areas surrounding flammable-liquid-storage tanks and electric substations and transformers should be kept free from grass (dry), weeds, underbrush, and other combustible materials for at least 25 feet in all directions.

55.4-4 *Mandatory.* Flammable liquids shall be stored in accordance with standards of the National Fire Protection Association or other recognized agencies approved by the Mining Enforcement and Safety Administration. Small quantities of flammable liquids drawn from storage shall be kept in appropriately labeled safety cans.

55.4-5 Unburied flammable-liquid storage tanks should be mounted securely on firm foundations. Outlet piping should be provided with flexible connections or other special fittings to prevent adverse effects from tank settling.

55.4-6 Buildings or rooms in which oil, grease, flammable liquids, or similar flammable materials are stored should be of fire-resistant construction and well-ventilated.

55.4-7 Means should be provided to confine, remove, control, or drain away spilled or flowing flammable liquids.

55.4-8 *Mandatory.* Fuel lines shall be equipped with valves to cut off fuel at the source and shall be located and maintained to minimize fire hazards.

55.4-9 *Mandatory.* All heat sources, including lighting equipment, capable of producing combustion shall be insulated or isolated from combustible materials.

55.4-10 *Mandatory.* Power wires and cables shall be adequately insulated where they pass through doors or walls or where they present a fire hazard.

55.4-11 *Mandatory.* Abandoned electrical circuits shall be deenergized and isolated so that they cannot become energized inadvertently.

55.4-12 Combustible materials, grease, lubricants, or flammable liquids should not be allowed to accumulate where they can create a fire hazard.

55.4-13 Materials such as oily waste and rags, which are subject to spontaneous combustion, should be placed in tightly covered metal containers until disposed of properly.

55.4-14 *Mandatory.* Solvents with flash points lower than 100° F. (38° C.) shall not be used for cleaning.

55.4-15 *Mandatory.* Solvents shall not be used near an open flame or other ignition source, or near any source of heat, or in an atmosphere that can elevate the temperature of the solvent above the flash point.

55.4-16 Drip pans should be provided to catch leakage or spillage when oil or flammable liquids are dispensed in a place or manner which may create a hazard.

55.4-17 Floors around drip pans should be covered with sand or other suitable non-combustible material and such sand or material should be replaced as necessary.

55.4-18 *Mandatory.* Oxygen cylinders shall not be stored in rooms or areas used or designated for oil or grease storage.

55.4-19 *Mandatory.* Gauges and regulators used with oxygen or acetylene cylinders shall be kept clean and free of oil and grease.

55.4-20 *Mandatory.* Battery-charging stations shall be located in well-ventilated areas.

55.4-21 *Mandatory.* Equipment powered by internal combustion engines (except diesel engines), where the fuel tank is an integral part of the equipment, shall be shut off and stopped before being fueled.

55.4-22 *Mandatory.* Each mine shall have available or be provided with suitable fire-fighting equipment adequate for the size of the mine.

55.4-23 *Mandatory.* Firefighting equipment which is provided on the mine property shall be strategically located, readily accessible, plainly marked, properly maintained, and inspected periodically. Records shall be kept of such inspections.

55.4-24 Fire extinguishers should be:

(a) Of the appropriate type for the particular fire hazard involved;

(b) Adequate in number and size for the particular fire hazard involved;

(c) Replaced immediately with fully charged extinguishers after any discharge is made from the extinguisher;

(d) Inspected, tested, and maintained at regular intervals according to the manufacturer's recommendations;

(e) Approved by the Underwriter's Laboratories, Inc., or other competent testing agency acceptable to the Mining Enforcement and Safety Administration.

55.4-25 Fire hydrants should be of a standard type. Adapters should be provided if necessary to fit the hose equipment of local fire departments. Wrenches or keys to open the valves should be readily available.

55.4-26 Water pipes, valves, outlets, hydrants, and hoses designated for firefighting purposes should be inspected every 3 months and tested annually.

55.4-27 Suitable fire extinguishers should be provided on self-propelled mobile equipment with enclosed cabinets.

55.4-28 [Reserved]

55.4-29 *Mandatory.* When welding or cutting, suitable precautions shall be taken to insure that smoldering metal or sparks do not result in a fire. Fire extinguishing equipment shall be immediately available at the site.

55.4-30 Employees should be trained in the use of firefighting equipment.

55.4-31 A firefighting organization should be established, equipped, and trained in firefighting; drills should be held at least twice a year.

55.4-32 [Reserved]

55.4-33 *Mandatory*. Valves on oxygen and acetylene tanks shall be kept closed when the contents are not being used.

55.4-34 *Mandatory*. Belt conveyors in locations where fire would create a hazard to personnel should be provided with safety switches to stop the drive pulley automatically in the event of excessive slippage.

55.4-35 through 55.4-39 [Reserved]

55.4-40 *Mandatory*. Fire alarm systems shall be provided and maintained in operating condition or adequate fire alarm procedures shall be established to warn promptly all persons endangered by a fire.

55.4-41 Two exits should be provided where men work or congregate.

55.4-42 through 55.4-47 [Reserved]

55.4-48 *Mandatory*. All employees shall be instructed at least once each calendar year on fire alarm signals and applicable procedures to be followed in case of fire or other emergency. Records of instruction shall be kept for two years.

[34 F.R. 12504, July 31, 1969, as amended at 35 F.R. 3661, Feb. 25, 1970; 35 F.R. 18588, Dec. 8, 1970; 37 FR 14369, July 19, 1972; 38 FR 23380, Aug. 29, 1973]

§ 55.5 Air quality.

55.5-1 *Mandatory*. Except as permitted by § 55.5-5:

(a) Except as provided in paragraph (b), the exposure to airborne contaminants shall not exceed, on the basis of a time weighted average, the threshold limit values adopted by the American Conference of Governmental Industrial Hygienists, as set forth and explained in the 1973 edition of the Conference's publication, entitled "TLV's Threshold Limit Values for Chemical Substances in Workroom Air Adopted by ACGIH for 1973," pages 1 through 54, which are hereby incorporated by reference and made a part hereof. This publication may be obtained from the American Conference of Governmental Industrial Hygienists by writing to the Secretary-Treasurer, P.O. Box 1937, Cincinnati, Ohio 45201, or may be examined in any Metal and Nonmetal Mine Health and Safety District or Subdistrict Office of the Mining Enforcement and Safety Administration. Excursions above the listed thresholds shall not be of a greater magnitude than is characterized as permissible by the Conference.

(b) The 8-hour time weighted average airborne concentration of asbestos dust to which employees are exposed shall not exceed 5 fibers per milliliter greater than 5 microns in length, as determined by the membrane filter method at 400-450 magnification (4 millimeter objective) phase contrast illumination. No employee shall be exposed at any time to airborne concentrations of asbestos fibers in excess of 10 fibers longer than 5 micrometers, per milliliter of air, as determined by the membrane filter method over a minimum sampling time of 15 minutes. "Asbestos" is a generic term for

a number of hydrated silicates that, when crushed or processed, separate into flexible fibers made up of fibrils. Although there are many asbestos minerals, the term "asbestos" as used herein is limited to the following minerals; chrysotile, amosite, crocidolite, anthophyllite asbestos, tremolite asbestos, and actinolite asbestos.

(c) Employees shall be withdrawn from areas where there is present an airborne contaminant given a "C" designation by the Conference and the concentration exceeds the threshold limit value listed for that contaminant.

55.5-2 *Mandatory*. Dust, gas, mist, and fume surveys shall be conducted as frequently as necessary to determine the adequacy of control measures.

55.5-3 *Mandatory*. Holes shall be collared and drilled wet, or other efficient dust control measures shall be used when drilling nonwater-soluble material. Efficient dust control measures shall be used when drilling water-soluble materials.

55.5-4 Muckpiles, haulage roads, rock transfer points, crushers, and other points where dust is produced in amounts sufficient to cause a health or safety hazard should be wetted down as often as necessary, unless dust is controlled adequately by other methods.

55.5-5 *Mandatory*. Control of employee exposure to harmful airborne contaminants shall be, insofar as feasible, by prevention of contamination, removal by exhaust ventilation, or by dilution with uncontaminated air. However, where accepted engineering control measures have not been developed or when necessary by the nature of work involved (for example, while establishing controls or occasional entry into hazardous atmospheres to perform maintenance or investigation), employees may work for reasonable periods of time in concentrations of airborne contaminants exceeding permissible levels if they are protected by appropriate respiratory protective equipment. Whenever respiratory protective equipment is used a program for selection, maintenance, training, fitting, supervision, cleaning, and use shall meet the following minimum requirements:

(a) Mining Enforcement and Safety Administration approved respirators which are applicable and suitable for the purpose intended shall be furnished, and employees shall use the protective equipment in accordance with training and instruction.

(b) A respirator program consistent with the requirements of ANSI Z88.2-1969, published by the American National Standards Institute and entitled "American National Standards Practices for Respiratory Protection ANSI Z88.2 1969," approved August 11, 1969, which is hereby incorporated by reference and made a part hereof. This publication may be obtained from the American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018, or

may be examined in any Metal and Non-metal Mine Health and Safety District or Subdistrict Office of the Mining Enforcement and Safety Administration.

(c) When respiratory protection is used in atmospheres immediately harmful to life, the presence of at least one other person with backup equipment and rescue capability shall be required in the event of failure of the respiratory equipment.

55.5-6 through 55.5-14 [Reserved]

[34 F.R. 12504, July 31, 1969, as amended at 35 F.R. 3661, Feb. 25, 1970; 35 F.R. 18588, Dec. 8, 1970; 39 FR 24316, July 1, 1974]

§ 55.6 Explosives.

The term "explosives" as used in this § 55.6 includes blasting agents. The standards in this section in which the term "explosives" appears are applicable to blasting agents (as well as to other explosives) unless blasting agents are expressly excluded.

STORAGE

55.6-1 *Mandatory.* Detonators and explosives other than blasting agents shall be stored in magazines.

55.6-2 *Mandatory.* Detonators shall not be stored in the same magazine with explosives.

55.6-3 Blasting agents may be stored with other explosives in the same magazine.

55.6-4 Safety fuse or detonating cord may be stored with explosives in the same magazine.

55.6-5 *Mandatory.* Areas surrounding magazines and facilities for the storage of blasting agents shall be kept clear of rubbish, brush, dry grass, or trees (other than live trees 10 or more feet tall), for a distance not less than 25 feet in all directions, and other unnecessary combustible materials for a distance of not less than 50 feet.

55.6-6 *Mandatory.* Smoking and open flames shall not be permitted within 25 feet of a place where explosives or detonators are stored.

55.6-7 Explosives, detonators, and related materials such as safety fuse and detonating cord should be stored in a manner to assure use of oldest stocks first.

55.6-8 *Mandatory.* Ammonium nitrate-fuel oil blasting agents shall be physically separated from other explosives, safety fuse, or detonating cord stored in the same magazine and in such a manner that oil does not contaminate the other explosives, safety fuse, or detonating cord.

55.6-9 Cases of explosives should not be stored on their ends or sides.

55.6-10 Cases of explosives should not be stacked more than 6 feet high.

55.6-11 through 55.6-19 [Reserved]

55.6-20 *Mandatory.* Magazines shall be:

(a) Located in accordance with the current American Table of Distances for storage of explosives.

(b) Detached structures located away from powerlines, fuel storage areas, and other possible sources of fire.

(c) Constructed substantially of noncombustible material or covered with fire-resistant material.

(d) Reasonably bullet resistant.

(e) Electrically bonded and grounded if constructed of metal.

(f) Made of nonsparking materials on the inside, including floors.

(g) Provided with adequate and effectively screened ventilation openings near the floor and ceiling.

(h) Kept locked securely when unattended.

(i) Posted with suitable danger signs so located that a bullet passing through the face of a sign will not strike the magazine.

(j) Used exclusively for storage of explosives or detonators and kept free of all extraneous materials.

(k) Kept clean and dry in the interior, and in good repair.

(l) Unheated, unless heated in a manner that does not create a fire or explosion hazard. Electrical heating devices shall not be used inside a magazine.

55.6-12 *Mandatory.* Prior to interior repair of facilities for storage of explosives, including blasting agents, all materials stored within the facility shall be removed and the interior cleaned. Prior to the exterior repair of such facilities, all materials stored within the facility shall be removed if there exists a possibility that such repairs may produce a spark or flame. The explosives removed from storage facilities to be repaired shall be placed either in other storage facilities appropriate for the storage of such materials under this section or a safe distance from the facilities under repair where they shall be properly guarded and protected until the repairs have been completed and the materials have been returned to storage within the facilities.

55.6-21 through 55.6-39 [Reserved]

TRANSPORTATION

55.6-40 *Mandatory.* Explosives and detonators shall be transported in separate vehicles unless separated by 4 inches of hardwood or the equivalent.

55.6-41 *Mandatory.* When explosives and detonators are hauled by trolley locomotive, covered, electrically-insulated cars shall be used.

55.6-42 *Mandatory.* Self-propelled vehicles used to transport explosives or detonators shall be equipped with suitable fire extinguishers.

55.6-43 *Mandatory.* Vehicles containing explosives or detonators shall be posted with proper warning signs.

55.6-44 *Mandatory.* When vehicles containing explosives or detonators are parked, the brakes shall be set, the motive power shut off, and the vehicle shall be blocked securely against rolling.

55.6-45 *Mandatory.* Vehicles containing explosives or detonators shall not be taken to a repair garage or shop for any purpose.

55.6-46 *Mandatory.* Vehicles containing explosives or detonators shall be maintained in good condition and shall be operated at a safe speed and in accordance with all safe operating practices.

55.6-47 *Mandatory.* Vehicles used to transport explosives, other than blasting agents, shall have substantially constructed bodies, no sparking metal exposed in the cargo space, and shall be equipped with suitable sides and tail gates; explosives shall not be piled higher than the side or end enclosures.

55.6-48 Explosives or detonators should be transported at times and over routes that expose a minimum number of persons.

55.6-49 Explosives or detonators in open-body vehicles should be covered with fire-retardant and water-repellant materials.

55.6-50 *Mandatory.* Other materials or supplies shall not be placed on or in the cargo space of a conveyance containing explosives, detonating cord or detonators, except for safety fuse and except for properly secured, nonsparking equipment used expressly in the handling of such explosives, detonating cord or detonators.

55.6-51 *Mandatory.* Explosives or detonators shall not be transported on locomotives.

55.6-52 *Mandatory.* No person shall smoke while transporting or handling explosives or detonators.

55.6-53 *Mandatory.* Only the necessary attendants shall ride on or in vehicles containing explosives or detonators.

55.6-54 *Mandatory.* Explosives or detonators shall not be transported on mantrips.

55.6-55 Explosives or detonators should be transported promptly without undue delays in transit.

55.6-56 *Mandatory.* Substantial nonconductive containers shall be used to carry explosives to blasting sites.

55.6-57 through 55.6-64 [Reserved]

55.6-65 *Mandatory.* Vehicles containing detonators or explosives, other than blasting agents, shall not be left unattended except in blasting areas where loading or charging is in progress.

55.6-66 through 55.60 [Reserved]

USE

55.6-90 *Mandatory.* Persons who use or handle explosives or detonators shall be experienced men who understand the hazards involved; trainees shall do such work only under the supervision of and in the immediate presence of experienced men.

55.6-91 *Mandatory.* Blasting operations shall be under the direct control of authorized persons.

55.6-92 *Mandatory.* Damaged or deteriorated explosives or detonators shall be destroyed in a safe manner.

55.6-93 [Reserved]

55.6-94 *Mandatory.* Holes to be blasted shall be charged as near to blasting time as

practical and such holes shall be blasted as soon as possible after charging has been completed. In no case shall the time elapsing between the completion of charging to the time of blasting exceed 72 hours unless prior approval has been obtained from the Mining Enforcement and Safety Administration.

55.6-95 *Mandatory.* No person shall smoke within 25 feet of explosives or detonators.

55.6-96 *Mandatory.* Explosives shall be kept separated from detonators until charging is started.

55.6-97 *Mandatory.* Capped primers shall be made up at the time of charging and as close to the blasting site as conditions allow.

55.6-98 A capped primer should be prepared so that the detonator is contained securely and is completely embedded within the explosive cartridge.

55.6-99 *Mandatory.* Only wooden or other nonsparking implements shall be used to punch holes in an explosive cartridge.

55.6-100 [Reserved]

55.6-101 *Mandatory.* No tamping shall be done directly on a capped primer.

55.6-102 *Mandatory.* Unused explosives and detonators shall be moved to a safe location as soon as charging operations are completed.

55.6-103 *Mandatory.* Areas in which charged holes are awaiting firing shall be guarded, or barricaded and posted, or flagged against unauthorized entry.

55.6-104 *Mandatory.* When safety fuse has been used, men shall not return to misfired holes for at least 30 minutes.

55.6-105 *Mandatory.* When electric blasting caps have been used, men shall not return to misfired holes for at least 15 minutes.

55.6-106 Faces and muckpiles should be examined for undetonated explosives after each blast and undetonated explosives found should be disposed of safely.

55.6-107 *Mandatory.* Holes shall not be drilled where there is danger of intersecting a charged or misfired hole.

55.6-108 *Mandatory.* Fuse and igniters shall be stored in a cool, dry place away from oils or grease.

55.6-109 Fuse should not be used if it has been kinked, bent sharply, or handled roughly in such a manner that the train of deflagration may be interrupted.

55.6-110 *Mandatory.* Fuses shall be cut and capped in safe, dry locations posted with "No Smoking" signs.

55.6-111 *Mandatory.* Blasting caps shall be crimped to fuses only with implements designed for that specific purpose.

55.6-112 *Mandatory.* The burning rate of the safety fuse in use at any time shall be measured, posted in conspicuous locations, and brought to the attention of all men concerned with blasting.

55.6-113 *Mandatory.* When firing from 1 to 15 blastholes with safety fuse ignited individually using hand-held lighters, the fuses shall be of such lengths to provide the

minimum burning time specified in the following table for a particular size round:

| <i>Number of holes in a round</i> | <i>Minimum burning time, minutes</i> |
|---------------------------------------|--|
| 1 ----- | 2 |
| 2-5 ----- | 2½ |
| 6-10 ----- | 3½ |
| 11-15 ----- | 5 |

In no case shall any 40-second-per-foot safety fuse less than 36 inches long or any 30-second-per-foot safety fuse less than 48 inches long be used.

55.6-114 *Mandatory*. At least two men shall be present when lighting fuses, and no man shall light more than 15 individual fuses. If more than 15 holes per man are to be fired, igniter cord and connectors or electric blasting shall be used.

55.6-115 [Revoked]

55.6-116 *Mandatory*. Fuse shall be ignited with hot-wire lighters, lead spitters, igniter cord, or other such devices designed for this purpose. Carbide lights shall not be used to light fuses.

55.6-117 *Mandatory*. Fuse shall not be ignited before the primer and the entire charge are securely in place.

55.6-118 Timing should be such that the fuse in the last hole to fire is burning within the hole before the first hole fires.

55.6-119 *Mandatory*. Electric detonators of different brands shall not be used in the same round.

55.6-120 *Mandatory*. Except when being tested with a blasting galvanometer:

(a) Electric detonators shall be kept shunted until they are being connected to the blasting line or wired into a blasting round.

(b) Wired rounds shall be kept shunted until they are being connected to the blasting line.

(c) Blasting lines shall be kept shunted until immediately before blasting.

55.6-121 Completely wired rounds should be tested with a blasting galvanometer before connections are made to the blasting line.

55.6-122 *Mandatory*. Permanent blasting lines shall be properly supported, insulated, and kept in good repair.

55.6-123 *Mandatory*. When electric detonators are used, charging shall be stopped immediately when the presence of static electricity or stray currents is detected; the condition shall be remedied before charging is resumed.

55.6-124 *Mandatory*. When electric detonators are used, charging shall be suspended in surface mining, shaft sinking, and tunneling and men withdrawn to a safe location upon the approach of an electrical storm.

55.6-125 *Mandatory*. If branch circuits are used when blasts are fired from power circuits, safety switches located at safe distances from the blast areas shall be provided in addition to the main blasting switch.

55.6-126 [Reserved]

55.6-127 *Mandatory*. Blasting switches shall be locked in the open position, except

when closed to fire and blast. Lead wires shall not be connected to the blasting switch until the shot is ready to be fired.

55.6-128 *Mandatory*. The key or other control to an electrical firing device shall be entrusted only to the person designated to fire the round or rounds.

55.6-129 *Mandatory*. Electric circuits from the blasting switches to the blast area shall not be grounded.

55.6-130 At least a 5-foot air gap should be provided between the blasting circuit and the power circuit.

55.6-131 *Mandatory*. Power sources shall be suitable for the number of electric detonators to be fired and for the type of circuits used.

55.6-132 Delay connectors for firing detonating cord should be treated and handled with the same safety precautions as blasting caps and electric detonators.

55.6-133 *Mandatory*. If any part of a blast is connected in parallel and is to be initiated from power lines or lighting circuits, the time of current flow shall be limited to a maximum of 25 milliseconds by incorporating an arcing control device in the blasting circuit or by interrupting the circuit with an explosive charge attached to one or both lead lines and initiated by a zero-delay electric blasting cap.

55.6-134 *Mandatory*. Tools used for opening metal or nailed wooden containers of explosives or detonators shall be of nonsparking materials.

55.6-135 *Mandatory*. Holes shall not be collared in bootlegs.

55.6-136 Black blasting powder should not be used for blasting except when a desired result cannot be obtained with another type of explosive such as in quarrying certain types of dimension stone.

55.6-137 *Mandatory*. In the use of black blasting powder:

(a) Containers shall not be opened in, or within 50 feet of any magazine; within any building in which a fuel-fired or exposed-element electric heater is in operation; where electrical or incandescent-particle sparks could result in powder ignition; or within 50 feet of any open flame.

(b) Granular powder shall be transferred from containers only by pouring.

(c) Spills of granular powder shall be cleaned up promptly with nonsparking equipment, contaminated powder shall be put into a container of water and its content disposed of promptly after the granules have disintegrated, or the spill area shall be flushed with a copious amount of water to completely disintegrate the granules.

(d) Containers of powder shall be kept securely closed at all times other than when the powder is being transferred from or into a container.

(e) Containers of powder transported by vehicles shall be in a wholly enclosed cargo space.

(f) Misfires shall be disposed of by: (1) Washing the stemming and powder charge from the borehole, and (2) removal and disposal of the initiator as a damaged explosive.

(g) Boreholes of shots that fire but fail to break, or fail to break properly, shall not be recharged for at least 12 hours.

55.6-138 through 55.6-158 [Reserved]

55.6-159 *Mandatory*. Powder chests shall be:

(a) Substantially constructed of non-sparking material on the inside.

(b) Posted with suitable warning signs.

(c) Located out of the blast area and out of the line of blasts.

(d) Emptied and their contents returned to the main magazine at the end of each shift unless the powder chest is located within the area continually attended by employees during shift changes.

(e) Separate for detonators and explosives unless separated by 4 inches of hard wood or the equivalent.

(f) Kept locked when unattended.

55.6-160 *Mandatory*. Ample warning shall be given before blasts are fired. All persons shall be cleared and removed from the blasting area unless suitable blasting shelters are provided to protect men endangered by concussion or flyrock from blasting.

55.6-161 *Mandatory*. If explosives are suspected of burning in a hole, all persons in the endangered area shall move to a safe location and no one shall return to the hole until the danger has passed, but in no case within 1 hour.

55.6-162 *Mandatory*. Lead wires and blasting lines shall not be strung across power conductors, pipelines, railroad tracks, or within 20 feet of bare powerlines. They shall be protected from sources of static or other electrical contact.

55.6-163 *Mandatory*. The double-trunkline or loop system shall be used in detonating-cord blasting.

55.6-164 *Mandatory*. Trunklines, in multiple-row blasts, shall make one or more complete loops, with crossties between loops at intervals of not over 200 feet.

55.6-165 [Reserved]

55.6-166 *Mandatory*. All detonating-cord knots shall be tight and all connections shall be kept at right angles to the trunklines.

55.6-167 Detonating cord should not be used if it has been kinked, bent, or otherwise handled in such a manner that the train of detonation may be interrupted.

55.6-168 *Mandatory*. Misfires shall be reported to the proper supervisor and shall be disposed of safely before any other work is performed in that blasting area.

55.6-169 Blastholes in "hothole" areas and holes that have been sprung should not be charged before tests have been made to ensure that the heat has dissipated to a safe extent.

55.6-170 *Mandatory*. Where electric blasting is to be performed, electric circuits to

equipment in the immediate area to be blasted shall be deenergized before electric detonators are connected to the blasting circuit; the power shall not be turned on until after the shots are fired or the blast is deactivated by removing or shunting each electric detonator.

55.6-171 through 55.6-174 [Reserved]

SENSITIZED AMMONIUM NITRATE BLASTING AGENTS

All of the standards in this § 55.6 in which the term "explosives" appears are applicable to blasting agents (as well as to other explosives) unless blasting agents are expressly excluded.

55.6-190 Sensitized ammonium nitrate blasting agents, and the components thereof prior to mixing, should be mixed and stored in accordance with the recommendations in Bureau of Mines Information Circular 8179 "Safety Recommendations for Sensitized Ammonium Nitrate Blasting Agents," or subsequent revisions.

55.6-191 [Reserved]

55.6-192 Adequate priming should be employed to guard against misfires, increased toxic fumes, and poor performance.

55.6-193 *Mandatory*. Where pneumatic loading is employed, before any type of blasting operation using blasting agents is put into effect, an evaluation of the potential hazard of static electricity shall be made. Adequate steps, including the grounding and bonding of the conductive parts of pneumatic loading equipment, shall be taken to eliminate the hazard of static electricity before blasting agent use is commenced.

55.6-194 *Mandatory*. Pneumatic loading equipment shall not be grounded to waterlines, air lines, rails, or the permanent electrical grounding systems.

55.6-195 *Mandatory*. Hoses used in connection with pneumatic loading machines shall be of the semiconductive type, having a total resistance low enough to permit the dissipation of static electricity and high enough to limit the flow of stray electric currents to a safe level. Wire-countered hose shall not be used because of the potential hazard from stray electric currents.

55.6-196 Reasonable precautions should be exercised to exclude water from blasting agents other than slurries.

55.6-197 [Reserved]

55.6-198 *Mandatory*. Plastic tubes shall not be used as hole liners if blasting agents are loaded pneumatically into holes containing an electric detonator.

55.6-199 [Reserved]

55.6-200 *Mandatory*. Vehicles used to transport blasting agents shall have substantially constructed bodies, no zinc or copper exposed in the cargo space and shall be freely vented. Blasting agents shall not be piled higher than the side or end enclosures of open-body vehicles. If an enclosed screw conveyor is used to discharge blasting agents

from the vehicle the conveyor shall be protected against excessive internal pressure and excessive frictional heat.

[34 F.R. 12504, July 31, 1969, as amended at 35 F.R. 3661, Feb. 25, 1970; 35 F.R. 18583, Dec. 8, 1970; 37 FR 14368, July 19, 1972; 39 FR 24317, July 1, 1974]

§ 55.7 Drilling.

55.7-1 Equipment that is to be used during a shift should be inspected each shift by a competent person. Equipment defects affecting safety should be reported.

55.7-2 *Mandatory.* Equipment defects affecting safety shall be corrected before the equipment is used.

55.7-3 *Mandatory.* The drilling area shall be inspected for hazards before starting the drilling operations.

55.7-4 *Mandatory.* Men shall not be on a mast while the drill-bit is in operation unless they are provided with a safe platform from which to work and they are required to use safety belts to avoid falling.

55.7-5 *Mandatory.* Drill crews and others shall stay clear of augers or drill stems that are in motion. Persons shall not pass under or step over a moving stem or auger.

55.7-6 Receptacles or racks should be provided for drill steel stored on drills.

55.7-7 Tools and other objects should not be left loose on the mast or drill platform.

55.7-8 *Mandatory.* When a drill is being moved from one drilling area to another, drill steel, tools, and other equipment shall be secured and the mast placed in a safe position.

55.7-9 The drill helper, when used, should be in sight of the operator at all times while the drill is being moved to a new location.

55.7-10 *Mandatory.* In the event of power failure, drill controls shall be placed in the neutral position until power is restored.

55.7-11 *Mandatory.* The drill stem shall be resting on the bottom of the hole or on the platform with the stem secured to the mast before attempts are made to straighten a crossed cable on a reel.

55.7-12 *Mandatory.* While in operation, drills shall be attended at all times.

55.7-13 *Mandatory.* Drill holes large enough to constitute a hazard shall be covered or guarded.

55.7-14 Men operating or working near jackhammers or jackleg drills and other drilling machines should position themselves so that they will not be struck or lose their balance if the drill steel breaks or sticks.

55.7-15 Men should not drill from positions that hinder their access to the control levers, or from insecure footing or staging, or from atop equipment not designed for this purpose.

55.7-16 Bit wrenches or bit knockers should be used to remove detachable bits from drill steel.

55.7-17 Starter steels should be used when collaring holes with handheld drills.

55.7-18 *Mandatory.* Men shall not hold the drill steel while collaring holes, or rest their hands on the chuck or centralizer while drilling.

55.7-19 Air should be turned off and bled from the hose before handheld drills are moved from one working area to another.

55.7-20 through 55.7-24 [Reserved]

[34 F.R. 12504, July 31, 1969, as amended at 35 F.R. 3663, Feb. 25, 1970; 35 F.R. 18583, Dec. 8, 1970]

§ 55.8 Rotary jet piercing.

55.8-1 Jet drills should be provided with:
(a) A system to pressurize operators cabs;
(b) A protective cover over the oxygen flow indicator.

55.8-2 *Mandatory.* Safety chains or other suitable locking devices shall be provided across connections to and between high pressure oxygen hose lines of 1-inch inside diameter or larger.

55.8-3 *Mandatory.* A suitable means of protection shall be provided for the employee when lighting the burner.

55.8-4 With equipment requiring refueling at locations other than fueling stations, a system for fueling from the ground without spill should be provided.

55.8-5 *Mandatory.* Men shall not smoke and open flames shall not be used in the vicinity of the oxygen storage and supply lines. Signs warning against smoking and open flames shall be posted in these areas.

55.8-6 *Mandatory.* The oxygen intake coupling on jet-piercing drills shall be constructed so that only the oxygen hose can be coupled to it.

55.8-7 *Mandatory.* The combustion chamber of a jet drill stem which has been sitting unoperated in a drill hole shall be flushed with a suitable solvent after the stem is pulled up.

[34 FR 12504, July 31, 1969, as amended at 39 FR 24317, July 1, 1974]

§ 55.9 Loading, hauling, dumping.

55.9-1 Equipment that is to be used during a shift should be inspected by a competent person each shift. Equipment defects affecting safety should be reported.

55.9-2 *Mandatory.* Equipment defects affecting safety shall be corrected before the equipment is used.

55.9-3 *Mandatory.* Powered mobile equipment shall be provided with adequate brakes.

55.9-4 Powered mobile haulage equipment should be provided with audible warning devices. Lights should be provided on both ends when required.

55.9-5 *Mandatory.* Operators shall be certain by signal or other means, that all persons are clear before starting or moving equipment.

55.9-6 *Mandatory.* When the entire length of a conveyor is visible from the starting switch, the operator shall visually check to make certain that all persons are in the clear before starting the conveyor. When the entire

length of the conveyor is not visible from the starting switch, a positive audible or visible warning system shall be installed and operated to warn persons that the conveyor will be started.

55.9-7 *Mandatory*. Unguarded conveyors with walkways shall be equipped with emergency stop devices or cords along their full length.

55.9-8 Adequate protection should be provided at dumping locations where men may be endangered by falling material.

55.9-9 *Mandatory*. Operators shall sound warning before starting trains, when trains approach crossings or other trains on adjacent tracks, and where vision is obscured.

55.9-10 Operators' cabs should be constructed to permit operators to see without straining and should be reasonably comfortable.

55.9-11 *Mandatory*. Cab windows shall be of safety glass or equivalent, in good condition and shall be kept clean.

55.9-12 *Mandatory*. Cabs of mobile equipment shall be kept free of extraneous materials.

55.9-13 *Mandatory*. Adequate backstops or brakes shall be installed on inclined-conveyor drive units to prevent conveyors from running in reverse if a hazard to personnel would be caused.

55.9-14 *Mandatory*. No person shall be permitted to ride a power-driven chain, belt, or bucket conveyor, unless the belt is specifically designed for the transportation of persons.

55.9-15 *Mandatory*. Unless the operator is otherwise protected, slushers in excess of 10 horsepower shall be provided with backlash guards. All slushers shall be equipped with rollers, and drum covers, and anchored securely before slushing operations are started.

55.9-16 Roadbeds, rails, joints, switches, frogs, and other elements on railroads should be designed, installed, and maintained in a safe manner consistent with the speed and type of haulage.

55.9-17 Equipment operating speeds should be prudent and consistent with conditions of roadway, grades, clearance, visibility, traffic, and the type of equipment used.

55.9-18 Dust control measures should be taken where dust significantly reduces visibility of equipment operators.

55.9-19 Track guardrails, lead rails, and frogs should be protected or blocked so as to prevent a person's foot from becoming wedged.

55.9-20 *Mandatory*. Positive-acting stop-blocks, derail devices, track skates, or other adequate means shall be installed wherever necessary to protect persons from runaway or moving railroad equipment.

55.9-21 Vehicles should follow at a safe distance; passing should be limited to areas of adequate clearance and visibility.

55.9-22 *Mandatory*. Berms or guards shall be provided on the outer bank of elevated roadways.

55.9-23 *Mandatory*. Trackless haulage equipment shall be operated under power control at all times.

55.9-24 *Mandatory*. Mobile equipment operators shall have full control of the equipment while it is in motion.

55.9-25 *Mandatory*. Dippers, buckets, loading booms, or heavy suspended loads shall not be swung over the cabs of haulage vehicles until the drivers are out of the cabs and in safe locations, unless the trucks are designed specifically to protect the drivers from falling material.

55.9-26 [Reserved]

55.9-27 *Mandatory*. When an operator is present, men shall notify him before getting on or off equipment.

55.9-28 *Mandatory*. Switch throws shall be installed so as to provide adequate clearance for switchmen.

55.9-29 Operators should sit facing the direction of travel while operating equipment with dual controls.

55.9-30 *Mandatory*. Men shall not work or pass under the buckets or booms of loaders in operation.

55.9-31 *Mandatory*. When traveling between work areas, the equipment shall be secured in the travel position.

55.9-32 *Mandatory*. Dippers, buckets, scraper blades, and similar movable parts shall be secured or lowered to the ground when not in use.

55.9-33 *Mandatory*. Men shall not ride in dippers, shovel buckets, forks, clamshells, or in the beds of ore haulage trucks for the purpose of transportation.

55.9-34 Cars or trucks should be loaded in such manner as to minimize spillage while en route to a dumping site.

55.9-35 Movements of two or more pieces of rail equipment operating independently on the same track should be regulated by an efficient signal block, telephone, or radio system; movements on complex haulage systems should be adequately controlled.

55.9-36 *Mandatory*. Electrically-powered mobile equipment shall not be left unattended unless the master switch is in the off position, all operating controls are in the neutral position, and the brakes are set or other equivalent precautions are taken against rolling.

55.9-37 *Mandatory*. Mobile equipment shall not be left unattended unless the brakes are set. The wheels shall be turned into a bank or rib, or shall be blocked, when such equipment is parked on a grade.

55.9-38 [Reserved]

55.9-39 *Mandatory*. Men shall not get on or off moving equipment, except that trainmen may get on or off of slowly moving trains.

55.9-40 *Mandatory*. Men shall not ride on top of loaded haulage equipment.

55.9-41 *Mandatory*. Only authorized persons shall be permitted to ride on trains or locomotives and they shall ride in a safe position.

55.9-42 Rocker-bottom or bottom-dump cars should be equipped with positive locking devices.

55.9-43 *Mandatory*. Men shall not ride outside the cabs and beds of mobile equipment.

55.9-44 [Reserved]

55.9-45 *Mandatory*. Equipment which is to be hauled shall be loaded and protected so as to prevent sliding or spillage.

55.9-46 [Reserved]

55.9-47 *Mandatory*. Parked railcars, unless held effectively by brakes shall be blocked securely.

55.9-48 *Mandatory*. Railroad cars with braking systems, when in use, shall be equipped with effective brake shoes.

55.9-49 Long material should be transported by a method designed to prevent any overhang from creating a hazard.

55.9-50 *Mandatory*. Railcars shall not be left on side tracks unless ample clearance is provided for traffic on adjacent tracks.

55.9-51 *Mandatory*. Persons shall not go over, under, or between cars unless the train is stopped and the motorman has been notified and the notice acknowledged.

55.9-52 *Mandatory*. Inability of a motorman to clearly recognize his brakeman's signals when the train is under the direction of the brakeman shall be construed by the motorman as a stop signal.

55.9-53 Dumping locations and haulage roads should be kept reasonably free of water, debris, and spillage.

55.9-54 *Mandatory*. Berms, bumper blocks, safety hooks, or similar means shall be provided to prevent overtravel and overturning at dumping locations.

55.9-55 Where the ground at a dumping place may fail to support the weight of a loaded dump truck, trucks should be dumped back from the edge of the bank.

55.9-56 Where necessary, bumper blocks or the equivalent should be provided at all track dead ends.

55.9-57 Grizzlies, grates, and other sizing devices at dump and transfer points should be anchored securely in place.

55.9-58 *Mandatory*. If truck spotters are used, they shall be well in the clear while trucks are backing into dumping positions and dumping; lights shall be used at night to direct trucks.

55.9-59 *Mandatory*. Public and permanent railroad crossings shall be posted with warning signs or signals, or shall be guarded when trains are passing and shall be planked or otherwise filled between the rails.

55.9-60 *Mandatory*. Where overhead clearance is restricted, warning devices shall be installed and the restricted area shall be conspicuously marked.

55.9-61 *Mandatory*. Stockpile and muckpile faces shall be trimmed to prevent hazards to personnel.

55.9-62 *Mandatory*. Rocks too large to be handled safely shall be broken before loading.

55.9-63 Ramps and dumps should be of solid construction, of ample width, have

ample side clearance and headroom, and be kept reasonably free of spillage.

55.9-64 *Mandatory*. Chute-loading installations shall be designed so that the men pulling chutes are not required to be in a hazardous position while loading cars.

55.9-65 Cars should not be coupled or uncoupled manually from the inside of curves unless the railroad and cars are so designed to eliminate any hazard from coupling or uncoupling cars from inside of curves.

55.9-66 [Reserved]

55.9-67 *Mandatory*. Facilities used to transport men to and from work areas shall not be overcrowded.

55.9-68 *Mandatory*. Lights, flares, or other warning devices shall be posted when parked equipment creates a hazard to vehicular traffic.

55.9-69 *Mandatory*. Tires shall be deflated before repairs on them are started and adequate means shall be provided to prevent wheel locking rims from creating a hazard during tire inflation.

55.9-70 A tow bar should be used to tow heavy equipment. A safety chain should be used in conjunction with the tow bar.

55.9-71 Traffic rules, signals, and warning signs should be standardized at each mine and posted.

55.9-72 through 55.9-80 [Reserved]

55.9-81 Trucks, shuttlecars, and front-end loaders should be equipped with emergency brakes separate and independent of the regular braking system when generally available for a particular class of equipment.

55.9-82 Haulage trucks with cabs should be equipped with heaters, air conditioners, or both, maintained in good condition, where needed because of extreme weather conditions.

55.9-83 *Mandatory*. Where possible at least 30 inches continuous clearance from the farthest projection of moving railroad equipment shall be provided on at least one side of the tracks; all places where it is not possible to provide 30-inch clearance shall be marked conspicuously.

55.9-84 Traffic rules, signals, and warning signs should be standardized at each mine, and posted.

55.9-85 *Mandatory*. Supplies, materials, and tools other than small handtools shall not be transported with men in mantrip vehicles unless such vehicles are specifically designed to make such transportation safe.

55.9-86 Any load extending more than 4 feet beyond the rear of the vehicle body should be marked clearly with a red flag by day and a red light at night.

55.9-87 through 55.9-94 [Reserved]

[34 F.R. 12504, July 31, 1969, as amended at 35 F.R. 3663, Feb. 25, 1970; 37 FR 14370, July 19, 1972]

§ 55.10 Aerial tramways.

55.10-1 Buckets should not be overloaded, and feed should be regulated to prevent spillage.

55.10-2 Carriers, including loading and unloading mechanisms, should be inspected each shift; brakes should be inspected daily; ropes and supports should be inspected as recommended by the manufacturer or as physical conditions warrant. Records of rope maintenance and inspections should be kept.

55.10-3 *Mandatory*. Any hazardous defects shall be corrected before the equipment is used.

55.10-4 Positive - action - type brakes should be provided on aerial tramways.

55.10-5 Track cable connections should be designed to offer minimum obstruction to the passage of wheels.

55.10-6 Guards should be installed to prevent swaying buckets from hitting towers.

55.10-7 *Mandatory*. Guard nets or other suitable protection shall be provided where tramways pass over roadways, walkways, or buildings.

55.10-8 *Mandatory*. Persons other than maintenance men shall not ride aerial tramways unless the following features are provided:

(a) Two independent brakes, each capable of holding the maximum load;

(b) Direct communication between terminals;

(c) Power drives with emergency power available in case of primary power failure;

(d) Buckets equipped with positive locks to prevent accidental tripping or dumping.

55.10-9 *Mandatory*. Men shall not ride loaded buckets.

55.10-10 *Mandatory*. Where possible, aerial tramways shall not be started until the operator has ascertained that everyone is in the clear.

[34 F.R. 12504, July 31, 1969, as amended at 35 F.R. 3663, Feb. 25, 1970]

§ 55.11 Travelways.

55.11-1 *Mandatory*. Safe means of access shall be provided and maintained to all working places.

55.11-2 *Mandatory*. Crossovers, elevated walkways, elevated ramps, and stairways shall be of substantial construction, provided with handrails, and maintained in good condition. Where necessary, toeboards shall be provided.

55.11-3 *Mandatory*. Ladders shall be of substantial construction and maintained in good condition.

55.11-4 Portable straight ladders should be provided with nonslip bases, should be placed against a safe backing, and set on secure footing.

55.11-5 *Mandatory*. Fixed ladders shall be anchored securely and installed to provide at least 3 inches of toe clearance.

55.11-6 *Mandatory*. Fixed ladders shall project at least 3 feet above landings, or substantial handholds shall be provided above the landings.

55.11-7 Wooden members of ladders should not be painted.

55.11-8 Ladderways, stairways, walkways, and ramps should be kept free of loose rock and extraneous materials.

55.11-9 *Mandatory*. Walkways with outboard railings shall be provided wherever persons are required to walk alongside elevated conveyor belts. Inclined railed walkways shall be nonskid or provided with cleats.

55.11-10 Vertical clearance above stair steps should be a minimum of 7 feet or adequate warning should be provided to indicate an impaired clearance.

55.11-11 Men climbing or descending ladders should face the ladders and have both hands free for climbing.

55.11-12 *Mandatory*. Openings above, below, or near travelways through which men or materials may fall shall be protected by railings, barriers, or covers. Where it is impractical to install such protective devices, adequate warning signals shall be installed.

55.11-13 *Mandatory*. Crossovers shall be provided where it is necessary to cross conveyors.

55.11-14 *Mandatory*. Moving conveyors shall be crossed only at designated crossover points.

55.11-15 Slippery walkways should be provided with cleats and handrails and/or ropes.

55.11-16 *Mandatory*. Regularly used walkways and travelways shall be sanded, salted, or cleared of snow and ice as soon as practicable.

55.11-17 Fixed ladders should not incline backwards at any point unless provided with backguards.

55.11-18 through 55.11-24 [Reserved]

55.11-25 Fixed ladders should be offset and have substantial railed landings at least every 30 feet unless backguards are provided.

55.11-26 Steep fixed ladders (70° to 90° from the horizontal), 30 feet or more in length, should be provided with backguards, cages, or equivalent protection, starting at a point not more than 7 feet from the bottom of the ladder.

55.11-27 *Mandatory*. Scaffolds and working platforms shall be of substantial construction and provided with handrails and maintained in good condition. Floor boards shall be laid properly and the scaffolds and working platform shall not be overloaded. Working platforms shall be provided with toeboards when necessary.

55.11-28 through 55.11-34 [Reserved]

[34 F.R. 12504, July 31, 1969, as amended at 35 F.R. 3664, Feb. 25, 1970; 37 FR 14370, July 19, 1972]

§ 55.12 Electricity.

55.12-1 *Mandatory*. Circuits shall be protected against excessive overload by fuses or circuits breakers of the correct type and capacity.

55.12-2 *Mandatory*. Electric equipment and circuits shall be provided with switches or other controls. Such switches or controls shall be of approved design and construction and shall be properly installed.

55.12-3 *Mandatory.* Individual overload protection or short-circuit protection shall be provided for the trailing cables of mobile equipment.

55.12-4 Power wires and cables should have adequate current-carrying capacity and should be protected from mechanical injury.

55.12-5 Neither crawler-mounted nor rubber-tired equipment should run over trailing cables, unless the cables are properly bridged or protected.

55.12-6 Distribution boxes should be provided with disconnect switches.

55.12-7 *Mandatory.* Trailing-cable and power-cable connections to junction boxes shall not be made or broken under load.

55.12-8 Power wires and cables should be insulated adequately where they pass into or out of electrical compartments.

55.12-9 [Reserved]

55.12-10 Telephone and low-potential electric signal wires should be protected from contacting energized powerlines.

55.12-11 *Mandatory.* High-potential transmission cables shall be covered, insulated, or placed according to acceptable electrical codes to prevent contact with low-potential circuits.

55.12-12 The potential on bare signal wires accessible to personal contact should not exceed 40 volts.

55.12-13 Splices in power cables, including ground conductors, where provided, should be:

(a) Mechanically strong with adequate electrical conductivity;

(b) Effectively insulated and sealed to exclude moisture;

(c) Provided with mechanical protection and electrical conductivity as near as possible to that of the original.

55.12-14 *Mandatory.* Shovel trailing cables shall not be moved with the shovel dipper unless cable slings or sleds are used.

55.12-15 [Reserved]

55.12-16 *Mandatory.* Electrical equipment shall be deenergized before work is done on such equipment. Switches shall be locked out or other measures taken which shall prevent the equipment from being energized without the knowledge of the individuals working on it. Such locks, or preventative devices shall be removed only by the persons who installed them or by authorized personnel.

55.12-17 *Mandatory.* Power circuits shall be deenergized before work is done on such circuits unless hot-line tools are used. Suitable warning signs shall be posted by the individuals who are to do the work. Switches shall be locked out or other measures taken which shall prevent the power circuits from being energized without the knowledge of the individuals working on them. Such locks, signs, or preventative devices shall be removed only by the person who installed them or by authorized personnel.

55.12-18 *Mandatory.* Principal power switches shall be labeled to show which units they control, unless identification can be made readily by location.

55.12-19 At least 3 feet of clearance should be provided around all parts of stationary electric equipment or switchgear where access or travel is necessary.

55.12-20 *Mandatory.* Dry wooden platforms, insulating mats, or other electrically-nonconductive material shall be kept in place at all switchboards and power-control switches where shock hazards exist. However, metal plates on which a person normally would stand and which are kept at the same potential as the grounded, metal, non-current-carrying parts of the power switches to be operated may be used.

55.12-21 *Mandatory.* Suitable danger signs shall be posted at all major electrical installations.

55.12-22 Areas containing major electrical installations should be entered only by authorized persons.

55.12-23 *Mandatory.* Electrical connections and resistor grids that are difficult or impractical to insulate shall be guarded, unless protection is provided by location.

55.12-24 Reverse-current protection should be provided at storage-battery charging stations.

55.12-25 *Mandatory.* All metal enclosing or encasing electrical circuits shall be grounded or provided with equivalent protection. This requirement does not apply to battery-operated equipment.

55.12-26 *Mandatory.* Metal fencing and metal buildings enclosing transformers and switchgear shall be grounded.

55.12-27 *Mandatory.* Frame grounding or equivalent protection shall be provided for mobile equipment powered through trailing cables.

55.12-28 *Mandatory.* Continuity and resistance of grounding systems shall be tested immediately after installation.

55.12-29 Electric equipment and wiring should be inspected by a competent person as often as necessary to assure safe operating conditions.

55.12-30 *Mandatory.* When a potentially dangerous condition is found it shall be corrected before equipment or wiring is energized.

55.12-31 Electric motors, switches, and controls exposed to damaging dust or water should be of dusttight or watertight construction.

55.12-32 *Mandatory.* Inspection and cover plates on electrical equipment and junction boxes shall be kept in place at all times except during testing or repairs.

55.12-33 *Mandatory.* Hand-held electric tools shall not be operated at high potential voltages.

55.12-34 Portable extension lights and other lights that may present a shock or burn hazard should be guarded.

55.12-35 Lamp sockets exposed to the weather should be of a weather-proof type.

55.12-36 *Mandatory.* Fuses shall not be removed or replaced by hand in an energized circuit, and they shall not otherwise be removed or replaced in an energized circuit

unless equipment and techniques especially designed to prevent electrical shock are provided and used for such purpose.

55.12-37 *Mandatory*. Fuse tongs or hot line tools shall be used when fuses are removed or replaced in high-potential circuits.

55.12-38 Trailing cables should be clamped to machines in a manner to protect the cables from damage and to prevent strain on the electrical connections.

55.12-39 Surplus trailing cables to shovels, cranes, and similar equipment should be stored in cable boats or on reels mounted on the equipment or otherwise protected from mechanical damage.

55.12-40 *Mandatory*. Operating controls shall be installed so that they can be operated without danger of contact with energized conductors.

55.12-41 *Mandatory*. Switches and starting boxes shall be of safe design and capacity.

55.12-42 Both rails should be bonded or welded at every joint and rails should be cross-bonded at least every 200 feet if the track serves as the return trolley circuit.

55.12-43 [Reserved]

55.12-44 *Lightning-arrester grounds* should be connected to earth at least 10 feet from the track or mine return circuit.

55.12-45 *Mandatory*. Overhead high-potential powerlines shall be installed as specified by the National Electrical Code.

55.12-46 [Reserved]

55.12-47 *Mandatory*. Guy wires of poles supporting high-voltage transmission lines shall meet the requirements for grounding or insulator protection of the National Electrical Safety Code, Part 2, entitled "Safety Rules for the Installation and Maintenance of Electric Supply and Communication Lines," (also referred to as National Bureau of Standards Handbook 81, Nov. 1, 1961) and Supplement 2 thereof issued March 1968, which are hereby incorporated by reference and made a part hereof. These publications and documents may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, or may be examined in any Metal and Non-metal Mine Health and Safety District or Subdistrict Office of the Mining Enforcement and Safety Administration.

55.12-48 *Mandatory*. Telegraph, telephone, or signal wires shall not be installed on the same crossarm with power conductors. When carried on poles supporting powerlines, they shall be installed as specified by the National Electrical Code.

55.12-49 Men should not stand on the ground in the vicinity of an electrically powered shovel or other similar heavy equipment during an electrical storm.

55.12-50 Trolley wires should be installed at least 7 feet above rails, where height permits, and aligned and supported to minimize sway and sag.

55.12-51 Trolley-wire hangers should be spaced so that the wire will not sag dangerously between hangers and so that the wire

may be detached from any one hanger without creating a shock hazard.

55.12-52 Trolley wires and trolley-feeder wires should be provided with sectioning switches near the beginning of all branch lines and at mantrip stations unless suitably covered mantrip cars are used.

55.12-53 Ground wires for lighting circuits powered from trolley wires should be connected securely to the ground-return circuit.

55.12-54 Tools and supplies should be carried in the hands and not on the shoulders when men travel near bare power conductors.

55.12-55 through 55.12-64 [Reserved]

55.12-65 *Mandatory*. Powerlines, including trolley wires, and telephone circuits shall be protected against short circuits and lightning.

55.12-66 *Mandatory*. Where metallic tools or equipment can come in contact with trolley wires or bare powerlines, the lines shall be guarded or deenergized.

55.12-67 *Mandatory*. Transformers shall be totally enclosed, or shall be placed at least 8 feet above the ground, or installed in a transformer house, or surrounded by a substantial fence at least 6 feet high and at least 3 feet from any energized parts, casings, or wiring.

55.12-68 *Mandatory*. Transformer enclosures shall be kept locked against unauthorized entry.

55.12-69 [Reserved]

55.12-71 *Mandatory*. When equipment must be moved or operated near energized high-voltage powerlines (other than trolley lines) and the clearance is less than 10 feet, the lines shall be deenergized or other precautionary measures shall be taken.

55.12-72 through 55.12-79 [Reserved]

[34 F.R. 12504, July 31, 1969, as amended at 35 F.R. 3664, Feb. 25, 1970; 35 F.R. 4515, Mar. 13, 1970; 35 F.R. 18588, Dec. 8, 1970; 37 FR 14370, July 19, 1972; 39 FR 24317, July 1, 1974]

§ 55.13 Compressed air and boilers.

GENERAL

55.13-1 *Mandatory*. All boilers and pressure vessels shall be constructed, installed, and maintained in accordance with the standards and specifications of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code.

55.13-2 through 55.13-9 [Reserved]

COMPRESSED AIR

55.13-10 Air compressors should be equipped with automatic temperature-activated shutoff mechanisms set for 400° F., or with fusible plugs installed in the compressor discharge lines as near the compressors as possible. Fusible plugs should melt at temperatures 50° less than the flash points of the lubricating oils.

55.13-11 Compressors and compressed-air receivers should be equipped with automatic pressure-release valves, pressure gauges, and drain valves.

55.13-12 Compressor air intakes should be installed to insure that only clean, uncontaminated air enters the compressors.

55.13-13 Compressed-air receivers should be drained of moisture and oil at least once each day.

55.13-14 Compressed-air receivers should have inspection openings which should be manholes when the tanks are over 36 inches in diameter.

55.13-15 Compressed-air receivers and other pressure vessels should be inspected internally at least once a year by qualified inspectors; records of such inspection should be kept.

55.13-16 Compressors should be operated and lubricated in accordance with the manufacturer's recommendations.

55.13-17 Compressor discharge pipes should be cleaned periodically.

55.13-18 Safety devices on compressed-air systems should be checked daily.

55.13-19 *Mandatory.* Repairs involving the pressure system of compressors, receivers, or compressed-air-powered equipment shall not be attempted until the pressure has been bled off.

55.13-20 *Mandatory.* At no time shall compressed air be directed toward a person. When compressed air is used, all necessary precautions shall be taken to protect persons from injury.

55.13-21 *Mandatory.* Except where automatic shutoff valves are used, safety chains or other suitable locking devices shall be used at connections to machines of high-pressure hose lines of 3/4-inch inside diameter or larger, and between high-pressure hose lines of 3/4-inch inside diameter or larger, where a connection failure would create a hazard.

55.13-23 through 55.13-29 [Reserved]
BOILERS

55.13-30 Boilers should be equipped with guarded, well-maintained water gages and pressure gages placed so that they can be observed easily. Water gages and pipe passages to the gages should be kept clean and free of scale and rust.

55.13-31 Boilers should be equipped with automatic pressure-relief valves; valves should be opened manually at least once each week to determine that they will function properly.

55.13-32 Boiler installations should be provided with safety devices, acceptable to the Mining Enforcement and Safety Administration, to protect against hazards of flame-outs, fuel interruptions, and low water level.

55.13-33 Blowoff valves should be piped outside the building and should have outlets so located or protected that persons passing by, near, or under them will not be scalded.

55.13-34 Boilers should be inspected internally at least once a year by licensed in-

spectors; records of such inspections should be kept.

[34 F.R. 12504, July 31, 1969, as amended at 35 F.R. 3664, Feb. 25, 1970; 37 FR 14370, July 19, 1972]

§ 55.14 Use of equipment.

GUARDS

55.14-1 *Mandatory.* Gears; sprockets; chains; drive, head, tail, and takeup pulleys; flywheels; couplings; shafts; sawblades; fan inlets; and similar exposed moving machine parts which may be contacted by persons, and which may cause injury to persons shall be guarded.

55.14-2 *Mandatory.* Overhead belts shall be guarded if the whipping action from a broken belt would be hazardous to persons below.

55.14-3 Guards at conveyor-drive, -head, and -tail pulleys should extend a distance sufficient to prevent a person from reaching behind the guard and becoming caught between the belt and the pulley.

55.14-4 Openings where conveyors pass through walls or floors should be guarded.

55.14-5 Protruding set screws on revolving parts should be guarded.

55.14-6 *Mandatory.* Except when testing the machinery, guards shall be securely in place while machinery is being operated.

55.14-7 Guards should be sufficiently strong and maintained to provide the required protection.

55.14-8 *Mandatory.* Stationary grinding machines other than special bit grinders shall be equipped with:

- (a) Peripheral hoods (less than 90° throat openings) capable of withstanding the force of a bursting wheel;
- (b) Adjustable tool rests set as close as practical to the wheel;
- (c) Safety washers.

55.14-9 *Mandatory.* Grinding wheels shall be operated within the specifications of the manufacturer of the wheel.

55.14-10 *Mandatory.* Hand-held power tools, other than rock drills; shall be equipped with controls requiring constant hand or finger pressure to operate the tools or shall be equipped with friction or other equivalent safety devices.

55.14-11 Guards or shields should be provided in areas where flying or falling materials present a hazard.

55.14-12 Industrial vehicles such as fork-lift trucks, front-end loaders, and bulldozers should be provided with roll protection when necessary to protect the operator.

55.14-13 *Mandatory.* Fork-lift trucks, front-end loaders, and bulldozers shall be provided with substantial canopies when necessary to protect the operator.

55.14-14 *Mandatory.* Face shields or goggles, in good condition, shall be worn when operating a grinding wheel.

55.14-15 through 55.14-24 [Reserved]

METHODS AND PROCEDURES

55.14-25 Machinery and equipment should be maintained properly.

55.14-26 *Mandatory.* Unsafe equipment or machinery shall be removed from service immediately.

55.14-27 Machinery and equipment should be operated only by authorized competent persons.

55.14-28 Adequate clearance should be provided at machine installations.

55.14-29 *Mandatory.* Repairs or maintenance shall not be performed on machinery until the power is off and the machinery is blocked against motion, except where machinery-motion is necessary to make adjustments.

55.14-30 *Mandatory.* Men shall not work on or from a piece of mobile equipment in a raised position until it has been blocked in place securely. This does not preclude the use of equipment specifically designed as elevated mobile-work-platforms.

55.14-31 *Mandatory.* Drive belts shall not be shifted while in motion unless the machines are provided with mechanical shifters.

55.14-32 *Mandatory.* Belts, chains, and ropes shall not be guided onto power-driven moving pulleys, sprockets, or drums with the hands except on slow-moving equipment especially designed for hand-feeding.

55.14-33 *Mandatory.* Pulleys of conveyors shall not be cleaned manually while the conveyor is in motion.

55.14-34 *Mandatory.* Belt dressing shall not be applied manually while belts are in motion unless an aerosol-type dressing is used.

55.14-35 *Mandatory.* Machinery shall not be lubricated while in motion where a hazard exists, unless equipped with extended fittings or cups.

55.14-36 Tools and equipment should be used only for the purpose and within the capacity for which they were intended and designed.

55.14-37 through 55.14-44 [Reserved]

55.14-45 *Mandatory.* Welding operations shall be shielded and well-ventilated.

55.14-46 through 55.14-54 [Reserved]

[34 F.R. 12504, July 31, 1969, as amended at 35 F.R. 3664, Feb. 25, 1970]

§ 55.15 Personal protection.

55.15-1 *Mandatory.* Adequate first-aid materials, including stretchers and blankets, shall be provided at places convenient to all working areas. Water or neutralizing agents shall be available where corrosive chemicals or other harmful substances are stored, handled, or used.

55.15-2 *Mandatory.* All persons shall wear suitable hard hats when in or around a mine or plant where falling objects may create a hazard.

55.15-3 *Mandatory.* All persons shall wear suitable protective footwear when in or around an area of a mine or plant where a

hazard exists which could cause an injury to the feet.

55.15-4 *Mandatory.* All persons shall wear safety glasses, goggles, or face shields or other suitable protective devices when in or around an area of a mine or plant where a hazard exists which could cause injury to unprotected eyes.

55.15-5 *Mandatory.* Safety belts and lines shall be worn when men work where there is danger of falling; a second person shall tend the lifeline when bins, tanks, or other dangerous areas are entered.

55.15-6 Protective clothing, rubber gloves, and goggles or face-shields should be worn by persons handling substances that are corrosive, toxic, or injurious to the skin.

55.15-7 *Mandatory.* Protective clothing or equipment and face-shields or goggles shall be worn when welding, cutting, or working with molten metal.

55.15-8 Snug-fitting clothing should be worn around moving equipment and machinery.

55.15-9 Protective gloves should be worn by employees handling materials which may cause injury.

55.15-10 Gloves should not be worn where they could create a hazard by becoming entwined or caught in moving parts of machinery.

55.15-11 Finger rings should not be worn while working in or around a mine or plant.

55.15-13 Where there is a danger of a vehicle overturning and where roll protection is provided, seatbelts should be used.

55.15-14 through 55.15-19 [Reserved]

55.15-20 *Mandatory.* Life jackets or belts shall be worn where there is danger from falling into water.

[34 F.R. 12504, July 31, 1969, as amended at 35 F.R. 3664, Feb. 25, 1970; 35 F.R. 18589, Dec. 8, 1970; 39 F.R. 24317, July 1, 1974]

§ 55.16 Materials storage and handling.

55.16-1 Materials should be stored and stacked in a manner which minimizes stumbling or fall-of-material hazards.

55.16-2 Men working on surge piles or storage piles should not walk or stand immediately above a reclaiming area during reclaiming.

55.16-3 *Mandatory.* Materials that can create hazards if accidentally liberated from their containers shall be stored in a manner that minimizes the dangers.

55.16-4 *Mandatory.* Hazardous materials shall be stored in containers of a type approved for such use by recognized agencies; such containers shall be labeled appropriately.

55.16-5 *Mandatory.* Compressed and liquid gas cylinders shall be secured in a safe manner.

55.16-6 *Mandatory.* Valves on compressed gas cylinders shall be protected by covers when being transported or stored, and by a safe location when the cylinders are in use.

55.16-7 Hitches and slings used to hoist materials should be designed and used properly for the particular material handled.

55.16-8 Taglines should be attached to suspended materials that require steadying or guidance.

55.16-9 *Mandatory.* Men shall stay clear of suspended loads.

55.16-10 Materials should not be dropped from an elevation unless the drop area is guarded or sufficient warning is given.

55.16-11 *Mandatory.* Men shall not ride on loads being moved by cranes or derricks, nor shall they ride the hoisting hooks unless such method eliminates a greater hazard.

55.16-12 Substances that react violently or liberate dangerous fumes when mixed should be stored in such a manner that they cannot come in contact with each other.

55.16-13 Only men wearing protective equipment should stand near pots or ladles when molten material is being handled; warning should be given before a pour is made or the pot is moved.

55.16-14 *Mandatory.* Operator-carrying overhead cranes shall be provided with:

- (a) Bumpers at each end of each rail;
- (b) Automatic switches to halt uptravel of the blocks before they strike the hoist;
- (c) Effective audible warning signals within easy reach of the operator;
- (d) A means to lockout the disconnect switch.

55.16-15 *Mandatory.* No person shall work from or travel on the bridge of an overhead crane unless the bridge is provided with substantial footwalks with toeboards and railings the length of the bridge.

55.16-16 Forklift trucks should be moved with the load in a low position and should descend ramps with the load behind.

55.16-17 through 55.16-34 [Reserved]

[34 F.R. 12504, July 31, 1969, as amended at 35 F.R. 3664, Feb. 25, 1970]

§ 55.17 Illumination.

55.17-1 *Mandatory.* Illumination sufficient to provide safe working conditions shall be provided in and on all surface structures, paths, walkways, stairways, switch panels, loading and dumping sites, and work areas.

55.17-2 through 55.17-9 [Reserved]

§ 55.18 Safety programs.

55.18-1 The employer should establish a definite, effective, and continually functioning safety program and make every attempt to prevent accidents and increase safety. Employees should actively participate in the safety program.

55.18-2 Regular safety inspections should be made by company officials or safety committees. Written reports should be made of the findings and actions recommended or taken; this information should be made available to the employees.

55.18-3 Serious accidents, whether resulting in injury or not, should be investi-

gated to determine the cause and the means of preventing recurrence. Records of these investigations should be kept and the information should be made available to the employees.

55.18-4 Company safety regulations pertinent to the various operations should be published or posted for employee information.

55.18-5 All employees and officials should be familiar with company, State, and Federal health and safety regulations applicable to their jobs.

55.18-6 *Mandatory.* New employees shall be indoctrinated in safety rules and safe work procedures.

55.18-7 Inexperienced employees should be assigned to work with experienced men until such employees have acquired the necessary skills to perform their duties safely.

55.18-8 Each working place should be visited by a supervisor or a designated person at least once each shift and more frequently as necessary to insure that work is being done in a safe manner.

55.18-9 A competent person should be in charge at all times when men are working.

55.18-10 *Mandatory.* Selected supervisors shall be trained in first aid. First aid training shall be made available to all interested employees.

55.18-11 All supervisors and employees should be trained in accident prevention.

55.18-12 *Mandatory.* Emergency telephone numbers shall be posted at appropriate telephones.

55.18-13 Where telephone service is not available, emergency communications should be provided to the nearest point of assistance.

55.18-14 *Mandatory.* Arrangements shall be made in advance for obtaining emergency medical assistance and transportation for injured persons.

55.18-15 through 55.18-19 [Reserved]

55.18-20 *Mandatory.* No employee shall be assigned, or allowed, or be required to perform work alone in any area where hazardous conditions exist that would endanger his safety unless he can communicate with others, can be heard, or can be seen.

55.18-21 through 55.18-24 [Reserved]

[34 F.R. 12504, July 31, 1969, as amended at 35 FR 3664, Feb. 25, 1970; 38 FR 23380, Aug. 29, 1973]

§ 55.19 Man hoisting.

The hoisting standards in this section apply to those hoists and appurtenances used for hoisting men. However, where men may be endangered by hoists and appurtenances used solely for handling ore, rock, and materials, the appropriate standards should be applied.

Hours

55.19-1 *Mandatory.* Hoists shall have rated capacities consistent with the loads handled and the recommended safety factors of the ropes used.

55.19-2 *Mandatory.* Hoists shall be anchored securely.

55.19-3 *Mandatory.* Belt, rope, or chains shall not be used to connect driving mechanisms to man hoists.

55.19-4 *Mandatory.* Any hoist used to hoist men shall be equipped with a brake or brakes which shall be capable of holding its fully loaded cage, skip, or bucket at any point in the shaft.

55.19-5 *Mandatory.* The operating mechanism of the clutch of every man-hoist drum shall be provided with a locking mechanism, or interlocked electrically or mechanically with the brake to prevent accidental withdrawal of the clutch.

55.19-6 *Mandatory.* Automatic hoists shall be provided with devices that automatically apply the brakes in the event of power failure.

55.19-7 *Mandatory.* All man hoists shall be provided with devices to prevent overtravel. When utilized in shafts exceeding 100 feet in depth, such hoists shall also be provided with overspeed devices.

55.19-8 Friction hoists shall be provided with synchronizing mechanisms that recalibrate the overtravel devices and position indicators to correct for rope creep or stretch.

55.19-9 *Mandatory.* An accurate and reliable indicator of the position of the cage, skip, bucket, or cars in the shaft shall be provided.

55.19-10 *Mandatory.* Hoist controls shall be placed or housed so that the noise from machinery or other sources will not prevent hoistmen from hearing signals.

55.19-11 Flanges on drums should extend radially a minimum of two rope diameters and not less than 4 inches beyond the last wrap.

55.19-12 Where grooved drums are used, the grooves should be of the proper size and pitch for the ropes used.

55.19-13 *Mandatory.* Where any diesel or similar fuel-injection engine is used to power a hoist, the engine shall be equipped with a damper or other cutoff in its air intake system. The control handle shall be clearly labeled to indicate that its intended function is for emergency stopping only:

55.19-14 through 55.19-19 [Reserved]

WIRE ROPE

55.19-20 The United States of America Standards Institute specifications cited in "Wire Rope for Mines," M11.1—1960, or the latest revision thereof, should be used as a guide in the selection, installation, and maintenance of wire ropes used for hoisting, except in those instances where the recommendations cited herein are more stringent.

55.19-21 *Mandatory.* The following static-load safety factors shall be used for selecting ropes to be used for hoisting men and for determining when such ropes shall be removed from man hoists:

| Length of rope in shaft (feet) | Minimum factor of safety (new rope) | Minimum factor of safety (remove) |
|--------------------------------|-------------------------------------|-----------------------------------|
| 500 or less..... | 8 | 6.4 |
| 501-1,000..... | 7 | 5.8 |
| 1,001-2,000..... | 6 | 5.0 |
| 2,001-3,000..... | 5 | 4.3 |
| 3,001 or more..... | 4 | 3.6 |

55.19-22 At least three wraps of rope should be left on the drum when the conveyance is at the bottom of the hoistway. This provision does not apply to friction hoists.

55.19-23 The end of the rope at the drum should make at least one full turn on the drum shaft, or a spoke of the drum in the case of a free drum, and should be fastened securely by means of rope clips or clamps. This standard does not apply to friction hoists.

55.19-24 *Mandatory.* The rope shall be attached to the load by the thimble-and-clip method, the socketing method, or other approved method. If the socketing method is employed, zinc or its equivalent shall be used. The use of Babbitt metal or lead for socketing wire ropes is prohibited. If the thimble-and-clip method is used, the following shall be observed:

(a) The rope shall be attached to the load by passing one end around an oval thimble that is attached to the load bending the end back so that it is parallel to the long or "live" end of the rope and fastening the two parts of the rope together with clips.

(b) The U-bolt of each clip shall encircle the short or "dead" end of the rope and the distance between clips shall not be less than the figures given in the accompanying table.

(c) As a minimum, the following number of clips or equivalent shall be used for various diameters of six-strand, 19-wire, plow-steel ropes:

(Follow manufacturer's recommendations for other kinds of wire rope and clips.)

| Diameter of rope, inches | Number of clips | Center-to-center spacing of clips, inches |
|--------------------------|-----------------|---|
| 3/4..... | 4 | 4 3/4 |
| 7/8..... | 4 | 5 1/4 |
| 1..... | 4 | 6 |
| 1 1/4..... | 5 | 6 3/4 |
| 1 1/2..... | 5 | 7 1/4 |
| 1 3/4..... | 6 | 8 1/4 |
| 1 7/8..... | 6 | 9 |
| 2..... | 6 | 9 3/4 |
| 2 1/4..... | 7 | 10 1/4 |
| 2 1/2..... | 8 | 11 1/4 |
| 2 3/4..... | 8 | 12 |
| 3..... | 8 | 13 |
| 3 1/4..... | 8 | 14 |

(d) For all ropes less than three-quarter inch in diameter at least four clips or equivalent shall be used.

(e) When special conditions require the attachment of a sling to the hoisting cable to handle equipment in the shaft, the sling shall be attached by clips or equivalent in accordance with the table in paragraph (c) of this standard.

55.19-25 New ropes should be broken in, in accordance with the manufacturer's recommendations.

55.19-26 *Mandatory.* Safety device attachments to hoist ropes shall be selected, installed, and maintained according to manufacturers' specifications to minimize internal corrosion and weakening of the hoist rope.

55.19-27 Where possible, conveyances attached to single ropes used to hoist men should be provided with secondary safety connections.

55.19-28 through 55.19-34 [Reserved]

HEADFRAMES AND SHEAVES

55.19-35 Headframes should be designed and constructed to withstand pulls by the hoists greater than the breaking strengths of the hoist ropes.

55.19-36 Headframes should be high enough to provide at least 15 feet of clearance between the bottom of the sheave or drum and the uppermost part of the highest rope connection of the conveyance when the conveyance is at its uppermost manlandings.

55.19-37 Fleet angles should not exceed 1½ degrees.

55.19-38 *Mandatory.* Platforms with toe-boards and handrails shall be provided around elevated head sheaves.

55.19-39 Diameters of head sheaves and hoist drums should conform to the following specifications:

| Rope construction | Diameter of sheave and drum | |
|--------------------------------------|-----------------------------|----------------------------|
| | Recommended | Minimum |
| | <i>Times rope diameter</i> | <i>Times rope diameter</i> |
| 6 x 7 classification..... | 72 | 42 |
| 6 x 19..... | 45 | 30 |
| 6 x 37..... | 27 | 18 |
| 6 x 25 type B, flattened strand..... | 45 | 30 |
| 6 x 27 type H, flattened strand..... | 45 | 30 |
| 6 x 30 type G, flattened strand..... | 45 | 30 |
| 18 x 7 classification..... | 51 | 34 |

55.19-40 Head, idler, knuckle, and curve sheaves should have grooves that support the ropes properly. Before installing new ropes, the grooves should be inspected and where necessary machined to the proper contour and the proper groove diameter.

55.19-41 through 55.19-44 [Reserved]

CONVEYANCES

55.19-45 *Mandatory.* Man cages and skips used for hoisting or lowering employees or other persons in any vertical shaft or any incline-shaft with an angle of inclination of

forty-five (45) degrees from the horizontal, shall be covered with a metal bonnet.

55.19-46 through 55.19-48 [Reserved]

55.19-49 *Mandatory.* Buckets shall not be used to hoist men except during shaft sinking operations, inspection, maintenance, and repairs.

55.19-50 *Mandatory.* Buckets used to hoist men during vertical shaft sinking operations shall have:

(a) A crosshead the height of which is at least 1½ times its width if used on wooden guides or a minimum height of 4 feet if used on rope or steel guides.

(b) Overhead protection when the shaft depth exceeds 50 feet.

(c) Sufficient depth or a suitably designed platform to transport men safely in a standing position.

(d) Devices to prevent accidental dumping where the bucket is supported by a ball attached to its lower half.

55.19-51 [Reserved]

55.19-52 [Reserved]

55.19-53 *Mandatory.* In shaft sinking where a platform is suspended by wire ropes, such ropes shall have an approved rating for the suspended load.

55.19-54 *Mandatory.* Where rope guides are used in shafts they shall be of locked coil construction.

HOISTING PROCEDURES

55.19-55 *Mandatory.* When a manually operated hoist is used, a qualified hoistman shall remain within hearing of the telephone or signal device at all times while any person is underground.

55.19-56 When automatic hoisting is used, a qualified hoistman should be in attendance on the premises while any person is underground.

55.19-57 Hoistmen should be physically fit and should undergo yearly examinations to determine their continued fitness; certification to this effect should be available at the mine.

55.19-58 *Mandatory.* Only experienced hoistmen shall operate the hoist except in cases of emergency and in the training of new hoistmen.

55.19-59 [Reserved]

55.19-60 Hoistmen should use extreme caution when hoisting or lowering men.

55.19-61 The safe speed for hoisting men should be determined for each shaft, and this speed should not be exceeded. Men should not be hoisted at a speed faster than 2,500 feet per minute, except in an emergency.

55.19-62 Maximum acceleration and deceleration should not exceed 6 feet per second per second.

55.19-63 Only authorized persons should be in hoist rooms.

55.19-64 [Reserved]

55.19-65 *Mandatory.* Conveyances shall not be lowered by the brakes alone except during emergencies.

55.19-66 Management should designate the maximum number of men permitted to

ride on a trip at one time; this limit should be posted on each landing.

55.19-67 Authorized persons should be in charge of all man trips.

55.19-68 Men should enter, ride, and leave conveyances in an orderly manner.

55.19-69 *Mandatory.* Men shall not enter or leave conveyances which are in motion or after a signal to move the conveyance has been given to the hoistman.

55.19-70 *Mandatory.* Cage doors or gates shall be closed while men are being hoisted; they shall not be opened until the cage has come to a stop.

55.19-71 *Mandatory.* Men shall not ride in skips or buckets with muck, supplies, materials, or tools other than small hand tools.

55.19-72 When combinations of cages and skips are used, the skips should be empty while men are being transported.

55.19-73 *Mandatory.* Rock or supplies shall not be hoisted in the same shaft as men during shift changes, unless the compartments and dumping bins are partitioned to prevent spillage into the cage compartment.

55.19-74 Men should not ride the ball, rim, or bonnet of any shaft conveyance, except where necessary for the inspection and maintenance of the shaft and lining.

55.19-75 *Mandatory.* Open hooks shall not be used to hoist buckets or other conveyances.

55.19-76 When men are hoisted, bucket speeds should not exceed 500 feet a minute, and should not exceed 200 feet a minute when within 100 feet of a landing.

55.19-77 *Mandatory.* Buckets shall be stopped about 15 feet from the shaft bottom to await a signal from one of the crew on the bottom for further lowering.

55.19-78 Buckets should be stopped after being raised 3 feet when men are hoisted from the bottom; a second hoisting signal should be given after the bucket has been stabilized. Hoisting should be at a minimum speed and the bellicord should be attended constantly until the crosshead has been engaged.

55.19-79 *Mandatory.* Where mine cars are hoisted by cage or skip, means for blocking cars shall be provided at all landings and also on the cage.

55.19-80 *Mandatory.* When tools, timbers, or other materials are being lowered or raised in a shaft by means of a bucket, skip, or cage, they shall be secured or so placed that they will not strike the sides of the shaft.

55.19-81 Conveyances not in use should be released and raised or lowered at least 10 feet from the floor of the landing.

55.19-82 through 55.19-89 [Reserved]

SIGNALING

55.19-90 *Mandatory.* There shall be at least two effective approved methods of signaling between each of the shaft stations and the hoist room, one of which shall be a telephone or speaking tube.

55.19-91 Hoistmen should not accept hoisting instructions by telephone unless the

regular signaling systems are out of order. During such an emergency one person should be designated to direct movement of the conveyance.

55.19-92 *Mandatory.* A method shall be provided to signal the hoist operator from cages or other conveyances at any point in the shaft.

55.19-93 A standard code of hoisting signals should be adopted and used at each mine.

55.19-94 *Mandatory.* A legible signal code shall be posted prominently in the hoist house within easy view of the hoistman, and at each place where signals are given or received.

55.19-95 Hoisting signal devices should be maintained within easy reach of men on the shaft bottom during sinking operation.

55.19-96 *Mandatory.* Any person responsible for receiving or giving signals for cages, skips, and man trips when men or materials are being transported shall be familiar with the posted signaling code.

55.19-97 through 55.19-99 [Reserved]

SHAFTS

55.19-100 *Mandatory.* Shaft landings shall be equipped with substantial safety gates so constructed that materials will not go through or under them; gates shall be closed except when loading or unloading shaft conveyances.

55.19-101 *Mandatory.* Positive stopblocks or a derail switch shall be installed on all tracks leading to a shaft collar or landing.

55.19-102 Guides should be provided in each hoisting compartment in shafts inclined more than 45° from the horizontal.

55.19-103 Dumping facilities should be so constructed as to minimize spillage into the shaft.

55.19-104 Adequate clearance should be maintained at shaft stations to allow men to pass safely and to allow materials to be handled safely.

55.19-105 *Mandatory.* A safe means of passage around open shaft compartments shall be provided on landings with more than one entrance to the shaft.

55.19-106 Shaft timbers should be kept clean of rocks and other loose material.

55.19-107 *Mandatory.* Hoistmen shall be informed when men are working in a compartment affected by that hoisting operation and a "Men Working in Shaft" sign shall be posted at the hoist.

55.19-108 *Mandatory.* When men are working in a shaft "Men Working in Shaft" signs shall be posted at all devices controlling hoisting operations that may endanger such men.

55.19-109 *Mandatory.* Shaft inspection and repair work in vertical shafts shall be performed from substantial platforms equipped with bonnets or equivalent overhead protection.

55.19-110 *Mandatory.* A substantial bulkhead or equivalent protection shall be provided above men at work deepening a shaft.

55.19-111 Substantial fixed ladders should be maintained as near the shaft bottom as practical during shaft-sinking operations. Chain, wire rope, or other extension ladders should be used from the fixed ladder to the shaft bottom.

55.19-112 through 55.19-119 [Reserved]

INSPECTION AND MAINTENANCE

55.19-120 *Mandatory.* A systematic procedure of inspection, testing, and maintenance of shafts and hoisting equipment shall be developed and followed. If it is found or suspected that any part is not functioning properly, the hoist shall not be used until the malfunction has been located and repaired or adjustments have been made.

55.19-121 Complete records should be kept of installation, lubrication, inspection, tests, and maintenance of shafts and hoisting equipment.

55.19-122 Parts used to repair hoists should have properties equal to or better than the original parts; replacement parts should be designed to fit the original installation.

55.19-123 Ropes should be kept well lubricated from end to end as recommended by the manufacturer.

55.19-124 On other than friction hoists, ropes should be cut off and reconnected to the conveyance as often as necessary to assure adequate inspection of rope condition and to distribute wear of the rope. At least 6 feet should be cut from the rope above the highest connection; this portion should be examined carefully for corrosion, damage, wear, and fatigue by the rope manufacturer or a competent agency.

55.19-125 Hoisting ropes wound in multiple layers should be cut off and repositioned on the drum at regular intervals as necessary to distribute wear of the rope. The length of the cutoff at the drum end should not be an even multiple of the circumference of the drum.

55.19-126 Ropes should be calipered at regular intervals as necessary to effectively determine the rate of wear and damage. Caliper measurements should be taken:

- (a) Immediately above the socket or clips and above the safety connection;
- (b) Where the ropes rest on the sheaves;
- (c) Where the ropes leave the drums when the conveyances are at the regular stopping points;
- (d) Where a layer of rope begins to overlap another layer on the drum.

55.19-127 Electromagnetic or other non-destructive rope testing systems should be used only as supplements to and not as substitutes for recommended inspections and tests.

55.19-128 *Mandatory.* Ropes shall not be used for hoisting when they have:

- (a) More than six broken wires in any lay;
- (b) Crown wires worn to less than 65 percent of the original diameter;
- (c) A marked amount of corrosion or distortion;

(d) A combination of similar factors individually less severe than those above but which in aggregate might create an unsafe condition.

55.19-129 *Mandatory.* Hoistmen shall examine their hoists and shall test overtravel, deadman controls, position indicators, and braking mechanisms at the beginning of each shift.

55.19-130 Empty conveyances should be operated up and down shafts at least one round trip before hoisting men after any shaft or equipment repairs and before regular man trips are hoisted or lowered.

55.19-131 Rope and conveyance-connections to conveyances should be inspected daily.

55.19-132 Safety catches should be inspected daily; drop tests should be made at the time of installation. Every 2 months the cage should be rested on chairs or proper blocking to check the operation or activation of the safety catches by allowing the rope to slacken suddenly.

55.19-133 Shafts should be inspected at least weekly.

55.19-134 Sheaves should be inspected daily and kept properly lubricated.

55.19-135 Rollers used in inclined shafts should be lubricated, properly aligned, and kept in good repair.

[34 F.R. 12504, July 31, 1969, as amended at 35 F.R. 3665, Feb. 25, 1970; 35 F.R. 18589, Dec. 8, 1970; 37 FR 14370, July 19, 1972; 39 FR 24317, July 1, 1974]

§ 55.20 Miscellaneous.

55.20-1 *Mandatory.* Intoxicating beverages and narcotics shall not be permitted or used in or around mines. Persons under the influence of alcohol or narcotics shall not be permitted on the job.

55.20-2 *Mandatory.* Potable water shall be available to all employees during working hours.

55.20-3 Good housekeeping should be practiced in and around a mine.

55.20-4 Men should not engage in horseplay.

55.20-5 *Mandatory.* Carbon tetrachloride shall not be used.

55.20-6 Protruding nails which may cause injury should be removed or completely bent over.

55.20-7 Employees should be constantly alert to the potential of accidents on their jobs.

55.20-8 Toilet facilities should be provided at convenient locations and should be kept clean and sanitary.

55.20-9 *Mandatory.* Dusts suspected of being explosive shall be tested for explosibility. If tests prove positive, appropriate control measures shall be taken.

55.20-10 *Mandatory.* If failure of a water or silt retaining dam will create a hazard, it shall be of substantial construction and inspected at regular intervals.

55.20-11 through 55.20-29 [Reserved]

[34 F.R. 12504, July 31, 1969, as amended at 35 F.R. 3665, Feb. 25, 1970]

§ 55.22 Savings provision.

55.22-1 through 55.22-3 [Reserved]

§ 55.24 Variances.

55.24-1 Except as provided in subsection 55.24-7, the Administrator, Mining Enforcement and Safety Administration, may, in accordance with the provisions of this § 55.24, permit a variance from a mandatory standard in this part. The Administrator may permit such a variance only by means of a written decision specifically describing the variance permitted and the restrictions and conditions to be observed and finding that, in the circumstances, the health and safety of all persons which the mandatory standard is designed to protect will be no less assured under the variance permitted. The Administrator may, in writing delegate the authority conferred by this § 55.24 to the Deputy Administrator, Mining Enforcement and Safety Administration, the Assistant Administrator, Metal and Nonmetal Mine Health and Safety, and the Metal and Nonmetal Mine Health and Safety District Managers.

55.24-2 An application for a variance must be in writing and filed with the Administrator, Mining Enforcement and Safety Administration, Department of the Interior, Washington, D.C. 20240. A copy of the application must be mailed or otherwise delivered to the District Manager of the Metal and Nonmetal Mine Health and Safety District of the Mining Enforcement and Safety Administration in which the mine is located and a copy must be mailed or otherwise delivered to the State agency responsible for health and safety in the mine.

55.24-3 Before an application for a variance is filed, the person making such application shall give notice of the contents of the application to all persons employed in the area of the mine that would be affected by the variance if granted. Such notice may be given by the delivery of a copy to each such employee individually; or by the delivery of a copy of the application to an organization, agency or individual authorized by the employees to represent them; or by posting a copy on a bulletin board at the mine office or in some other appropriate place at the mine adequate to give notice to the employees. An application will be rejected if it does not show that the notice required by this subsection has been given.

55.24-4 An application for a variance must:

(a) Specify the mandatory standard or standards from which the variance is requested;

(b) Describe the variance requested;

(c) Identify the areas of the mine that would be affected by the variance:

(d) Give the reasons why the standard or standards cannot or should not be strictly complied with;

(e) Specify the time period for which the variance is requested;

(f) Describe the work assignments of persons employed in affected areas of the mine, specifying the number of persons having each work assignment;

(g) Explain how the health and safety of persons employed in the affected areas of the mine will be no less assured if the requested variance is granted than through strict compliance with the standard or standards;

(h) Indicate the authority of the person signing the application;

(1) Include a statement describing how, and on what dates, the notice required in subsection 55.24-3 was given.

55.24-5 For a period of 15 days following the date on which an application for a variance is filed, any interested person may submit to the Administrator, Mining Enforcement and Safety Administration, written data, views, or arguments, respecting the application. Copies of such comments shall be mailed or otherwise delivered to the District Manager of the Health and Safety District of the Mining Enforcement and Safety Administration in which the mine is located, to the State agency responsible for health and safety in the mine, and to the person making the application. The Administrator may hold a public hearing if he determines that such a hearing would contribute to his consideration of the application. The Administrator shall issue a decision on an application promptly following the expiration of the period of 15 days and the conclusion of a hearing, if any.

55.24-6 Notwithstanding the provisions of subsection 55.24-5, a temporary variance from a mandatory standard may be approved before the expiration of the 15-day period for a specified time not to exceed 45 calendar days after receipt of the application, if the application is for a variance that would, in the judgment of the Administrator, clearly provide a level of health and safety to the persons employed in the areas of the mine that would be affected thereby no less than would be provided by compliance with a particular mandatory standard.

55.24-7 This § 55.24 does not authorize the Administrator to permit a variance from any mandatory standard relating to exposure to concentrations and airborne contaminants or from any mandatory standard relating to exposure to concentrations of radon daughters.

[35 F.R. 18589, Dec. 8, 1970]

§ 55.26 Procedures.

NOTIFICATION OF COMMENCEMENT OF OPERATIONS AND CLOSING OF MINES

55.26-1 *Mandatory.* The owner, operator, or person in charge of any metal or non-metal mine shall notify the nearest Mining

Enforcement and Safety Administration Metal and Nonmetal Mine Health and Safety subdistrict office of the State agency if the mine is located in a State which has a State Plan Agreement in effect, before starting operations, of the approximate or actual date mine operation will commence. The notification shall include the mine name, location, the company name, mailing address, person in charge, and whether operations will be continuous or intermittent.

When any mine is closed, the person in charge shall notify the nearest subdistrict office or State agency as provided above, and indicate whether the closure is temporary or permanent.

[38 FR 23380, Aug. 29, 1973]

PART 56—HEALTH AND SAFETY STANDARDS—SAND, GRAVEL, AND CRUSHED STONE OPERATIONS

- Sec. 56.1 Purpose and scope.
- 56.2 Definitions.
- 56.3 Ground control.
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- 56.12 Electricity.
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- 56.14 Use of equipment.
- 56.15 Personal protection.
- 56.16 Materials storage and handling.
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- 56.18 Safety programs.
- 56.19 Man hoisting.
- 56.20 Miscellaneous.
- 56.22 Savings provision.
- 56.24 Variances.
- 56.26 Procedures.

AUTHORITY: The provisions of this Part 56 issued under sec. 6, 80 Stat. 774; 30 U.S.C. 725.

SOURCE: The provisions of this Part 56 appear at 34 F.R. 12511, July 31, 1969, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 38 FR 18666, July 13, 1973.

§ 56.1 Purpose and scope.

The regulations in this part are promulgated pursuant to section 6 of the Federal Metal and Nonmetallic Mine Safety Act (30 U.S.C. 725) and prescribe health and safety standards for the purpose of the protection of life, the promotion of health and safety, and the prevention of accidents in sand (including industrial sands), gravel and crushed

stone operations which are subject to that Act. Each standard which is preceded by the word "Mandatory" is a mandatory standard. The violation of a mandatory standard will subject an operator to an order or notice under section 8 of the Act (30 U.S.C. 727).

§ 56.2 Definitions.

As used in this part:

"American Table of Distances" means the current edition of "The American Table of Distances for Storage of Explosives" published by the Institute of Makers of Explosives.

"Approved" means tested and accepted for a specific purpose by a nationally recognized agency.

"Authorized person" means a person approved or assigned by mine management to perform a specific type of duty or duties or to be at a specific location or locations in the mine.

"Barricaded" means obstructed to prevent the passage of persons, vehicles, or flying materials.

"Berm" means a pile or mound of material capable of restraining a vehicle.

"Blasting agent" means any material consisting of a mixture of a fuel and oxidizer which

(a) Is used or intended for use in blasting,

(b) Is not classed as an explosive by the Department of Transportation,

(c) Contains no ingredient classed as an explosive by the Department of Transportation, and

(d) Cannot be detonated by a No. 8 blasting cap when tested as recommended in Bureau of Mines Information Circular 8179.

"Blasting area" means the area near blasting operations in which concussion or flying material can reasonably be expected to cause injury.

"Blasting caps" means a detonator containing a charge of detonating compound, which is ignited by electric current or by the spark of a fuse. Used for detonating explosives.

"Blasting circuit" means electric circuits used to fire electric detonators or to ignite an igniter cord by means of an electric starter.

"Blasting switch" means a switch used to connect a power source to a blasting circuit.

"Capped fuse" means a length of safety fuse to which a detonator has been attached.

"Capped primer" means a package or cartridge of explosives which is specifically designed to transmit detonation to other explosives and which contains a detonator.

"Combustible" means capable of being ignited and consumed by fire.

"Company official" means a member of the company supervisory or technical staff.

"Competent person" means a person having abilities and experience that fully qualify him to perform the duty to which he is assigned.

"Detonating cord" or **"detonating fuse"** means a flexible cord containing a core of high explosives.

"Detonator" means a device containing a small detonating charge that is used for detonating an explosive, including, but not limited to, blasting caps, exploders, electric detonators, and delay electric blasting caps.

"Distribution box" means a portable apparatus with an enclosure through which an electric circuit is carried to one or more cables from a single incoming feed line, each cable circuit being connected through individual overcurrent protective devices.

"Electric blasting cap" means a blasting cap designed for and capable of being initiated by means of an electric current.

"Electrical grounding" means to connect with the ground to make the earth part of the circuit.

"Employee" means a person who works for wages or salary in the service of an employer.

"Employer" means a person or organization which hires one or more persons to work for wages or salary.

"Explosive" means any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion. Explosives include, but are not limited to black powder, dynamite, nitroglycerin, fulminate, ammonium nitrate when mixed with a hydrocarbon, and other blasting agents.

"Face or bank" means that part of any mine where excavating is progressing or was last done.

"Flammable" means capable of being easily ignited and of burning rapidly.

"Flash point" means the minimum temperature at which sufficient vapor is released by a liquid or solid to form a flammable vapor-air mixture at atmospheric pressure.

"Highway" means any public street, public alley, or public road.

"High potential" means more than 650 volts.

"Hoist" means a power driven windlass or drum used for raising ore, rock, or other material from a mine, and for lowering or raising men and material.

"Igniter cord" means a fuse, cordlike in appearance, which burns progressively along its length with an external flame at the zone of burning, and is used for lighting a series of safety fuses in the desired sequence.

"Lay" means the distance parallel to the axis of the rope in which a strand makes one complete turn about the axis of the rope.

"Low potential" means 650 volts or less.

"Major electrical installation" means an assemblage of stationary electrical equipment for the generation, transmission, distribution, or conversion of electrical power.

"Man trip" means a trip on which men are transported to and from a work area.

"Mill" includes any ore mill, sampling works, concentrator, and any crushing, grinding, or screening plant used at, and in connection with, an excavation or mine.

"Misfire" means the complete or partial failure of a blasting charge to explode as planned.

"Overburden" means material of any nature, consolidated or unconsolidated, that overlies a deposit of useful materials or ores that are to be mined.

"Permissible" means a machine, material, apparatus, or device that has been investigated, tested, and approved by the Bureau of Mines or the Mining Enforcement and Safety Administration and maintained in permissible condition.

"Potable" means fit for drinking.

"Powder chest" means a substantial, nonconductive portable container equipped with a lid and used at blasting sites for explosives other than blasting agents.

"Primer or Booster" means a package or cartridge of explosive which is designed specifically to transmit detonation to other explosives and which does not contain a detonator.

"Reverse-current protection" means a method or device used on direct-current circuits or equipment to prevent the flow of current in the reverse direction.

"Roll protection" means a framework safety canopy or similar protection for the operator when equipment overturns.

“Safety can” means an approved container, of not over five gallons capacity, having a spring-closing lid and spout cover.

“Safety fuse” means a train of powder enclosed in cotton, jute yarn, and water-proofing compounds, which burns at a uniform rate; used for firing a cap containing the detonating compound which in turn sets off the explosive charge.

“Safety switch” means a sectionalizing switch that also provides shunt protection in blasting circuits between the blasting switch and the shot area.

“Scaling” means removal of insecure material from a face or high-wall.

“Secondary safety connection” means a second connection between a conveyance and rope, intended to prevent the conveyance from running away or falling in the event the primary connection falls.

“Shaft” means a vertical or inclined shaft; a slope, incline or winze.

“Stray current” means that portion of a total electric current that flows through paths other than the intended circuit.

“Substantial construction” means construction of such strength, material, and workmanship that the object will withstand all reasonable shock, wear, and usage, to which it will be subjected.

“Suitable” means that which fits, and has the qualities or qualifications to meet a given purpose, occasion, condition, function, or circumstance.

“Travelway” means a passage, walk or way regularly used and designated for persons to go from one place to another.

“Trip light” means a light displayed on the opposite end of a train from the locomotive or engine.

“Wet drilling” means the continuous application of water through the central hole of hollow drill steel to the bottom of the drill hole.

“Working place” means any place in or about a mine where work is being performed.

[34 F.R. 12511, July 31, 1969, as amended at 35 F.R. 3666, Feb. 25, 1970; 35 F.R. 4515, Mar. 13, 1970; 37 FR 14368, July 19, 1972]

§ 56.3 Ground control.

56.3-1 *Mandatory.* Standards for the safe control of pit walls, including the overall slope of the pit wall, shall be established and followed by the operator. Such standards shall be consistent with prudent engineering design, the nature of the ground and the kind of material and mineral mined, and the ensuring of safe working conditions

according to the degree of slope. Mining methods shall be selected which will ensure wall and bank stability, including benching as necessary to obtain a safe overall slope.

56.3-2 *Mandatory.* Loose, unconsolidated material shall be stripped for a safe distance, but in no case less than 10 feet, from the top of pit or quarry walls, and the loose, unconsolidated material shall be sloped to the angle of repose.

56.3-3 *Mandatory.* To ensure safe operation, the width and height of benches shall be governed by the type of equipment to be used and the operation to be performed.

56.3-4 *Mandatory.* Safe means for scaling pit-banks shall be provided. Hazardous banks shall be scaled before other work is performed in the hazardous bank area.

56.3-5 *Mandatory.* Men shall not work near or under dangerous banks. Overhanging banks shall be taken down immediately and other unsafe ground conditions shall be corrected promptly, or the areas shall be barricaded and posted.

56.3-6 *Mandatory.* Men shall approach from above loose rock and areas to be scaled and shall scale from a safe location.

56.3-7 *Baffleboards, screens, cribbing, or other suitable barriers should be provided where movement of material into cuts constitutes a safety hazard.*

56.3-7. *Mandatory.* The supervisor, or a competent person designated by him, shall examine working areas and faces for unsafe conditions at least at the beginning of each shift and after blasting. Any unsafe condition found shall be corrected before any further work is performed at the immediate area or face at which the unsafe condition exists.

56.3-9. *Mandatory.* Men shall examine their working places before starting work and frequently thereafter, and any unsafe condition shall be corrected.

56.3-10. Banks, benches, and terrain sloping into the working areas should be examined after every rain, freeze, or thaw, before men work in such areas.

56.3-11. Before large boulders are drilled or broken, the boulder should be—

- (a) Moved to a safe location; or
- (b) Positioned securely, and prevented from rolling and moving; or
- (c) The men who do the drilling or breaking should be positioned so that movement of the boulder will not endanger the men.

56.3-12 *Mandatory.* Men shall not work between equipment and the pit wall or bank where the equipment may hinder escape from falls or slides of the bank.

56.3-13 *Rock-bolt installations, where used, should be in accordance with recommendations of the Mining Enforcement and Safety Administration or other competent agency.*

56.3-14 through 56.3-19 [Reserved]
[34 F.R. 12511, July 31, 1969, as amended at 35 F.R. 3666, Feb. 25, 1970; 35 F.R. 18569, Dec. 8, 1970]

§ 56.4 Fire prevention and control.

56.4-1 *Mandatory*. No person shall smoke or use an open flame—

(a) Where flammable solvents, liquids, fluids, or other flammable materials are stored, transported, handled, or used; or

(b) Where oil or grease is stored, transported, handled, or used, if smoking or the use of an open flame may cause a fire; or

(c) Within an unsafe distance of any area where smoking or the use of an open flame may cause a fire or an explosion.

56.4-2 *Mandatory*. Signs warning against smoking and open flames shall be posted so they can be readily seen in areas or places where fire or explosion hazards exist.

56.4-3 Areas surrounding flammable-liquid-storage tanks and electric substations and transformers should be kept free from grass (dry), weeds, underbrush, and other combustible materials for at least 25 feet in all directions.

56.4-4 *Mandatory*. Flammable liquids shall be stored in accordance with standards of the National Fire Protection Association or other recognized agencies approved by the Mining Enforcement and Safety Administration. Small quantities of flammable liquids drawn from storage shall be kept in appropriately labeled safety cans.

56.4-5 Unburied flammable-liquid storage tanks should be mounted securely on firm foundations. Outlet piping should be provided with flexible connections or other special fittings to prevent adverse effects from tank settling.

56.4-6 Buildings or rooms in which oil, grease, flammable liquids, or similar flammable materials are stored should be of fire-resistant construction and well-ventilated.

56.4-7 Means should be provided to confine, remove, control, or drain away spilled or flowing flammable liquids.

56.4-8 *Mandatory*. Fuel lines shall be equipped with valves to cut off fuel at the source and shall be located and maintained to minimize fire hazards.

56.4-9 *Mandatory*. All heat sources, including lighting equipment, capable of producing combustion shall be insulated or isolated from combustible materials.

56.4-10 *Mandatory*. Power wires and cables shall be adequately insulated where they pass through doors or walls or where they present a fire hazard.

56.4-11 *Mandatory*. Abandoned electrical circuits shall be deenergized and isolated so that they cannot become energized inadvertently.

56.4-12 Combustible materials, grease, lubricants, or flammable liquids should not be allowed to accumulate where they can create a fire hazard.

56.4-13 Materials such as oily waste and rags, which are subject to spontaneous combustion, should be placed in tightly covered metal containers until disposed of properly.

56.4-14 *Mandatory*. Solvents with flash points lower than 100° F. (38° C.) shall not be used for cleaning.

56.4-15 *Mandatory*. Solvents shall not be used near an open flame or other ignition source, or near any source of heat, or in an atmosphere that can elevate the temperature of the solvent above the flash point.

56.4-16 Drip pans should be provided to catch leakage or spillage when oil or flammable liquids are dispensed in a place or manner which may create a hazard.

56.4-17 Floors around drip pans should be covered with sand or other suitable non-combustible material and such sand or material should be replaced as necessary.

56.4-18 *Mandatory*. Oxygen cylinders shall not be stored in rooms or areas used or designated for oil or grease storage.

56.4-19 *Mandatory*. Gauges and regulators used with oxygen or acetylene cylinders shall be kept clean and free of oil and grease.

56.4-20 *Mandatory*. Battery-charging stations shall be located in well-ventilated areas.

56.4-21 *Mandatory*. Equipment powered by internal combustion engines (except diesel engines), where the fuel tank is an integral part of the equipment, shall be shut off and stopped before being fueled.

56.4-22 *Mandatory*. Each mine shall have available or be provided with suitable fire-fighting equipment adequate for the size of the mine.

56.4-23 *Mandatory*. Firefighting equipment which is provided on the mine property shall be strategically located, readily accessible, plainly marked, properly maintained, and inspected periodically. Records shall be kept of such inspections.

56.4-24 Fire extinguishers should be:

(a) Of the appropriate type for the particular fire hazard involved;

(b) Adequate in number and size for the particular fire hazard involved;

(c) Replaced immediately with fully charged extinguishers after any discharge is made from the extinguisher;

(d) Inspected, tested, and maintained at regular intervals according to the manufacturer's recommendations;

(e) Approved by the Underwriter's Laboratories, Inc., or other competent testing agency acceptable to the Mining Enforcement and Safety Administration.

56.4-25 Fire hydrants should be of a standard type. Adapters should be provided if necessary to fit the hose equipment of local fire departments. Wrenches or keys to open the valves should be readily available.

56.4-26 Water pipes, valves, outlets, hydrants, and hoses designated for firefighting purposes should be inspected every 3 months and tested annually.

56.4-27 Suitable fire extinguishers should be provided on self-propelled mobile equipment with enclosed cabs.

56.4-28 [Reserved]

56.4-29 *Mandatory*. When welding or cutting, suitable precautions shall be taken to insure that smoldering metal or sparks do

not result in a fire. Fire extinguishing equipment shall be immediately available at the site.

56.4-30 Employees should be trained in the use of firefighting equipment.

56.4-31 A firefighting organization should be established, equipped, and trained in firefighting; drills should be held at least twice a year.

56.4-32 [Reserved]

56.4-33 *Mandatory.* Valves on oxygen and acetylene tanks shall be kept closed when the contents are not being used.

56.4-34 Belt conveyors in locations where fire would create a hazard to personnel should be provided with safety switches to stop the drive pulley automatically in the event of excessive slippage.

56.4-35 through 56.4-39 [Reserved]

56.4-40 *Mandatory.* Fire alarm systems shall be provided and maintained in operating condition or adequate fire alarm procedures shall be established to warn promptly all persons endangered by a fire.

56.4-41 Two exits should be provided where men work or congregate.

56.4-42 through 56.4-47 [Reserved]

56.4-48 *Mandatory.* All employees shall be instructed at least once each calendar year on fire alarm signals and applicable procedures to be followed in case of fire or other emergency. Records of instruction shall be kept for 2 years.

[34 F.R. 12511, July 31, 1969, as amended at 35 F.R. 3666, Feb. 25, 1970; 35 F.R. 18589, Dec. 8, 1970; 37 FR 14371, July 19, 1972; 38 FR 23381, Aug. 29, 1973]

§ 56.5 Air quality.

56.5-1 *Mandatory.* Except as permitted by § 56.5-5:

(a) Except as provided in paragraph (b), the exposure to airborne contaminants shall not exceed, on the basis of a time weighted average, the threshold limit values adopted by the American Conference of Governmental Industrial Hygienists, as set forth and explained in the 1973 edition of the Conference's publication, entitled "TLV's Threshold Limit Values for Chemical Substances in Workroom Air Adopted by ACGIH for 1973," pages 1 through 54, which are hereby incorporated by reference and made a part hereof. This publication may be obtained from the American Conference of Governmental Industrial Hygienists by writing to the Secretary-Treasurer, P.O. Box 1937, Cincinnati, Ohio 45201, or may be examined in any Metal and Nonmetal Mine Health and Safety District or Subdistrict Office of the Mining Enforcement and Safety Administration. Excursions above the listed thresholds shall not be of a greater magnitude than is characterized as permissible by the Conference.

(b) The 8-hour time weighted average airborne concentration of asbestos dust to which employees are exposed shall not exceed 5 fibers per milliliter greater than 5 microns

in length, as determined by the membrane filter method at 400-450 magnification (4 millimeter objective) phase contrast illumination. No employee shall be exposed at any time to airborne concentrations of asbestos fibers in excess of 10 fibers longer than 5 micrometers, per milliliter of air, as determined by the membrane filter method over a minimum sampling time of 15 minutes. "Asbestos" is a generic term for a number of hydrated silicates that, when crushed or processed, separate into flexible fibers made up of fibrils. Although there are many asbestos minerals, the term "asbestos" as used herein is limited to the following minerals; chrysotile, amosite, crocidolite, anthophyllite asbestos, tremolite asbestos, and actinolite asbestos.

(c) Employees shall be withdrawn from areas where there is present an airborne contaminant given a "C" designation by the Conference and the concentration exceeds the threshold limit value listed for that contaminant.

56.5-2 *Mandatory.* Dust, gas, mist, and fume surveys shall be conducted as frequently as necessary to determine the adequacy of control measures.

56.5-3 *Mandatory.* Holes shall be collared and drilled wet, or other efficient dust control measures shall be used when drilling nonwater-soluble material. Efficient dust control measures shall be used when drilling water-soluble materials.

56.5-4 *Muckpiles, haulage roads, rock transfer points, crushers, and other points where dust is produced in amounts sufficient to cause a health or safety hazard should be wetted down as often as necessary, unless dust is controlled adequately by other methods.*

56.5-5 *Mandatory.* Control of employee exposure to harmful airborne contaminants shall be, insofar as feasible, by prevention of contamination, removal by exhaust ventilation, or by dilution with uncontaminated air. However, where accepted engineering control measures have not been developed or when necessary by the nature of work involved (for example, while establishing controls or occasional entry into hazardous atmospheres to perform maintenance or investigation), employees may work for reasonable periods of time in concentrations of airborne contaminants exceeding permissible levels if they are protected by appropriate respiratory protective equipment. Whenever respiratory protective equipment is used a program for selection, maintenance, training, fitting, supervision, cleaning, and use shall meet the following minimum requirements:

(a) Mining Enforcement and Safety Administration approved respirators which are applicable and suitable for the purpose intended shall be furnished, and employees shall use the protective equipment in accordance with training and instruction.

(b) A respirator program consistent with the requirements of ANSI Z88.2-1969, pub-

lished by the American National Standards Institute and entitled "American National Standards Practices for Respiratory Protection ANSI Z88.2 1969," approved August 11, 1969, which is hereby incorporated by reference and made a part hereof. This publication may be obtained from the American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018, or may be examined in any Metal and Nonmetal Mine Health and Safety District or Subdistrict Office of the Mining Enforcement and Safety Administration.

(c) When respiratory protection is used in atmospheres immediately harmful to life, the presence of at least one other person with backup equipment and rescue capability shall be required in the event of failure of the respiratory equipment.

[34 F.R. 12511, July 31, 1969, as amended at 35 F.R. 3667, Feb. 25, 1970; 35 F.R. 18590, Dec. 8, 1970; 39 FR 24318, July 1, 1974]

§ 56.6 Explosives.

The term "explosives" as used in this § 56.6 includes blasting agents. The standards in this section in which the term "explosives" appears are applicable to blasting agents (as well as to other explosives) unless blasting agents are expressly excluded.

STORAGE

56.6-1 *Mandatory.* Detonators and explosives other than blasting agents shall be stored in magazines.

56.6-2 *Mandatory.* Detonators shall not be stored in the same magazine with explosives.

56.6-3 Blasting agents may be stored with other explosives in the same magazine.

56.6-4 Safety fuse or detonating cord may be stored with explosives in the same magazine.

56.6-5 *Mandatory.* Areas surrounding magazines and facilities for the storage of blasting agents shall be kept clear of rubbish, brush, dry grass, or trees (other than live trees 10 or more feet tall), for a distance not less than 25 feet in all directions, and other unnecessary combustible materials for a distance of not less than 50 feet.

56.6-6 *Mandatory.* Smoking and open flames shall not be permitted within 25 feet of a place where explosives or detonators are stored.

56.6-7 Explosives, detonators, and related materials such as safety fuse and detonating cord should be stored in a manner to assure use of oldest stocks first.

56.6-8 *Mandatory.* Ammonium nitrate-fuel oil blasting agents shall be physically separated from other explosives, safety fuse, or detonating cord stored in the same magazine and in such a manner that oil does not contaminate the other explosives, safety fuse, or detonating cord.

56.6-9 Cases of explosives should not be stored on their ends or sides.

56.6-10 Cases of explosives should not be stacked more than 6 feet high.

56.6-11 [Reserved]

56.6-12 *Mandatory.* Prior to interior repair of facilities for storage of explosives, including blasting agents, all materials stored within the facility shall be removed and the interior cleaned. Prior to the exterior repair of such facilities, all materials stored within the facility shall be removed if there exists a possibility that such repairs may produce a spark or flame. The explosives removed from storage facilities to be repaired shall be placed either in other storage facilities appropriate for the storage of such materials under this section or a safe distance from the facilities under repair where they shall be properly guarded and protected until the repairs have been completed and the materials have been returned to storage within the facilities.

56.6-13 through 56.6-19 [Reserved]

56.6-20 *Mandatory.* Magazines shall be:

- (a) Located in accordance with the current American Table of Distances for storage of explosives.

- (b) Detached structures located away from powerlines, fuel storage areas, and other possible sources of fire.

- (c) Constructed substantially of noncombustible material or covered with fire-resistant material.

- (d) Reasonably bullet resistant.

- (e) Electrically bonded and grounded if constructed of metal.

- (f) Made of nonsparking materials on the inside, including floors.

- (g) Provided with adequate and effectively screened ventilation openings near the floor and ceiling.

- (h) Kept locked securely when unattended.

- (i) Posted with suitable danger signs so located that a bullet passing through the face of a sign will not strike the magazine.

- (j) Used exclusively for storage of explosives or detonators and kept free of all extraneous materials.

- (k) Kept clean and dry in the interior, and in good repair.

- (l) Unheated, unless heated in a manner that does not create a fire or explosion hazard. Electrical heating devices shall not be used inside a magazine.

56.6-21 through 56.6-24 [Reserved]

TRANSPORTATION

56.6-25 through 56.6-39 [Reserved]

56.6-40 *Mandatory.* Explosives and detonators shall be transported in separate vehicles unless separated by 4 inches of hard wood or the equivalent.

56.6-41 *Mandatory.* When explosives and detonators are hauled by trolley locomotive, covered electrically insulated cars shall be used.

56.6-42 *Mandatory.* Self-propelled vehicles used to transport explosives or detonators shall be equipped with suitable fire extinguishers.

56.6-43 *Mandatory.* Vehicles containing explosives or detonators shall be posted with proper warning signs.

56.6-44 *Mandatory*. When vehicles containing explosives or detonators are parked, the brakes shall be set, the motive power shut off, and the vehicle shall be blocked securely against rolling.

56.6-45 *Mandatory*. Vehicles containing explosives or detonators shall not be taken to a repair garage or shop for any purpose.

56.6-46 *Mandatory*. Vehicles containing explosives or detonators shall be maintained in good condition and shall be operated at a safe speed and in accordance with all safe operating practices.

56.6-47 *Mandatory*. Vehicles used to transport explosives, other than blasting agents, shall have substantially constructed bodies, no sparking metal exposed in the cargo space, and shall be equipped with suitable sides and tail gates; explosives shall not be piled higher than the side or end enclosures.

56.6-48 Explosives or detonators should be transported at times and over routes that expose a minimum number of persons.

56.6-49 Explosives or detonators in open-body vehicles should be covered with fire retardant and water-repellent materials.

56.6-50 *Mandatory*. Other materials or supplies shall not be placed on or in the cargo space of a conveyance containing explosives, detonating cord or detonators, except for safety fuse and except for properly secured, nonsparking equipment used expressly in the handling of such explosives, detonating cord or detonators.

56.6-51 *Mandatory*. Explosives or detonators shall not be transported on locomotives.

56.6-52 *Mandatory*. No person shall smoke while transporting or handling explosives or detonators.

56.6-53 *Mandatory*. Only the necessary attendants shall ride on or in vehicles containing explosives or detonators.

56.6-54 *Mandatory*. Explosives or detonators shall not be transported on man-trips.

56.6-55 Explosives or detonators should be transported promptly without undue delays in transit.

56.6-56 *Mandatory*. Substantial nonconductive containers shall be used to carry explosives to blasting sites.

56.6-57 *Mandatory*. Nonconductive containers with tight-fitting covers shall be used to transport or carry capped fuses and electric detonators to blasting sites.

56.6-58 through 56.6-64 [Reserved]

56.6-65 *Mandatory*. Vehicles containing detonators or explosives, other than blasting agents, shall not be left unattended except in blasting areas where loading or charging is in progress.

56.6-66 through 56.6-74 [Reserved]

USE

56.6-75 through 56.6-89 [Reserved]

56.6-90 *Mandatory*. Persons who use or handle explosive or detonators shall be experienced men who understand the hazards involved; trainees shall do such work only

under the supervision of and in the immediate presence of experienced men.

56.6-91 *Mandatory*. Blasting operations shall be under the direct control of authorized persons.

56.6-92 *Mandatory*. Damaged or deteriorated explosives or detonators shall be destroyed in a safe manner.

56.6-93 [Reserved]

56.6-94 *Mandatory*. Holes to be blasted shall be charged as near to blasting time as practical and such holes shall be blasted as soon as possible after charging has been completed. In no case shall the time elapsing between the completion or charging to the time of blasting exceed 72 hours unless prior approval has been obtained from the Mining Enforcement and Safety Administration.

56.6-95 *Mandatory*. No person shall smoke within 25 feet of explosives or detonators.

56.6-96 *Mandatory*. Explosives shall be kept separated from detonators until charging is started.

56.6-97 *Mandatory*. Capped primers shall be made up at the time of charging and as close to the blasting site as conditions allow.

56.6-98 A capped primer should be prepared so that the detonator is contained securely and is completely embedded within the explosive cartridge.

56.6-99 *Mandatory*. Only wooden or other nonsparking implements shall be used to punch holes in an explosive cartridge.

56.6-100 *Mandatory*. Tamping poles shall be blunt and squared at one end and made of wood, nonsparking material, or of special plastic acceptable to the Mining Enforcement and Safety Administration.

56.6-101 *Mandatory*. No tamping shall be done directly on a capped primer.

56.6-102 *Mandatory*. Unused explosives and detonators shall be moved to a safe location as soon as charging operations are completed.

56.6-103 *Mandatory*. Areas in which charged holes are awaiting firing shall be guarded, or barricaded and posted, or flagged against unauthorized entry.

56.6-104 *Mandatory*. When safety fuse has been used, men shall not return to misfired holes for at least 30 minutes.

56.6-105 *Mandatory*. When electric blasting caps have been used, men shall not return to misfired holes for at least 15 minutes.

56.6-106 Faces and muckpiles should be examined for undetonated explosives after each blast and undetonated explosives found should be disposed of safely.

56.6-107 *Mandatory*. Holes shall not be drilled where there is danger of intersecting a charged or misfired hole.

56.6-108 *Mandatory*. Fuse and igniters shall be stored in a cool, dry place away from oils or grease.

56.6-109 Fuse should not be used if it has been kinked, bent sharply, or handled roughly in such a manner that the train of deflagration may be interrupted.

56.6-110 *Mandatory*. Fuses shall be cut and capped in safe, dry locations posted with "No Smoking" signs.

56.6-111 *Mandatory*. Blasting caps shall be crimped to fuses only with implements designed for that specific purpose.

56.6-112 *Mandatory*. The burning rate of the safety fuse in use at any time shall be measured, posted in conspicuous locations, and brought to the attention of all men concerned with blasting.

56.6-113 *Mandatory*. When firing from 1 to 15 blastholes with safety fuse ignited individually using hand-held lighters, the fuses shall be of such lengths to provide the minimum burning time specified in the following table for a particular size round:

| Number of holes in a round | Minimum burning time, minutes |
|-------------------------------|----------------------------------|
| 1 ----- | 2 |
| 2-5 ----- | 2½ |
| 6-10 ----- | 3½ |
| 11-15 ----- | 5 |

In no case shall any 40-second-per-foot safety fuse less than 36 inches long or any 30-second-per-foot safety fuse less than 48 inches long be used.

56.6-114 *Mandatory*. At least two men shall be present when lighting fuses, and no man shall light more than 15 individual fuses. If more than 15 holes per man are to be fired, igniter cord and connectors or electric blasting shall be used.

56.6-115 [Revoked]

56.6-116 *Mandatory*. Fuse shall be ignited with hot-wire lighters, lead spitters, igniter cord, or other such devices designed for this purpose. Carbide lights shall not be used to light fuses.

56.6-117 *Mandatory*. Fuse shall not be ignited before the primer and the entire charge are securely in place.

56.6-118 Timing should be such that the fuse in the last hole to fire is burning within the hole before the first hole fires.

56.6-119 *Mandatory*. Electric detonators of different brands shall not be used in the same round.

56.6-120 *Mandatory*. Except when being tested with a blasting galvanometer:

(a) Electric detonators shall be kept shunted until they are being connected to the blasting line or wired into a blasting round.

(b) Wired rounds shall be kept shunted until they are being connected to the blasting line.

(c) Blasting lines shall be kept shunted until immediately before blasting.

56.6-121 Completely wired rounds should be tested with a blasting galvanometer before connections are made to the blasting line.

56.6-122 *Mandatory*. Permanent blasting lines shall be properly supported, insulated, and kept in good repair.

56.6-123 *Mandatory*. When electric detonators are used, charging shall be stopped immediately when the presence of static

electricity or stray currents is detected; the condition shall be remedied before charging is resumed.

56.6-124 *Mandatory*. When electric detonators are used, charging shall be suspended in surface mining, shaft sinking, and tunneling and men withdrawn to a safe location upon the approach of an electrical storm.

56.6-125 *Mandatory*. If branch circuits are used when blasts are fired from power circuits, safety switches located at safe distances from the blast areas shall be provided in addition to the main blasting switch.

56.6-126 [Reserved]

56.6-127 *Mandatory*. Blasting switches shall be locked in the open position, except when closed to fire the blast. Lead wires shall not be connected to the blasting switch until the shot is ready to be fired.

56.6-128 *Mandatory*. The key or other control to an electrical firing device shall be entrusted only to the person designated to fire the round or rounds.

56.6-129 *Mandatory*. Electric circuits from the blasting switches to the blast area shall not be grounded.

56.6-130 At least a 5-foot air gap should be provided between the blasting circuit and the power circuit.

56.6-131 *Mandatory*. Power sources shall be suitable for the number of electric detonators to be fired and for the type of circuits used.

56.6-132 Delay connectors for firing detonating cord should be treated and handled with the same safety precautions as blasting caps and electric detonators.

56.6-133 *Mandatory*. If any part of a blast is connected in parallel and is to be initiated from powerlines or lighting circuits, the time of current flow shall be limited to a maximum of 25 milliseconds by incorporating an arcing control device in the blasting circuit or by interrupting the circuit with an explosive charge attached to one or both lead lines and initiated by a zero-delay electric blasting cap.

56.6-134 *Mandatory*. Tools used for opening metal or nailed wooden containers of explosives or detonators shall be of non-sparking materials.

56.6-135 *Mandatory*. Holes shall not be collared in bootlegs.

56.6-136 Black blasting powder should not be used for blasting except when a desired result cannot be obtained with another type of explosive such as in quarrying certain types of dimension stone.

56.6-137 *Mandatory*. In the use of black blasting powder:

(a) Containers shall not be opened in, or within 50 feet of any magazine; within any building in which a fuel-fired or exposed-element electric heater is in operation; where electrical or incandescent-particle sparks could result in powder ignition; or within 50 feet of any open flame.

(b) Granular powder shall be transferred from containers only by pouring.

(c) Spills or granular powder shall be cleaned up promptly with nonsparking equipment; contaminated powder shall be put into a container of water and its content disposed of promptly after the granules have disintegrated, or the spill area shall be flushed with a copious amount of water to completely disintegrate the granules.

(d) Containers of powder shall be kept securely closed at all times other than when the powder is being transferred from or into a container.

(e) Containers of powder transported by vehicles shall be in a wholly enclosed cargo space.

(f) Misfires shall be disposed of by: (1) washing the stemming and powder charge from the borehole, and (2) removal and disposal of the initiator as a damaged explosive.

(g) Boreholes of shots that fire but fail to break or fail to break properly, shall not be recharged for at least 12 hours.

56.6-138 through 56.6-158 [Reserved]

56.6-159 *Mandatory*. Powder chests shall be:

(a) Substantially constructed of non-sparking material on the inside.

(b) Posted with suitable warning signs.

(c) Located out of the blast area and out of the line of blasts.

(d) Emptied and their contents returned to the main magazines at the end of each shift unless the powder chest is located within the area continually attended by employees during shift changes.

(e) Separate for detonators and explosives unless separated by 4 inches of hard wood or the equivalent.

(f) Kept locked when unattended.

56.6-160 *Mandatory*. Ample warning shall be given before blasts are fired. All persons shall be cleared and removed from the blasting area unless suitable blasting shelters are provided to protect men endangered by concussion or flyrock from blasting.

56.6-161 *Mandatory*. If explosives are suspected of burning in a hole, all persons in the endangered area shall move to a safe location and no one shall return to the hole until the danger has passed, but in no case within 1 hour.

56.6-162 *Mandatory*. Lead wires and blasting lines shall not be strung across power conductors, pipelines, railroad tracks, or within 20 feet of bare powerlines. They shall be protected from sources of static or other electrical contact.

56.6-163 *Mandatory*. The double-trunkline or loop system shall be used in detonating-cord blasting.

56.6-164 *Mandatory*. Trunklines, in multiple-row blasts, shall make one or more complete loops, with cross-ties between loops at intervals of not over 200 feet.

56.6-165 [Reserved]

56.6-166 *Mandatory*. All detonating-cord knots shall be tight and all connections shall be kept at right angles to the trunklines.

56.6-167 Detonating cord should not be used if it has been kinked, bent, or otherwise handled in such a manner that the train of detonation may be interrupted.

56.6-168 *Mandatory*. Misfires shall be reported to the proper supervisor and shall be disposed of safely before any other work is performed in that blasting area.

56.6-169 Blastholes in "hothole" areas and holes that have been sprung should not be charged before tests have been made to ensure that the heat has dissipated to a safe extent.

56.6-170 *Mandatory*. Where electric blasting is to be performed, electric circuits to equipment in the immediate area to be blasted shall be deenergized before electric detonators are connected to the blasting circuits; the power shall not be turned on until after the shots are fired or the blast is deactivated by removing or shunting each electric detonator.

56.6-171 through 56.6-174 [Reserved]

SENSITIZED AMMONIUM NITRATE BLASTING AGENTS

All of the standards in this § 56.6 in which the term "explosives" appears are applicable to blasting agents (as well as to other explosives) unless blasting agents are expressly excluded.

56.6-175 through 56.6-189 [Reserved]

56.6-190 Sensitized ammonium nitrate blasting agents, and the components thereof prior to mixing, should be mixed and stored in accordance with the recommendations in Bureau of Mines Information Circular 8179 "Safety Recommendations for Sensitized Ammonium Nitrate Blasting Agents," or subsequent revisions.

56.6-191 [Reserved]

56.6-192 Adequate priming should be employed to guard against misfires, increased toxic fumes, and poor performance.

56.6-193 *Mandatory*. Where pneumatic loading is employed, before any type of blasting operation using blasting agents is put into effect, an evaluation of the potential hazard of static electricity shall be made. Adequate steps, including the grounding and bonding of the conductive parts of pneumatic loading equipment, shall be taken to eliminate the hazard of static electricity before blasting agent use is commenced.

56.6-194 [Reserved]

56.6-195 *Mandatory*. Hoses used in connection with pneumatic loading machines shall be of the semiconductive type, having a total resistance low enough to permit the dissipation of static electricity and high enough to limit the flow of stray electric currents to a safe level. Wire-countered hose shall not be used because of the potential hazard from stray electric currents.

56.6-196 Reasonable precautions should be exercised to exclude water from blasting agents other than slurries.

56.6-197 [Reserved]

56.6-198 *Mandatory*. Plastic tubes shall not be used as hole liners if blasting agents are loaded pneumatically into holes containing an electric detonator.

56.6-200 *Mandatory*. Vehicles used to transport blasting agents shall have substantially constructed bodies, no zinc or copper exposed in the cargo space and shall be freely vented. Blasting agents shall not be piled higher than the side or end enclosures of open-body vehicles. If an enclosed screw conveyor is used to discharge blasting agents from the vehicle the conveyor shall be protected against excessive internal pressure and excessive frictional heat.

[34 F.R. 12511, July 31, 1969; 34 F.R. 12947, Aug. 9, 1969; 35 F.R. 3667, Feb. 25, 1970; 37 FR 14368, July 19, 1972; 39 FR 24318, July 1, 1974]

§ 56.7 Drilling.

56.7-1 Equipment that is to be used during a shift should be inspected each shift by a competent person. Equipment defects affecting safety should be reported.

56.7-2 *Mandatory*. Equipment defects affecting safety shall be corrected before the equipment is used.

56.7-3 *Mandatory*. The drilling area shall be inspected for hazards before starting the drilling operations.

56.7-4 *Mandatory*. Men shall not be on a mast while the drill-bit is in operation unless they are provided with a safe platform from which to work and they are required to use safety belts to avoid falling.

56.7-5 *Mandatory*. Drill crews and others shall stay clear of augers or drill stems that are in motion. Persons shall not pass under or step over a moving stem or auger.

56.7-6 Receptacles or racks should be provided for drill steel stored on drills.

56.7-7 Tools and other objects should not be left loose on the mast or drill platform.

56.7-8 *Mandatory*. When a drill is being moved from one drilling area to another, drill steel, tools, and other equipment shall be secured and the mast placed in a safe position.

56.7-9 The drill helper, when used, should be in sight of the operator at all times while the drill is being moved to a new location.

56.7-10 *Mandatory*. In the event of power failure, drill controls shall be placed in the neutral position until power is restored.

56.7-11 *Mandatory*. The drill stem shall be resting on the bottom of the hole or on the platform with the stem secured to the mast before attempts are made to straighten a crossed cable on a reel.

56.7-12 *Mandatory*. While in operation, drills shall be attended at all times.

56.7-13 *Mandatory*. Drill holes large enough to constitute a hazard shall be covered or guarded.

56.7-14 Men operating or working near jackhammers or jackleg drills and other drilling machines should position themselves so

that they will not be struck or lose their balance if the drill steel breaks or sticks.

56.7-15 Men should not drill from positions that hinder their access to the control levers, or from insecure footing or staging, or from atop equipment not designed for this purpose.

56.7-16 Bit wrenches or bit knockers should be used to remove detachable bits from drill steel.

56.7-17 Starter steels should be used when collaring holes with handheld drills.

56.7-18 *Mandatory*. Men shall not hold the drill steel while collaring holes, or rest their hands on the chuck or centralizer while drilling.

56.7-19 Air should be turned off and bled from the hose before handheld drills are moved from one working area to another.

56.7-20 through 56.7-24 [Reserved]

[34 F.R. 12511, July 31, 1969, as amended at 35 F.R. 3668, Feb. 25, 1970; 35 F.R. 18590, Dec. 8, 1970]

§ 56.8 Rotary jet piercing.

56.8-1 Jet drill should be provided with:

- (a) A system to pressurize operators cabs;
- (b) A protective cover over the oxygen flow indicator.

56.8-2 *Mandatory*. Safety chains or other suitable locking devices shall be provided across connections to and between high pressure oxygen hose lines of 1-inch inside diameter or larger.

56.8-3 *Mandatory*. A suitable means of protection shall be provided for the employee when lighting the burner.

56.8-4 With equipment requiring refueling at locations other than fueling stations, a system for fueling from the ground without spill should be provided.

56.8-5 *Mandatory*. Men shall not smoke and open flames shall not be used in the vicinity of the oxygen storage and supply lines. Signs warning against smoking and open flames shall be posted in these areas.

56.8-6 *Mandatory*. The oxygen intake coupling on jet-piercing drills shall be constructed so that only the oxygen hose can be coupled to it.

56.8-7 *Mandatory*. The combustion chamber of a jet drill stem which has been sitting unoperated in a drill hole shall be flushed with a suitable solvent after the stem is pulled up.

[34 FR 12511, July 31, 1969, as amended at 39 FR 24318, July 1, 1974]

§ 56.9 Loading, hauling, dumping.

56.9-1 Equipment that is to be used during a shift should be inspected by a competent person each shift. Equipment defects affecting safety should be reported.

56.9-2 *Mandatory*. Equipment defects affecting safety shall be corrected before the equipment is used.

56.9-3 *Mandatory*. Powered mobile equipment shall be provided with adequate brakes.

56.9-4 Powered mobile haulage equipment should be provided with audible warning devices. Lights should be provided on both ends when required.

56.9-5 *Mandatory.* Operators shall be certain, by signal or other means, that all persons are clear before starting or moving equipment.

56.9-6 *Mandatory.* When the entire length of a conveyor is visible from the starting switch, the operator shall visually check to make certain that all persons are in the clear before starting the conveyor. When the entire length of the conveyor is not visible from the starting switch, a positive audible or visual warning system shall be installed and operated to warn persons that the conveyor will be started.

56.9-7 *Mandatory.* Unguarded conveyors with walkways shall be equipped with emergency stop devices or cords along their full length.

56.9-8 Adequate protection should be provided at dumping locations where men may be endangered by falling material.

56.9-9 *Mandatory.* Operators shall sound warning before starting trains, when trains approach crossings or other trains on adjacent tracks, and where vision is obscured.

56.9-10 Operators' cabs should be constructed to permit operators to see without straining and should be reasonably comfortable.

56.9-11 *Mandatory.* Cab windows shall be of safety glass or equivalent, in good condition and shall be kept clean.

56.9-12 *Mandatory.* Cabs of mobile equipment shall be kept free of extraneous materials.

56.9-13 *Mandatory.* Adequate backstops or brakes shall be installed on inclined-conveyor drive units to prevent conveyors from running in reverse if a hazard to personnel would be caused.

56.9-14 *Mandatory.* No person shall be permitted to ride a power-driven chain, belt, or bucket conveyor, unless the belt is specifically designed for the transportation of persons.

56.9-15 *Mandatory.* Unless the operator is otherwise protected, slushers in excess of 10 horsepower shall be provided with backlash guards. All slushers shall be equipped with rollers, and drum covers, and anchored securely before slushing operations are started.

56.9-16 Roadbeds, rails, joints, switches, frogs, and other elements on railroads should be designed, installed, and maintained in a safe manner consistent with the speed and type of haulage.

56.9-17 Equipment operating speeds should be prudent and consistent with conditions of roadway, grades, clearance, visibility traffic, and the type of equipment used.

56.9-18 Dust control measures should be taken where dust significantly reduces visibility of equipment operators.

56.9-19 Track guardrails, lead rails, and frogs should be protected or blocked so as

to prevent a person's foot from becoming wedged.

56.9-20 *Mandatory.* Positive-acting stop-blocks, derral devices, track skates, or other adequate means shall be installed wherever necessary to protect persons from runaway or moving railroad equipment.

56.9-21 Vehicles should follow at a safe distance; passing should be limited to areas of adequate clearance and visibility.

56.9-22 *Mandatory.* Berms or guards shall be provided on the outer bank of elevated roadways.

56.9-23 *Mandatory.* Trackless haulage equipment shall be operated under power control at all times.

56.9-24 *Mandatory.* Mobile equipment operators shall have full control of the equipment while it is in motion.

56.9-25 *Mandatory.* Dippers, buckets, loading booms, or heavy suspended loads shall not be swung over the cabs of haulage vehicles until the drivers are out of the cabs and in safe locations, unless the trucks are designed specifically to protect the drivers from falling material.

56.9-26 [Reserved]

56.9-27 *Mandatory.* When an operator is present, men shall notify him before getting on or off equipment.

56.9-28 *Mandatory.* Switch throws shall be installed so as to provide adequate clearance for switchmen.

56.9-29 Operators should sit facing the direction of travel while operating equipment with dual controls.

56.9-30 *Mandatory.* Men shall not work or pass under the buckets or booms of loaders in operation.

56.9-31 *Mandatory.* When traveling between work areas, the equipment shall be secured in the travel position.

56.9-32 *Mandatory.* Dippers, buckets, scraper blades, and similar movable parts shall be secured or lowered to the ground when not in use.

56.9-33 *Mandatory.* Men shall not ride in dippers, shovel buckets, forks, clamshells or in the beds of ore haulage trucks for the purpose of transportation.

56.9-34 Cars or trucks should be loaded in such manner as to minimize spillage while en route to a dumping site.

56.9-35 Movements of two or more pieces of rail equipment operating independently on the same track should be regulated by an efficient signal block, telephone, or radio system; movements on complex haulage systems should be adequately controlled.

56.9-36 *Mandatory.* Electrically powered mobile equipment shall not be left unattended unless the master switch is in the off position, all operating controls are in the neutral position, and the brakes are set or other equivalent precautions are taken against rolling.

56.9-37 *Mandatory.* Mobile equipment shall not be left unattended unless the brakes are set. The wheels shall be turned into a

bank or rib, or shall be blocked, when such equipment is parked on a grade.

56.9-38 [Reserved]

56.9-39 *Mandatory*. Men shall not get on or off moving equipment, except that trainmen may get on or off of slowly moving trains.

56.9-40 *Mandatory*. Men shall not ride on top of loaded haulage equipment.

56.9-41 *Mandatory*. Only authorized persons shall be permitted to ride on trains or locomotives and they shall ride in a safe position.

56.9-42 Rocker-bottom or bottom-dump cars should be equipped with positive locking devices.

56.9-43 *Mandatory*. Men shall not ride outside the cabs and beds of mobile equipment.

56.9-44 [Reserved]

56.9-45 *Mandatory*. Equipment which is to be hauled shall be loaded and protected so as to prevent aliding or spillage.

56.9-46 [Reserved]

56.9-47 *Mandatory*. Parked railcars, unless held effectively by brakes shall be blocked securely.

56.9-48 *Mandatory*. Railroad cars with braking systems, when in use, shall be equipped with effective brake shoes.

56.9-49 Long material should be transported by a method designed to prevent any overhang from creating a hazard.

56.9-50 *Mandatory*. Railcars shall not be left on side tracks unless ample clearance is provided for traffic on adjacent tracks.

56.9-51 *Mandatory*. Persons shall not go over, under, or between cars unless the train is stopped and the motorman has been notified and the notice acknowledged.

56.9-52 *Mandatory*. Inability of a motorman to clearly recognize his brakeman's signals when the train is under the direction of the brakeman shall be construed by the motorman as a stop signal.

56.9-53 Dumping locations and haulage roads should be kept reasonably free of water, debris, and spillage.

56.9-54 *Mandatory*. Berms, bumper blocks, safety hooks, or similar means shall be provided to prevent overtravel and overturning at dumping locations.

56.9-55 Where the ground at a dumping place may fall to support the weight of a loaded dump truck, trucks should be dumped back from the edge of the bank.

56.9-56 Where necessary, bumper blocks or the equivalent should be provided at all track dead ends.

56.9-57 Grizzlies, grates, and other sizing devices at dump and transfer points should be anchored securely in place.

56.9-58 *Mandatory*. If truck spotters are used, they shall be well in the clear while trucks are backing into dumping positions and dumping; lights shall be used at night to direct trucks.

56.9-59 *Mandatory*. Public and permanent railroad crossings shall be posted with warning signs or signals, or shall be guarded when

trains are passing and shall be planked or otherwise filled between the rails.

56.9-60 *Mandatory*. Where overhead clearance is restricted, warning devices shall be installed and the restricted area shall be conspicuously marked.

56.9-61 *Mandatory*. Stockpiles and muckpile faces shall be trimmed to prevent hazards to personnel.

56.9-62 *Mandatory*. Rocks too large to be handled safely shall be broken before loading.

56.9-63 Ramps and dumps should be of solid construction, of ample width, have ample side clearance and headroom, and be kept reasonably free of spillage.

56.9-64 *Mandatory*. Chute-loading installations shall be designed so that the men pulling chutes are not required to be in a hazardous position while loading cars.

56.9-65 Cars should not be coupled or uncoupled manually from the inside of curves unless the railroad and cars are so designed to eliminate any hazard from coupling or uncoupling cars from inside of curves.

56.9-66 [Reserved]

56.9-67 *Mandatory*. Facilities used to transport men to and from work areas shall not be overcrowded.

56.9-68 *Mandatory*. Lights, flares, or other warning devices shall be posted when parked equipment creates a hazard to vehicular traffic.

56.9-69 *Mandatory*. Tires shall be deflated before repairs on them are started and adequate means shall be provided to prevent wheel locking rims from creating a hazard during tire inflation.

56.9-70 A tow bar should be used to tow heavy equipment. A safety chain should be used in conjunction with the tow bar.

56.9-71 Traffic rules, signals and warning signs should be standardized at each mine and posted.

56.9-72 through 56.9-80 [Reserved]

56.9-81 Trucks, shuttlecars, and front-end loaders should be equipped with emergency brakes separate and independent of the regular braking system when generally available for a particular class of equipment.

56.9-82 Haulage trucks with cabs should be equipped with heaters, air conditioners, or both, maintained in good condition, where needed because of extreme weather conditions.

56.9-83 *Mandatory*. Where possible at least 30 inches continuous clearance from the farthest projection of moving railroad equipment shall be provided on at least one side of the tracks; all places where it is not possible to provide 30-inch clearance shall be marked conspicuously.

56.9-84 Traffic rules, signals, and warning signs should be standardized at each mine, and posted.

56.9-85 *Mandatory*. Supplies, materials, and tools other than small handtools shall not be transported with men in mantrip

vehicles unless such vehicles are specifically designed to make such transportation safe.

56.9-86 Any load extending more than 4 feet beyond the rear of the vehicle body should be marked clearly with a red flag by day and a red light at night.

56.9-87 and 56.9-94 [Reserved]

[34 F.R. 12511, July 31, 1969, as amended at 35 F.R. 3668, Feb. 25, 1970; 37 FR 14372, July 19, 1972]

§ 56.10 Aerial tramways.

56.10-1 Buckets should not be overloaded, and feed should be regulated to prevent spillage.

56.10-2 Carriers, including loading and unloading mechanisms, should be inspected each shift; brakes should be inspected daily; ropes and supports should be inspected as recommended by the manufacturer or as physical conditions warrant. Records of rope maintenance and inspections should be kept.

56.10-3 *Mandatory.* Any hazardous defects shall be corrected before the equipment is used.

56.10-4 Positive-action-type brakes should be provided on aerial tramways.

56.10-5 Track cable connections should be designed to offer minimum obstruction to the passage of wheels.

56.10-6 Guards should be installed to prevent swaying buckets from hitting towers.

56.10-7 *Mandatory.* Guard nets or other suitable protection shall be provided where tramways pass over roadways, walkways, or buildings.

56.10-8 *Mandatory.* Persons other than maintenance men shall not ride aerial tramways unless the following features are provided:

(a) Two independent brakes, each capable of holding the maximum load;

(b) Direct communication between terminals;

(c) Power drives with emergency power available in case of primary power failure;

(d) Buckets equipped with positive locks to prevent accidental tripping or dumping.

56.10-9 *Mandatory.* Men shall not ride loaded buckets.

56.10-10 *Mandatory.* Where possible, aerial tramways shall not be started until the operator has ascertained that everyone is in the clear.

[34 F.R. 12511, July 31, 1969, as amended at 35 F.R. 3669, Feb. 25, 1970]

§ 56.11 Travelways.

56.11-1 *Mandatory.* Safe means of access shall be provided and maintained to all working places.

56.11-2 *Mandatory.* Crossovers, elevated walkways, elevated ramps, and stairways shall be of substantial construction provided with handrails, and maintained in good condition. Where necessary, toeboards shall be provided.

56.11-3 *Mandatory.* Ladders shall be of substantial construction and maintained in good condition.

56.11-4 Portable straight ladders should be provided with nonslip bases, should be placed against a safe backing, and set on secure footing.

56.11-5 *Mandatory.* Fixed ladders shall be anchored securely and installed to provide at least 3 inches of toe clearance.

56.11-6 *Mandatory.* Fixed ladders shall project at least 3 feet above landings, or substantial handholds shall be provided above the landings.

56.11-7 Wooden members of ladders should not be painted.

56.11-8 Ladderways, stairways, walkways, and ramps should be kept free of loose rock and extraneous materials.

56.11-9 *Mandatory.* Walkways with onboard railings shall be provided wherever persons are required to walk alongside elevated conveyor belts. Inclined railed walkways shall be nonskid or provided with cleats.

56.11-10 Vertical clearance above stair steps should be a minimum of 7 feet or adequate warning should be provided to indicate an impaired clearance.

56.11-11 Men climbing or descending ladders should face the ladders and have both hands free for climbing.

56.11-12 *Mandatory.* Openings above, below, or near travelways through which men or materials may fall shall be protected by railings, barriers, or covers. Where it is impractical to install such protective devices, adequate warning signals shall be installed.

56.11-13 *Mandatory.* Crossovers shall be provided where it is necessary to cross conveyors.

56.11-14 *Mandatory.* Moving conveyors shall be crossed only at designated crossover points.

56.11-15 Slippery walkways should be provided with cleats and handrails and/or ropes.

56.11-16 *Mandatory.* Regularly used walkways and travelways shall be sanded, salted, or cleared of snow and ice as soon as practicable.

56.11-17 Fixed ladders should not incline backwards at any point unless provided with backguards.

56.11-18 through 56.11-24 [Reserved]

56.11-25 Fixed ladders should be offset and have substantial railed landings at least every 30 feet unless backguards are provided.

56.11-26 Steep fixed ladders (70° to 90° from the horizontal) 30 feet or more in length should be provided with backguards, cages or equivalent protection, starting at a point not more than seven feet from the bottom of the ladder.

56.11-27 *Mandatory.* Scaffolds and working platforms shall be of substantial construction and provided with handrails and maintained in good condition. Floor boards shall be laid properly and the scaffolds and working platforms shall not be overloaded. Working platforms shall be provided with toeboards when necessary.

56.11-28 through 56.11-34 [Reserved]

[34 F.R. 12511, July 31, 1969, as amended at 35 F.R. 3669, Feb. 25, 1970; 37 FR 14372, July 19, 1972]

§ 56.12 Electricity.

56.12-1 *Mandatory.* Circuits shall be protected against excessive overload by fuses or circuit breakers of the correct type and capacity.

56.12-2 *Mandatory.* Electric equipment and circuits shall be provided with switches or other controls. Such switches or controls shall be of approved design and construction and shall be properly installed.

56.12-3 *Mandatory.* Individual overload protection or short circuit protection shall be provided for the trailing cables of mobile equipment.

56.12-4 Power wires and cables should have adequate current-carrying capacity and should be protected from mechanical injury.

56.12-5 Neither crawler-mounted nor rubber-tired equipment should run over trailing cables, unless cables are properly bridged or protected.

56.12-6 Distribution boxes should be provided with disconnect switches.

56.12-7 *Mandatory.* Trailing cables and power-cable connections to junction boxes shall not be made or broken under load.

56.12-8 Power wires and cable should be insulated adequately where they pass into or out of electrical compartments.

56.12-9 [Reserved]

56.12-10 Telephone and low-potential electric signal wires should be protected from contacting energized powerlines.

56.12-11 *Mandatory.* High-potential transmission cables shall be covered, insulated, or placed according to acceptable electrical codes to prevent contact with low-potential circuits.

56.12-12 The potential on bare signal wires accessible to personal contact should not exceed 40 volts.

56.12-13 Splices in power cables, including ground conductors, where provided, should be:

(a) Mechanically strong with adequate electrical conductivity;

(b) Effectively insulated and sealed to exclude moisture;

(c) Provided with mechanical protection and electrical conductivity as near as possible to that of the original.

56.12-14 *Mandatory.* Shovel trailing cables shall not be moved with the shovel dipper unless cable slings or sleds are used.

56.12-15 [Reserved]

56.12-16 *Mandatory.* Electrical equipment shall be deenergized before work is done on such equipment. Switches shall be locked out or other measures taken which shall prevent the equipment from being energized without the knowledge of the individuals working on it. Such locks, or preventative devices shall be removed only by the persons who installed them or by authorized personnel.

56.12-17 *Mandatory.* Power circuits shall be deenergized before work is done on such circuits unless hot-line tools are used. Suitable warning signs shall be posted by the individuals who are to do the work. Switches shall be locked out or other measures taken which shall prevent the power circuits from being energized without the knowledge of the individuals working on them. Such locks, signs, or preventative devices shall be removed only by the person who installed them or by authorized personnel.

56.12-18 *Mandatory.* Principal power switches shall be labeled to show which units they control, unless identification can be made readily by location.

56.12-19 At least 3 feet of clearance should be provided around all parts of stationary electric equipment or switchgear where access or travel is necessary.

56.12-20 *Mandatory.* Dry wooden platforms, insulating mats, or other electrically nonconductive material shall be kept in place at all switchboards and power-control switches where shock hazards exist. However, metal plates on which a person normally would stand and which are kept at the same potential as the grounded, metal, non-current-carrying parts of the power switches to be operated may be used.

56.12-21 *Mandatory.* Suitable danger signs shall be posted at all major electrical installations.

56.12-22 Areas containing major electrical installations should be entered only by authorized persons.

56.12-23 *Mandatory.* Electrical connections and resistor grids that are difficult or impractical to insulate shall be guarded, unless protection is provided by location.

56.12-24 Reverse-current protection should be provided at storage-battery charging stations.

56.12-25 *Mandatory.* All metal enclosing or encasing electrical circuits shall be grounded or provided with equivalent protection. This requirement does not apply to battery-operated equipment.

56.12-26 *Mandatory.* Metal fencing and metal buildings enclosing transformers and switchgear shall be grounded.

56.12-27 *Mandatory.* Frame grounding or equivalent protection shall be provided for mobile equipment powered through trailing cables.

56.12-28 *Mandatory.* Continuity and resistance of grounding systems shall be tested immediately after installation.

56.12-29 Electric equipment and wiring should be inspected by a competent person as often as necessary to assure safe operating conditions.

56.12-30 *Mandatory.* When a potentially dangerous condition is found it shall be corrected before equipment or wiring is energized.

56.12-31 Electric motors, switches, and controls exposed to damaging dust or water should be of dusttight or watertight construction.

56.12-32 *Mandatory.* Inspection and cover plates on electrical equipment and junction boxes shall be kept in place at all times except during testing or repairs.

56.12-33 *Mandatory.* Hand-held electric tools shall not be operated at high potential voltages.

56.12-34 Portable extension lights and other lights that may present a shock or burn hazard should be guarded.

56.12-35 Lamp sockets exposed to the weather should be of a weather-proof type.

56.12-36 *Mandatory.* Fuses shall not be removed or replaced by hand in an energized circuit, and they shall not otherwise be removed or replaced in an energized circuit unless equipment and techniques especially designed to prevent electrical shock are provided and used for such purpose.

56.12-37 *Mandatory.* Fuse tongs or hot line tools shall be used when fuses are removed or replaced in high-potential circuits.

56.12-38 Trailing cables should be clamped to machines in a manner to protect the cables from damage and to prevent strain on the electrical connections.

56.12-39 Surplus trailing cables to shovels, cranes, and similar equipment should be stored in cable boats or on reels mounted on the equipment or otherwise protected from mechanical damage.

56.12-40 *Mandatory.* Operating controls shall be installed so that they can be operated without danger of contact with energized conductors.

56.12-41 *Mandatory.* Switches and starting boxes shall be of safe design and capacity.

56.12-42 Both rails should be bonded or welded at every joint and rails should be crossbonded at least every 200 feet if the track serves as the return trolley circuit.

56.12-43 [Reserved]

56.12-44 Lightning-arrested grounds should be connected to earth at least 10 feet from the track or mine return circuit.

56.12-45 *Mandatory.* Overhead high-potential powerlines shall be installed as specified by the National Electrical Code.

56.12-46 [Reserved]

56.12-47 *Mandatory.* Guy wires of poles supporting high-voltage transmission lines shall meet the requirements for grounding or insulator protection of the National Electrical Safety Code, Part 2, entitled "Safety Rules for the Installation and Maintenance of Electric Supply and Communication Lines" (also referred to as National Bureau of Standards Handbook 81, November 1, 1961) and Supplement 2 thereof issued March 1968, which are hereby incorporated by reference and made a part hereof. These publications and documents may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, or may be examined in any Metal and Nonmetal Mine Health and Safety District or Subdistrict Office of the Mining Enforcement and Safety Administration.

56.12-48 *Mandatory.* Telegraph, telephone, or signal wires shall not be installed on the same crossarm with power conductors. When carried on poles supporting powerlines, they shall be installed as specified by the National Electrical Code.

56.12-49 Men should not stand on the ground in the vicinity of an electrically powered shovel or other similar heavy equipment during an electrical storm.

56.12-50 Trolley wires should be installed at least 7 feet above rails, where height permits, and aligned and supported to minimize sway and sag.

56.12-51 Trolley-wire hangers should be spaced so that the wire will not sag dangerously between hangers and so that the wire may be detached from any one hanger without creating a shock hazard.

56.12-52 Trolley wires and trolley-feeder wires should be provided with sectioning switches near the beginning of all branch lines and at mantrip stations unless suitably covered mantrip cars are used.

56.12-53 Ground wires for lighting circuits powered from trolley wires should be connected securely to the ground-return circuit.

56.12-54 Tools and supplies should be carried in the hands and not on the shoulders when men travel near bare power conductors.

56.12-55 through 56.12-64 [Reserved]

56.12-65 *Mandatory.* Powerlines, including trolley wires, and telephone circuits shall be protected against short circuits and lightning.

56.12-66 *Mandatory.* Where metallic tools or equipment can come in contact with trolley wires or bare powerlines, the lines shall be guarded or deenergized.

56.12-67 *Mandatory.* Transformers shall be totally enclosed, or shall be placed at least 8 feet above the ground, or installed in a transformer house, or surrounded by a substantial fence at least 6 feet high and at least 3 feet from any energized parts, casings, or wirings.

56.12-68 *Mandatory.* Transformer enclosures shall be kept locked against unauthorized entry.

56.12-69 [Reserved]

56.12-70 [Reserved]

56.12-71 *Mandatory.* When equipment must be moved or operated near energized high-voltage powerlines (other than trolley lines) and the clearance is less than 10 feet, the lines shall be deenergized or other precautionary measures shall be taken.

[34 F.R. 12511, July 31, 1969, as amended at 35 F.R. 3669, Feb. 25, 1970; 35 F.R. 18590, Dec. 8, 1970; 37 FR 14372, July 19, 1972; 39 FR 24318, July 1, 1974]

§ 56.13 Compressed air and boilers.

GENERAL

56.13-1 *Mandatory.* All boilers and pressure vessels shall be constructed, installed, and maintained in accordance with the standards and specifications of the American

Society of Mechanical Engineers Boiler and Pressure Vessel Code.

56.13-2 through 56.13-9 [Reserved]

COMPRESSED AIR

56.13-10 Air compressors should be equipped with automatic temperature-activated shutoff mechanisms set for 400° F., or with fusible plugs installed in the compressor discharge lines as near the compressors as possible. Fusible plugs should melt at temperatures 50° less than the flash point of the lubricating oils.

56.13-11 Compressors and compressed-air receivers should be equipped with automatic pressure-release valves, pressure gauges, and drain valves.

56.13-12 Compressor air intakes should be installed to insure that only clean, uncontaminated air enters the compressors.

56.13-13 Compressed-air receivers should be drained of moisture and oil at least once each day.

56.13-14 Compressed-air receivers should have inspection openings which should be manholes when the tanks are over 36 inches in diameter.

56.13-15 Compressed-air receivers and other pressure vessels should be inspected internally at least once a year by qualified inspectors; records of such inspection should be kept.

56.13-16 Compressors should be operated and lubricated in accordance with the manufacturer's recommendations.

56.13-17 Compressor discharge pipes should be cleaned periodically.

56.13-18 Safety devices on compressed-air systems should be checked daily.

56.13-19 *Mandatory.* Repairs involving the pressure system of compressors, receivers, or compressed-air-powered equipment shall not be attempted until the pressure has been bled off.

56.13-20 *Mandatory.* At no time shall compressed air be directed toward a person. When compressed air is used, all necessary precautions shall be taken to protect persons from injury.

56.13-21 *Mandatory.* Except where automatic shutoff valves are used, safety chains or other suitable locking devices shall be used at connections to machines of high-pressure hose lines of ¾-inch inside diameter or larger, and between high-pressure hose lines of ¾-inch inside diameter or larger, where a connection failure would create a hazard.

56.13-22 through 56.13-29 [Reserved]

BOILERS

56.13-30 Boilers should be equipped with guarded, well-maintained water gages and pressure gages placed so that they can be observed easily. Water gages and pipe passages to the gages should be kept clean and free of scale and rust.

56.13-31 Boilers should be equipped with automatic pressure-relief valves; valves

should be opened manually at least once each week to determine that they will function properly.

56.13-32 Boiler installations should be provided with safety devices, acceptable to the Mining Enforcement and Safety Administration, to protect against hazards of flame-outs, fuel interruptions, and low water level.

56.13-33 Blowoff valves should be piped outside the building and should have outlets so located or protected that persons passing by, near, or under them will not be scalded.

56.13-34 Boilers should be inspected internally at least once a year by licensed inspectors; records of such inspections should be kept.

[34 F.R. 12511, July 31, 1969, as amended at 35 F.R. 3669, Feb. 25, 1970; 37 FR 14372, July 19, 1972]

§ 56.14 Use of equipment.

GUARDS

56.14-1 *Mandatory.* Gears; sprockets; chains; drive, head, tail, and takeup pulleys; flywheels; couplings; shafts; sawblades; fan inlets; and similar exposed moving machine parts which may be contacted by persons, and which may cause injury to persons, shall be guarded.

56.14-2 *Mandatory.* Overhead belts shall be guarded if the whipping action from a broken belt would be hazardous to persons below.

56.14-3 Guards at conveyor-drive, conveyor-head, and conveyor-tail pulleys should extend a distance sufficient to prevent a person from reaching behind the guard and becoming caught between the belt and the pulley.

56.14-4 Openings where conveyors pass through walls or floors should be guarded.

56.14-5 Protruding set screws on revolving parts should be guarded.

56.14-6 *Mandatory.* Except when testing the machinery, guards shall be securely in place while machinery is being operated.

56.14-7 Guards should be sufficiently strong and maintained to provide the required protection.

56.14-8 *Mandatory.* Stationary grinding machines other than special bit grinders shall be equipped with:

(a) Peripheral hoods (less than 90° throat openings) capable of withstanding the force of a bursting wheel;

(b) Adjustable tool rests set as close as practical to the wheel;

(c) Safety washers.

56.14-9 *Mandatory.* Grinding wheels shall be operated within the specifications of the manufacturer of the wheel.

56.14-10 *Mandatory.* Hand-held power tools, other than rock drills, shall be equipped with controls requiring constant hand or finger pressure to operate the tools or shall be equipped with friction or other equivalent safety devices.

56.14-11 Guards or shields should be provided in areas where flying or falling materials present a hazard.

56.14-12 Industrial vehicles such as fork-lift trucks, front-end loaders, and bulldozers should be provided with roll protection when necessary to protect the operator.

56.14-13 *Mandatory.* Fork-lift trucks, front-end loaders, and bulldozers shall be provided with substantial canopies when necessary to protect the operator.

56.14-14 *Mandatory.* Face shields or goggles, in good condition, shall be worn when operating a grinding wheel.

56.14-15 through 56.14-24 [Reserved]

METHODS AND PROCEDURES

56.14-25 Machinery and equipment should be maintained properly.

56.14-26 *Mandatory.* Unsafe equipment or machinery shall be removed from service immediately.

56.14-27 Machinery and equipment should be operated only by authorized competent persons.

56.14-28 Adequate clearance should be provided at machine installations.

56.14-29 *Mandatory.* Repairs or maintenance shall not be performed on machinery until the power is off and the machinery is blocked against motion, except where machinery motion is necessary to make adjustments.

56.14-30 *Mandatory.* Men shall not work on or from a piece of mobile equipment in a raised position until it has been blocked in place securely. This does not preclude the use of equipment specifically designed as elevated mobile work platforms.

56.14-31 *Mandatory.* Drive belts shall not be shifted while in motion unless the machines are provided with mechanical shifters.

56.14-32 *Mandatory.* Belts, chains, and ropes shall not be guided onto power-driven moving pulleys, sprockets, or drums with the hands except on slow moving equipment especially designed for hand feeding.

56.14-33 *Mandatory.* Pulleys of conveyors shall not be cleaned manually while the conveyor is in motion.

56.14-34 *Mandatory.* Belt dressing shall not be applied manually while belts are in motion unless an aerosol-type dressing is used.

56.14-35 *Mandatory.* Machinery shall not be lubricated while in motion where a hazard exists, unless equipped with extended fittings or cups.

56.14-36 Tools and equipment should be used only for the purpose and within the capacity for which they were intended and designed.

56.14-37 through 56.14-44 [Reserved]

56.14-45 *Mandatory.* Welding operations shall be shielded and well-ventilated.

55.14-46 through 55.14-54 [Reserved]
[34 F.R. 12511, July 31, 1969, as amended at 35 F.R. 3669, Feb. 25, 1970; 37 FR 14372, July 19, 1972]

§ 56.15 Personal protection.

56.15-1 *Mandatory.* Adequate first-aid materials, including stretchers and blankets, shall be provided at places convenient to all working areas. Water or neutralizing agents shall be available where corrosive chemicals or other harmful substances are stored, handled, or used.

56.15-2 *Mandatory.* All persons shall wear suitable hard hats when in or around a mine or plant where falling objects may create a hazard.

56.15-3 *Mandatory.* All persons shall wear suitable protective footwear when in or around an area of a mine or plant where a hazard exists which could cause an injury to the feet.

56.15-4 *Mandatory.* All persons shall wear safety glasses, goggles, or face shields or other suitable protective devices when in or around an area of a mine or plant where a hazard exists which could cause injury to unprotected eyes.

56.15-5 *Mandatory.* Safety belts and lines shall be worn when men work where there is danger of falling; a second person shall tend the lifeline when bins, tanks, or other dangerous areas are entered.

56.15-6 Protective clothing, rubber gloves, and goggles or face-shields should be worn by persons handling substances that are corrosive, toxic, or injurious to the skin.

56.15-7 *Mandatory.* Protective clothing or equipment and face-shields or goggles shall be worn when welding, cutting, or working with molten metal.

56.15-8 Snug-fitting clothing should be worn around moving equipment and machinery.

56.15-9 Protective gloves should be worn by employees handling materials which may cause injury.

56.15-10 Gloves should not be worn where they could create a hazard by becoming entwined or caught in moving parts of machinery.

56.15-11 Finger rings should not be worn while working in or around a mine or plant.

56.15-13 Where there is a danger of a vehicle overturning and where roll protection is provided, seatbelts should be used.

56.15-14 through 56.15-19 [Reserved]

56.15-20 *Mandatory.* Life jackets or belts shall be worn where there is danger from falling into water.

[34 F.R. 12511, July 31, 1969, as amended at 35 F.R. 3669, Feb. 25, 1970; 85 F.R. 18590, Dec. 8, 1970; 39 FR 24318, July 1, 1974]

§ 56.16 Materials storage and handling.

56.16-1 Materials should be stored and stacked in a manner which minimizes stumbling or fall-of-material hazards.

56.16-2 Men working on surge piles or storage piles should not walk or stand immediately above a reclaiming area during reclaiming.

56.16-3 *Mandatory.* Materials that can create hazards if accidentally liberated from their containers shall be stored in a manner that minimizes the dangers.

56.16-4 *Mandatory.* Hazardous materials shall be stored in containers of a type approved for such use by recognized agencies; such containers shall be labeled appropriately.

56.16-5 *Mandatory.* Compressed and liquid gas cylinders shall be secured in a safe manner.

56.16-6 *Mandatory.* Valves on compressed gas cylinder shall be protected by covers when being transported or stored, and by a safe location when the cylinders are in use.

56.16-7 Hitches and slings used to hoist materials should be designed and used properly for the particular material handled.

56.16-8 Taglines should be attached to suspended materials that require steadying or guidance.

56.16-9 *Mandatory.* Men shall stay clear of suspended loads.

56.16-10 Materials should not be dropped from an elevation unless the drop area is guarded or sufficient warning is given.

56.16-11 *Mandatory.* Men shall not ride on loads being moved by cranes or derricks, nor shall they ride the hoisting hooks unless such method eliminates a greater hazard.

56.16-12 Substances that react violently or liberate dangerous fumes when mixed should be stored in such a manner that they cannot come in contact with each other.

56.16-13 Only men wearing protective equipment should stand near pots or ladles when molten material is being handled; warning should be given before a pour is made or the pot is moved.

56.16-14 *Mandatory.* Operator-carrying overhead cranes shall be provided with:

- (a) Bumpers at each end of each rail;
- (b) Automatic switches to halt uptravel of the blocks before they strike the hoist;
- (c) Effective audible warning signals within easy reach of the operator;

(d) A means to lock out the disconnect switch.

56.16-15 *Mandatory.* No person shall work from or travel on the bridge of an overhead crane unless the bridge is provided with substantial footwalks with toeboards and railings the length of the bridge.

56.16-16 Forklift trucks should be moved with the load in a low position and should descend ramps with the load behind.

56.16-17 through 56.16-34 [Reserved]

[34 F.R. 12511, July 31, 1969, as amended at 85 F.R. 3669, Feb. 25 1970]

§ 56.17 Illumination.

56.17-1 *Mandatory.* Illumination sufficient to provide safe working conditions

shall be provided in and on all surface structures, paths, walkways, stairways, switch panels, loading and dumping sites, and work areas.

56.17-2 through 56.17-9 [Reserved]

§ 56.18 Safety programs.

56.18-1 The employer should establish a definite, effective, and continually functioning safety program and make every attempt to prevent accidents and increase safety. Employees should actively participate in the safety program.

56.18-2 Regular safety inspections should be made by company officials or safety committees. Written reports should be made of the findings and actions recommended or taken; this information should be made available to the employees.

56.18-3 Serious accidents, whether resulting in injury or not, should be investigated to determine the cause and the means of preventing recurrence. Records of these investigations should be kept and the information should be made available to the employees.

56.18-4 Company safety regulations pertinent to the various operations should be published or posted for employee information.

56.18-5 All employees and officials should be familiar with company, State, and Federal health and safety regulations applicable to their jobs.

56.18-6 *Mandatory.* New employees shall be indoctrinated in safety rules and safe work procedures.

56.18-7 Inexperienced employees should be assigned to work with experienced men until such employees have acquired the necessary skills to perform their duties safely.

56.18-8 Each working place should be visited by a supervisor or a designated person at least once each shift and more frequently as necessary to insure that work is being done in a safe manner.

56.18-9 A competent person should be in charge at all times when men are working.

56.18-10 *Mandatory.* Selected supervisors shall be trained in first aid. First aid training shall be made available to all interested employees.

56.18-11 All supervisors and employees should be trained in accident prevention.

56.18-12 *Mandatory.* Emergency telephone numbers shall be posted at appropriate telephones.

56.18-13 Where telephone service is not available, emergency communications should be provided to the nearest point of assistance.

56.18-14 *Mandatory.* Arrangements shall be made in advance for obtaining emergency medical assistance and transportation for injured persons.

56.18-15 through 56.18-19 [Reserved]

56.18-20 *Mandatory.* No employee shall be assigned, or allowed, or be required to perform work alone in any area where hazardous

conditions exist that would endanger his safety unless he can communicate with others, can be heard, or can be seen.

56.18-21 through 56.18-24 [Reserved]

[34 F.R. 12511, July 31, 1969, as amended at 35 FR 3670, Feb. 25, 1970; 38 FR 23381, Aug. 29, 1973]

§ 56.19 Man hoisting.

The hoisting standards in this section apply to those hoists and appurtenances used for hoisting men. However, where men may be endangered by hoists and appurtenances used solely for handling ore, rock and materials, the appropriate standards should be applied.

Hoists

56.19-1 *Mandatory.* Hoists shall have rated capacities consistent with the loads handled and the recommended safety factors of the ropes used.

56.19-2 *Mandatory.* Hoists shall be anchored securely.

56.19-3 *Mandatory.* Belt, rope, or chains shall not be used to connect driving mechanisms to man hoists.

56.19-4 *Mandatory.* Any hoist used to hoist men shall be equipped with a brake or brakes which shall be capable of holding its fully loaded cage, skip, or bucket at any point in the shaft.

56.19-5 *Mandatory.* The operating mechanism of the clutch of every man-hoist drum shall be provided with a locking mechanism, or interlocked electrically or mechanically with the brake to prevent accidental withdrawal of the clutch.

56.19-6 *Mandatory.* Automatic hoists shall be provided with devices that automatically apply the brakes in the event of power failure.

56.19-7 *Mandatory.* All man hoists shall be provided with devices to prevent overtravel. When utilized in shafts exceeding 100 feet in depth, such hoists shall also be provided with overspeed devices.

56.19-8 Friction hoists should be provided with synchronizing mechanisms that recalibrate the overtravel devices and position indicators to correct for rope creep or stretch.

56.19-9 *Mandatory.* An accurate and reliable indicator of the position of the cage, skip, bucket, or cars in the shaft shall be provided.

56.19-10 *Mandatory.* Hoist controls shall be placed or housed so that the noise from machinery or other sources will not prevent hoistmen from hearing signals.

56.19-11 Flanges on drums should extend radially a minimum of two rope diameters and not less than 4 inches beyond the last wrap.

56.19-12 Where grooved drums are used, the grooves should be of the proper size and pitch for the ropes used.

56.19-13 *Mandatory.* Where any diesel or similar fuel-injection engine is used to power a hoist, the engine shall be equipped with a damper or other cutoff in its air intake system. The control handle shall be clearly labeled to indicate that its intended function is for emergency stopping only.

56.19-14 through 56.19-19 [Reserved]

WIRE ROPE

56.19-20 The United States of America Standards Institute specifications cited in "Wire Rope for Mines," M11.1—1960, or the latest revision thereof, should be used as a guide in the selection, installation, and maintenance of wire ropes used for hoisting, except in those instances where the recommendations cited herein are more stringent.

56.19-21 *Mandatory.* The following static-load safety factors shall be used for selecting ropes to be used for hoisting men and for determining when such ropes shall be removed from man hoists:

| Length of rope in shaft (feet) | Minimum factor of safety (new rope) | Minimum factor of safety (remove) |
|--------------------------------|-------------------------------------|-----------------------------------|
| 500 or less..... | 8 | 6.4 |
| 501-1,000..... | 7 | 5.8 |
| 1,001-2,000..... | 6 | 5.0 |
| 2,001-3,000..... | 5 | 4.3 |
| 3,001 or more..... | 4 | 3.6 |

56.19-22 At least three wraps of rope should be left on the drum when the conveyance is at the bottom of the hoistway. This provision does not apply to friction hoists.

56.19-23 The end of the rope at the drum should make at least one full turn on the drum shaft, or a spoke of the drum in the case of a free drum, and should be fastened securely by means of rope clips or clamps. This standard does not apply to friction hoists.

56.19-24 *Mandatory.* The rope shall be attached to the load by the thimble-and-clip method, the socketing method, or other approved method. If the socketing method is employed, zinc or its equivalent shall be used. The use of Babbitt metal or lead for socketing wire ropes is prohibited. If the thimble-and-clip method is used, the following shall be observed:

(a) The rope shall be attached to the load by passing one end around an oval thimble that is attached to the load bending the end back so that it is parallel to the long or "live" end of the rope and fastening the two parts of the rope together with clips.

(b) The U-bolt of each clip shall encircle the short or "dead" end of the rope and the distance between clips shall not be less than the figures given in the accompanying table.

(c) As a minimum, the following number of clips or equivalent shall be used for various diameters of six-strand, 19-wire, plow-steel ropes:

(Follow manufacturer's recommendations for other kinds of wire rope and clips.)

| Diameter of rope, inches | Number of clips | Center-to-center spacing of clips, inches |
|--------------------------|-----------------|---|
| 3/4 | 4 | 4 1/2 |
| 7/8 | 4 | 5 1/4 |
| 1 | 4 | 6 |
| 1 1/8 | 5 | 6 3/4 |
| 1 1/4 | 5 | 7 1/2 |
| 1 1/2 | 6 | 8 1/4 |
| 1 3/4 | 6 | 9 |
| 1 7/8 | 6 | 9 3/4 |
| 2 | 7 | 10 1/2 |
| 2 1/8 | 8 | 11 1/4 |
| 2 1/4 | 8 | 12 |
| 2 3/8 | 8 | 13 |
| 2 1/2 | 8 | 14 |

(d) For all ropes less than three-quarter inch in diameter at least four clips or equivalent shall be used.

(e) When special conditions require the attachment of a sling to the hoisting cable to handle equipment in the shaft, the sling shall be attached by clips or equivalent in accordance with the table in paragraph (c) of this standard.

56.19-25 New ropes should be broken in, in accordance with the manufacturer's recommendations.

56.19-26 *Mandatory.* Safety device attachments to hoist ropes shall be selected, installed, and maintained according to manufacturers' specifications to minimize internal corrosion and weakening of the hoist rope.

56.19-27 Where possible, conveyances attached to single ropes used to hoist men should be provided with secondary safety connections.

56.19-28 through 56.19-34 [Reserved]

HEADFRAMES AND SHEAVES

56.19-35 Headframes should be designed and constructed to withstand pulls by the hoists greater than the breaking strengths of the hoist ropes.

56.19-36 Headframes should be high enough to provide at least 15 feet of clearance between the bottom of the sheave or drum and the uppermost part of the highest rope connection of the conveyance when the conveyance is at its uppermost manlanding.

56.19-37 Fleet angles should not exceed 1 1/2 degrees.

56.19-38 *Mandatory.* Platforms with toeboards and handrails shall be provided around elevated head sheaves.

56.19-39 Diameters of head sheaves and hoist drums should conform to the following specifications:

| Rope construction | Diameter of sheave and drum | |
|---------------------------------|-----------------------------|----------------------------|
| | Recommended | Minimum |
| | <i>Times rope diameter</i> | <i>Times rope diameter</i> |
| 6 x 7 classification | 72 | 12 |
| 6 x 19 | 45 | 30 |
| 6 x 37 | 27 | 48 |
| 6 x 25 type B, flattened strand | 45 | 30 |
| 6 x 27 type H, flattened strand | 45 | 30 |
| 6 x 30 type G, flattened strand | 45 | 30 |
| 18 x 7 classification | 51 | 34 |

56.19-40 Head, idler, knuckle, and curve sheaves should have grooves that support the ropes properly. Before installing new ropes, the grooves should be inspected and where necessary machined to the proper contour and the proper groove diameter.

56.19-41 through 56.19-44 [Reserved]

CONVEYANCES

56.19-45 *Mandatory.* Man cages and skips used for hoisting or lowering employees or other persons in any vertical shaft or any incline shaft with an angle of inclination of forty-five (45) degrees from the horizontal, shall be covered with a metal bonnet.

56.19-46 through 56.19-48 [Reserved]

56.19-49 *Mandatory.* Buckets shall not be used to hoist men except during shaft sinking operations, inspection, maintenance, and repairs.

56.19-50 *Mandatory.* Buckets used to hoist men during vertical shaft sinking operations shall have:

(a) A crosshead the height of which is at least 1 1/2 times its width if used on wooden guides or a minimum height of 4 feet if used on rope or steel guides.

(b) Overhead protection when the shaft depth exceeds 50 feet.

(c) Sufficient depth or a suitably designed platform to transport men safely in a standing position.

(d) Devices to prevent accidental dumping where the bucket is supported by a ball attached to its lower half.

56.19-51 [Reserved]

56.19-52 [Reserved]

56.19-53 *Mandatory.* In shaft sinking where a platform is suspended by wire ropes, such ropes shall have an approved rating for the suspended load.

56.19-54 *Mandatory.* Where rope guides are used in shafts they shall be of locked coil construction.

HOISTING PROCEDURES

56.19-55 *Mandatory.* When a manually operated hoist is used, a qualified hoistman shall remain within hearing of the telephone

or signal device at all times while any person is underground.

56.19-56 When automatic hoisting is used, a qualified hoistman should be in attendance on the premises while any person is underground.

56.19-57 Hoistmen should be physically fit and should undergo yearly examinations to determine their continued fitness; certification to this effect should be available at the mine

56.19-58 *Mandatory*. Only experienced hoistmen shall operate the hoist except in cases of emergency and in the training of new hoistmen.

56.19-59 [Reserved]

56.19-60 Hoistmen should use extreme caution when hoisting or lowering men.

56.19-61 The safe speed for hoisting men should be determined for each shaft, and this speed should not be exceeded. Men should not be hoisted at a speed faster than 2,500 feet per minute, except in an emergency.

56.19-62 Maximum acceleration and deceleration should not exceed 6 feet per second per second.

56.19-63 Only authorized persons should be in hoist rooms.

56.19-64 [Reserved]

56.19-65 *Mandatory*. Conveyances shall not be lowered by the brakes alone except during emergencies.

56.19-66 Management should designate the maximum number of men permitted to ride on a trip at one time; this limit should be posted on each landing.

56.19-67 Authorized persons should be in charge of all man trips.

56.19-68 Men should enter, ride, and leave conveyances in an orderly manner.

56.19-69 *Mandatory*. Men shall not enter or leave conveyances which are in motion or after a signal to move the conveyance has been given to the hoistman.

56.19-70 *Mandatory*. Cage doors or gates shall be closed while men are being hoisted; they shall not be opened until the cage has come to a stop.

56.19-71 *Mandatory*. Men shall not ride in skips or buckets with muck, supplies, materials, or tools other than small hand tools.

56.19-72 When combinations of cages and skips are used, the skips should be empty while men are being transported.

56.19-73 *Mandatory*. Rock or supplies shall not be hoisted in the same shaft as men during shift changes, unless the compartments and dumping bins are partitioned to prevent spillage into the cage compartment.

56.19-74 Men should not ride the ball, rim, or bonnet of any shaft conveyance, except where necessary for the inspection and maintenance of the shaft and lining.

56.19-75 *Mandatory*. Open hooks shall not be used to hoist buckets or other conveyances.

56.19-76 When men are hoisted, bucket speeds should not exceed 500 feet a minute,

and should not exceed 200 feet a minute when within 100 feet of a landing.

56.19-77 *Mandatory*. Buckets shall be stopped about 15 feet from the shaft bottom to await a signal from one of the crew on the bottom for further lowering.

56.19-78 Buckets should be stopped after being raised 3 feet when men are hoisted from the bottom; a second hoisting signal should be given after the bucket has been stabilized. Hoisting should be at a minimum speed and the bellcord should be attended constantly until the crosshead has been engaged.

56.19-79 *Mandatory*. Where mine cars are hoisted by cage or skip, means for blocking cars shall be provided at all landings and also on the cage.

56.19-80 *Mandatory*. When tools, timbers, or other materials are being lowered or raised in a shaft by means of a bucket, skip, or cage, they shall be secured or so placed that they will not strike the sides of the shaft.

56.19-81 Conveyances not in use should be released and raised or lowered at least 10 feet from the floor of the landing.

56.19-82 through 56.19-89 [Reserved]

SIGNALING

56.19-90 *Mandatory*. There shall be at least two effective approved methods of signaling between each of the shaft stations and the hoist room, one of which shall be a telephone or speaking tube.

56.19-91 Hoistmen should not accept hoisting instructions by telephone unless the regular signaling systems are out of order. During such an emergency one person should be designated to direct movement of the conveyance.

56.19-92 *Mandatory*. A method shall be provided to signal the hoist operator from cages or other conveyances at any point in the shaft.

56.19-93 A standard code of hoisting signals should be adopted and used at each mine.

56.19-94 *Mandatory*. A legible signal code shall be posted prominently in the hoist house within easy view of the hoistman, and at each place where signals are given or received.

56.19-95 Hoisting signal devices should be maintained within easy reach of men on the shaft bottom during sinking operation.

56.19-96 *Mandatory*. Any person responsible for receiving or giving signals for cages, skips, and man trips when men or materials are being transported shall be familiar with the posted signaling code.

56.19-97 through 56.19-99 [Reserved]

SHAFTS

56.19-100 *Mandatory*. Shaft landings shall be equipped with substantial safety gates so constructed that materials will not go through or under them; gates shall be closed except when loading or unloading shaft conveyances.

56.19-101 *Mandatory.* Positive stopblocks or a derail switch shall be installed on all tracks leading to a shaft collar or landing.

56.19-102 Guides should be provided in each hoisting compartment in shafts inclined more than 45° from the horizontal.

56.19-103 Dumping facilities should be so constructed as to minimize spillage into the shaft.

56.19-104 Adequate clearance should be maintained at shaft stations to allow men to pass safely and to allow materials to be handled safely.

56.19-105 *Mandatory.* A safe means of passage around open shaft compartments shall be provided on landings with more than one entrance to the shaft.

56.19-106 Shaft timbers should be kept clean of rocks and other loose material.

56.19-107 *Mandatory.* Holstmen shall be informed when men are working in a compartment affected by that hoisting operation and a "Men Working in Shaft" sign shall be posted at the hoist.

56.19-108 *Mandatory.* When men are working in a shaft "Men Working in Shaft" signs shall be posted at all devices controlling hoisting operations that may endanger such men.

56.19-109 *Mandatory.* Shaft inspection and repair work in vertical shafts shall be performed from substantial platforms equipped with bonnets or equivalent overhead protection.

56.19-110 *Mandatory.* A substantial bulkhead or equivalent protection shall be provided above men at work deepening a shaft.

56.19-111 Substantial fixed ladders should be maintained as near the shaft bottom as practical during shaft-sinking operations. Chain, wire rope, or other extension ladders should be used from the fixed ladder to the shaft bottom.

56.19-112 through 56.19-119 [Reserved]

INSPECTION AND MAINTENANCE

56.19-120 *Mandatory.* A systematic procedure of inspection, testing, and maintenance of shaft and hoisting equipment shall be developed and followed. If it is found or suspected that any part is not functioning properly, the hoist shall not be used until the malfunction has been located and repaired or adjustments have been made.

56.19-121 Complete records should be kept of installation, lubrication, inspection, tests, and maintenance of shafts and hoisting equipment.

56.19-122 Parts used to repair hoists should have properties equal to or better than the original parts; replacement parts should be designed to fit the original installation.

56.19-123 Ropes should be kept well lubricated from end to end as recommended by the manufacturer.

56.19-124 On other than friction hoists, ropes should be cut off and reconnected to

the conveyance as often as necessary to assure adequate inspection of rope condition and to distribute wear of the rope. At least 6 feet should be cut from the rope above the highest connection; this portion should be examined carefully for corrosion, damage, wear, and fatigue by the rope manufacturer or a competent agency.

56.19-125 Hoisting ropes wound in multiple layers should be cut off and repositioned on the drum at regular intervals as necessary to distribute wear of the rope. The length of the cutoff at the drum end should not be an even multiple of the circumference of the drum.

56.19-126 Ropes should be calipered at regular intervals as necessary to effectively determine the rate of wear and damage. Caliper measurements should be taken:

(a) Immediately above the socket or clips and above the safety connection;

(b) Where the ropes rest on the sheaves;

(c) Where the ropes leave the drums when the conveyances are at the regular stopping points;

(d) Where a layer of rope begins to overlap another layer on the drum.

56.19-127 Electromagnetic or other non-destructive rope testing systems should be used only as supplements to and not as substitutes for recommended inspections and tests.

56.19-128 *Mandatory.* Ropes shall not be used for hoisting when they have:

(a) More than six broken wires in any lay;

(b) Crown wires worn to less than 65 percent of the original diameter;

(c) A marked amount of corrosion or distortion;

(d) A combination of similar factors individually less severe than those above but which in aggregate might create an unsafe condition.

56.19-129 *Mandatory.* Holstmen shall examine their hoists and shall test overtravel, deadman controls, position indicators, and braking mechanisms at the beginning of each shift.

56.19-130 Empty conveyances should be operated up and down shafts at least one round trip before hoisting men after any shaft or equipment repairs and before regular man trips are hoisted or lowered.

56.19-131 Rope and conveyance connections to conveyances should be inspected daily.

56.19-132 Safety catches should be inspected daily; drop tests should be made at the time of installation. Every 2 months the cage should be rested on chairs or proper blocking to check the operation or activation of the safety catches by allowing the rope to slacken suddenly.

56.19-133 Shafts should be inspected at least weekly.

56.19-134 Sheaves should be inspected daily and kept properly lubricated.

56.19-135 Rollers used in inclined shafts should be lubricated, properly aligned, and kept in good repair.

[34 F.R. 12511, July 31, 1969, as amended at 35 F.R. 3670, Feb. 25, 1970; 35 F.R. 18590, Dec. 8, 1970; 37 FR 14372, July 19, 1972; 39 FR 24318, 24319, July 1, 1974]

§ 56.20 Miscellaneous.

56.20-1 *Mandatory.* Intoxicating beverages and narcotics shall not be permitted or used in or around mines. Persons under the influence of alcohol or narcotics shall not be permitted on the job.

56.20-2 *Mandatory.* Potable water shall be available to all employees during working hours.

56.20-3 Good housekeeping should be practiced in and around a mine.

56.20-4 Men should not engage in horseplay.

56.20-5 *Mandatory.* Carbon tetrachloride shall not be used.

56.20-6 Protruding nails which may cause injury should be removed or completely bent over.

56.20-7 Employees should be constantly alert to the potential of accidents on their jobs.

56.20-8 Toilet facilities should be provided at convenient locations and should be kept clean and sanitary.

56.20-9 *Mandatory.* Dusts suspected of being explosive shall be tested for explosibility. If tests prove positive, appropriate control measures shall be taken.

56.20-10 *Mandatory.* If failure of a water or silt retaining dam will create a hazard, it shall be of substantial construction and inspected at regular intervals.

56.20-11 through 56.20-29 [Reserved]

[34 F.R. 12511, July 31, 1969, as amended at 35 FR 3670, Feb. 25, 1970; 39 FR 24318, July 1, 1974]

§ 56.22 Savings provision.

56.22-1 through 56.22-3 [Reserved]

§ 56.24 Variances.

56.24-1 Except as provided in subsection 56.24-7, the Administrator, Mining Enforcement and Safety Administration, may, in accordance with the provisions of this § 56.24, permit a variance from a mandatory standard in this part. The Administrator may permit such a variance only by means of a written decision specifically describing the variance permitted and the restrictions and conditions to be observed and finding that, in the circumstances, the health and safety of all persons which the mandatory standard is designed to protect will be no less assured under the variance permitted. The Administrator may, in writing delegate the authority conferred by this § 56.24 to the Deputy Administrator, Mining Enforcement and Safety Administration, the Assistant Administrator, Metal and Nonmetal Mine

Health and Safety, and the Metal and Nonmetal Mine Health and Safety District Managers.

56.24-2 An application for a variance must be in writing and filed with the Administrator, Mining Enforcement and Safety Administration, Department of the Interior, Washington, D.C. 20240. A copy of the application must be mailed or otherwise delivered to the District Manager of the Metal and Nonmetal Mine Health and Safety District of the Mining Enforcement and Safety Administration in which the mine is located and a copy must be mailed or otherwise delivered to the State agency responsible for health and safety in the mine.

56.24-3 Before an application for a variance is filed, the person making such application shall give notice of the contents of the application to all persons employed in the area of the mine that would be affected by the variance if granted. Such notice may be given by the delivery of a copy to each such employee individually; or by the delivery of a copy of the application to an organization, agency, or individual authorized by the employees to represent them; or by posting a copy on a bulletin board at the mine office or in some other appropriate place at the mine adequate to give notice to the employees. An application will be rejected if it does not show that the notice required by this subsection has been given.

56.24-4 An application for a variance must:

(a) Specify the mandatory standard or standards from which the variance is requested;

(b) Describe the variance requested;

(c) Identify the areas of the mine that would be affected by the variance;

(d) Give the reasons why the standard or standards cannot or should not be strictly complied with;

(e) Specify the time period for which the variance is requested;

(f) Describe the work assignments of persons employed in affected areas of the mine, specifying the number of persons having each work assignment;

(g) Explain how the health and safety of persons employed in the affected areas of the mine will be no less assured if the requested variance is granted than through strict compliance with the standard or standards;

(h) Indicate the authority of the person signing the application;

(i) Include a statement describing how, and on what dates, the notice required in subsection 56.24-3 was given.

56.24-5 For a period of 15 days following the date on which an application for a variance is filed, any interested person may submit to the Administrator, Mining Enforcement and Safety Administration, written data, views, or arguments, respecting the application. Copies of such comments shall be mailed or otherwise delivered to the District Manager of the Health

and Safety District of the Mining Enforcement and Safety Administration in which the mine is located, to the State agency responsible for health and safety in the mine, and to the person making the application. The Administrator may hold a public hearing if he determines that such a hearing would contribute to his consideration of the application. The Administrator shall issue a decision on an application promptly following the expiration of the period of 15 days and the conclusion of a hearing, if any.

56.24-6 Notwithstanding the provisions of subsection 56.24-5, a temporary variance from a mandatory standard may be approved before the expiration of the 15-day period for a specified time not to exceed 45 calendar days after receipt of the application, if the application is for a variance that would, in the judgment of the Administrator, clearly provide a level of health and safety to the persons employed in the areas of the mine that would be affected thereby no less than would be provided by compliance with a particular mandatory standard.

56.24-7 This § 56.24 does not authorize the Administrator to permit a variance from any mandatory standard relating to exposure to concentrations of airborne contaminants or from any mandatory standard relating to exposure to concentrations of radon daughters.

[35 F.R. 18590, Dec. 8, 1970]

§ 56.26 Procedures.

NOTIFICATION OF COMMENCEMENT OF OPERATIONS AND CLOSING OF MINES

56.26-1 *Mandatory.* The owner, operator, or person in charge of any metal and nonmetal mine shall notify the nearest Mining Enforcement in Safety Administration Metal and Nonmetal Mine Health and Safety sub-district office or the State agency if the mine is located in a State which has a State Plan Agreement in effect, before starting operations, of the approximate or actual date mine operation will commence. The notification shall include the mine name, location, the company name, mailing address, person in charge, and whether operations will be continuous or intermittent.

When any mine is closed, the person in charge shall notify the nearest subdistrict office or State agency as provided above and indicate whether the closure is temporary or permanent.

[38 FR 23381, Aug. 29, 1973]

PART 57—HEALTH AND SAFETY STANDARDS—METAL AND NON-METALLIC UNDERGROUND MINES

Sec.

57.1 Purpose and scope.

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- 57.21 Gassy mines.
- 57.22 Savings provision.
- 57.24 Variances: Mandatory standards other than those relating to exposure to concentrations of radon daughters.
- 57.25 Variance: Mandatory standards relating to exposure to radon daughters.
- 57.26 Procedures.

AUTHORITY: The provisions of this Part 57 issued under sec. 6, 80 Stat. 774; 30 U.S.C. 725.

SOURCE: The provisions of this Part 57 appear at 34 F.R. 12517, July 31, 1969, unless otherwise noted.

NOTE: Nomenclature changes to this Part appear at 38 FR 18666, July 13, 1973.

§ 57.1 Purpose and scope.

The regulations in this part are promulgated pursuant to section 6 of the Federal Metal and Nonmetallic Mine Safety Act (30 U.S.C. 725) and prescribe health and safety standards for the purpose of the protection of life, the promotion of health and safety, and the prevention of accidents in underground metal and nonmetallic mines which are subject to that Act. Each standard which is preceded by the word "Mandatory" is a mandatory standard. The violation of a mandatory standard will subject an operator to an order or notice under section 8 of the Act (30 U.S.C. 727). Those regulations in each subpart appearing under the heading "General—Surface and Underground" apply both to the underground and surface operations of underground mines; those appearing under the heading "Surface Only" apply only to the surface operations of underground mines; those appearing under the heading "Underground Only" apply only to the underground operations of underground mines.

§ 57.2 Definitions.

As used in this part:

“Abandoned mine” means all work has stopped on the mine premises and an office with a responsible person in charge is no longer maintained at the mine.

“Abandoned workings” means deserted mine areas in which further work is not intended.

“Active workings” means areas at, in, or around a mine or plant where men work or travel.

“American Table of Distances” means the current edition of “The American Table of Distances for Storage of Explosives” published by the Institute of Makers of Explosives.

“Approved” means tested and accepted for a specific purpose by a nationally recognized agency.

“Authorized person” means a person approved or assigned by mine management to perform a specific type of duty or duties or to be at a specific location or locations in the mine.

“Auxiliary fan” means a fan used to deliver air to a working place off the main airstream; generally used with ventilation tubing.

“Barricaded” means obstructed to prevent the passage of persons, vehicles, or flying materials.

“Berm” means a pile or mound of material capable of restraining a vehicle.

“Blasting agent” means any material consisting of a mixture of a fuel and oxidizer which

(a) Is used or intended for use in blasting,

(b) Is not classed as an explosive by the Department of Transportation,

(c) Contains no ingredient classed as an explosive by the Department of Transportation, and

(d) Cannot be detonated by a No. 8 blasting cap when tested as recommended in Bureau of Mines Information Circular 8179.

“Blasting area” means the area near blasting operations in which concussion or flying material can reasonably be expected to cause injury.

“Blasting cap” means a detonator containing a charge of detonating compound, which is ignited by electric current, or the spark of a fuse. Used for detonating explosives.

“Blasting circuit” means electric circuits used to fire electric detonators or to ignite an igniter cord by means of an electric starter.

“Blasting switch” means a switch used to connect a power source to a blasting circuit.

“Booster fan” means a fan installed in the main airstream or a split of the main airstream to increase airflow through a section or sections of a mine.

“Capped fuse” means a length of safety fuse to which a detonator has been attached.

“Capped primer” means a package or cartridge of explosives which is specifically designed to transmit detonation to other explosives and which contains a detonator.

“Combustible” means capable of being ignited and consumed by fire.

“Company official” means a member of the company supervisory or technical staff.

“Competent person” means a person having abilities and experience that fully qualify him to perform the duty to which he is assigned.

“Detonating cord” or “detonating fuse” means a flexible cord containing a core of high explosive.

“Detonator” means a device containing a small detonating charge that is used for detonating an explosive, including, but not limited to blasting caps, exploders, electric detonators, and delay electric blasting caps.

“Distribution box” means a portable apparatus with an enclosure through which an electric circuit is carried to one or more cables from a single incoming feed line; each cable circuit being connected through individual overcurrent protective devices.

“Electric blasting cap” means a blasting cap designed for and capable of being initiated by means of an electric current.

“Electrical grounding” means to connect with the ground to make the earth part of the circuit.

“Employee” means a person who works for wages or salary in the service of an employer.

“Employer” means a person or organization which hires one or more persons to work for wages or salary.

“Escapeway” means a passageway by which persons may leave a mine.

“Explosive” means any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion. Explosives include, but are not limited to black powder, dynamite,

nitroglycerin, fulminate, ammonium nitrate when mixed with a hydrocarbon, and other blasting agents.

“Face or bank” means that part of any mine where excavating is progressing or was last done.

“Flammable” means capable of being easily ignited and of burning rapidly.

“Flash point” means the minimum temperature at which sufficient vapor is released by a liquid or solid to form a flammable vapor-air mixture at atmospheric pressure.

“Highway” means any public street, public alley or public road.

“High potential” means more than 650 volts.

“Hoist” means a power-driven windlass or drum used for raising ore, rock, or other material from a mine, and for lowering or raising men and material.

“Igniter cord” means a fuse, cordlike in appearance, which burns progressively along its length with an external flame at the zone of burning, and is used for lighting a series of safety fuses in the desired sequence.

“Lay” means the distance parallel to the axis of the rope in which a strand makes one complete turn about the axis of the rope.

“Low potential” means 650 volts or less.

“Main fan” means a fan that controls the entire airflow of the mine, or the airflow of one of the major air circuits.

“Major electrical installation” means an assemblage of stationary electrical equipment for the generation, transmission, distribution, or conversion of electrical power.

“Man trip” means a trip on which men are transported to and from a work area.

“Mill” includes any ore mill, sampling works, concentrator, and any crushing, grinding, or screening plant used at, and in connection with, an excavation or mine.

“Mine opening” means any opening or entrance from the surface into a mine.

“Misfire” means the complete or partial failure of a blasting charge to explode as planned.

“Overburden” means material of any nature, consolidated or unconsolidated, that overlies a deposit of useful materials or ores that are to be mined.

“Permissible” means a machine, material, apparatus, or device which has been investigated, tested, and approved by the Bureau of Mines or the Mining Enforce-

ment and Safety Administration, and is maintained in permissible condition.

“Potable” means fit for drinking.

“Powder chest” means a substantial, nonconductive portable container equipped with a lid and used at blasting sites for explosives other than blasting agents.

“Primer or Booster” means a package or cartridge of explosive which is designed specifically to transmit detonation to other explosives and which does not contain a detonator.

“Reverse-current protection” means a method or device used on direct-current circuits or equipment to prevent the flow of current in a reverse direction.

“Roll protection” means a framework, safety canopy or similar protection for the operator when equipment overturns.

“Safety can” means an approved container, of not over 5 gallons capacity, having a spring-closing lid and spout cover.

“Safety fuse” means a train of powder enclosed in cotton, jute yarn, and water-proofing compounds, which burns at a uniform rate; used for firing a cap containing the detonating compound which in turn sets off the explosive charge.

“Safety switch” means a sectionalizing switch that also provides shunt protection in blasting circuits between the blasting switch and the shot area.

“Scaling” means removal of insecure material from a face or highwall.

“Secondary safety connection” means a second connection between a conveyance and rope, intended to prevent the conveyance from running away or falling in the event the primary connection fails.

“Shaft” means a vertical or inclined shaft; a slope, incline, or winze.

“Stray current” means that portion of a total electric current that flows through paths other than the intended circuit.

“Substantial construction” means construction of such strength, material, and workmanship that the object will withstand all reasonable shock, wear, and usage to which it will be subjected.

“Suitable” means that which fits, and has the qualities or qualifications to meet a given purpose, occasion, condition, function, or circumstance.

“Travelway” means a passage, walk or way regularly used and designated for persons to go from one place to another.

"Trip light" means a light displayed on the opposite end of a train from the locomotive or engine.

"Wet drilling" means the continuous application of water through the central hole of hollow drill steel to the bottom of the drill hole.

"Working level" (WL) means any combination of the short-lived radon daughters in one liter of air that will result in ultimate emission of 1.3×10^6 MeV (million electron volts) of potential alpha energy, and exposure to these radon daughters over a period of time is expressed in terms of "working level months" (WLM). Inhalation of air containing a radon daughter concentration of 1 WL for 173 hours results in an exposure of 1 WLM."

"Working place" means any place in or about a mine where work is being performed.

[34 F.R. 12517, July 31, 1969, as amended at 35 F.R. 3671, Feb. 25, 1970; 37 FR 14369, July 19, 1972; 39 FR 24319, July 1, 1974]

§ 57.3 Ground control.

SURFACE ONLY

57.3-1 *Mandatory.* Standards for the safe control of pit walls, including the overall slope of the pit wall, shall be established and followed by the operator. Such standards shall be consistent with prudent engineering design, the nature of the ground and the kind of material and mineral mined, and the ensuring of safe working conditions according to the degree of slope. Mining methods shall be selected which will ensure wall and bank stability, including benching as necessary to obtain a safe overall slope.

57.3-2 *Mandatory.* Loose, unconsolidated material shall be stripped for a safe distance, but in no case less than 10 feet, from the top of pit or quarry walls, and the loose, unconsolidated material shall be sloped to the angle of repose.

57.3-3 *Mandatory.* To ensure safe operation, the width and height of benches shall be governed by the type of equipment to be used and the operation to be performed.

57.3-4 *Mandatory.* Safe means for scaling pit-banks shall be provided. Hazardous banks shall be scaled before other work is performed in the hazardous bank area.

57.3-5 *Mandatory.* Men shall not work near or under dangerous banks. Overhanging banks shall be taken down immediately and other unsafe ground conditions shall be corrected promptly, or the areas shall be barricaded and posted.

57.3-6 *Mandatory.* Men shall approach from above loose rock and areas to be scaled and shall scale from a safe location.

57.3-7 *Baffleboards, screens, cribbing, or other suitable barriers* should be provided where movement of material into cuts constitutes a safety hazard.

57.3-8 *Mandatory.* The supervisor, or a competent person designated by him, shall examine working areas and faces for unsafe conditions at least at the beginning of each shift and after blasting. Any unsafe condition found shall be corrected before any further work is performed at the immediate area or face at which the unsafe condition exists.

57.3-9 *Mandatory.* Men shall examine their working places before starting work and frequently thereafter, and any unsafe condition shall be corrected.

57.3-10 *Banks, benches, and terrain sloping into the working areas* should be examined after every rain, freeze, or thaw, before men work in such areas.

57.3-11 Before large boulders are drilled or broken, the boulder should be—

- (a) Moved to a safe location; or
- (b) Positioned securely, and prevented from rolling and moving; or

(c) The men who do the drilling or breaking should be positioned so that movement of the boulder will not endanger the men.

57.3-12 *Mandatory.* Men shall not work between equipment and the pit wall or bank where the equipment may hinder escape from falls or slides of the bank.

57.3-13 *Rock-bolt installations, where used, should be in accordance with recommendations of the Mining Enforcement and Safety Administration or other competent agency.*

57.3-14 through 57.3-19 [Reserved]

UNDERGROUND ONLY

57.3-20 *Mandatory.* Ground support shall be used if the operating experience of the mine, or any particular area of the mine, indicates that it is required. If it is required, support, including timbering, rock bolting, or other methods shall be consistent with the nature of the ground and the mining method used.

57.3-21 Men should be trained in the proper methods of testing for, taking down, and supporting loose ground.

57.3-22 *Mandatory.* Miners shall examine and test the back, face, and ribs of their working places at the beginning of each shift and frequently thereafter. Supervisors shall examine the ground conditions during daily visits to insure that proper testing and ground control practices are being followed. Loose ground shall be taken down or adequately supported before any other work is done. Ground conditions along haulageways and travelways shall be examined periodically and scaled or supported as necessary.

57.3-23 A scaling bar of proper length and blunt on one end should be provided at each working face.

57.3-24 *Picks or other short tools that would place the user in danger of falling rock should not be used for barring down.*

57.3-25 *Timbers should be blocked tightly.*

57.3-26 *Damaged or dislodged timbers which create a hazardous condition should be repaired or replaced promptly.*

57.3-28 When necessary, permanent, or temporary ground support should be installed near enough to the bottom of the shaft during shaft sinking to prevent falls of rocks from the sides of the shaft.

57.3-29 Shaft pillars should have sufficient strength to protect operating shafts.

57.3-30 Rock-bolt installations should be installed in a manner to provide safe and effective ground support.

57.3-31 Rock-bolting materials should meet the applicable standards of the United States of America Standards Institute.

57.3-32 When needed, rock bolts should be installed as soon as possible after an area is exposed.

57.3-33 Torque meters or torque wrenches should be available at mines where rock bolts are used for ground support. Periodic tests should be made to determine if bolts meet recommended torque.

[34 F.R. 12517, July 31, 1969, as amended at 35 F.R. 3671, Feb. 25, 1970; 35 F.R. 18591, Dec. 8, 1970; 39 FR 24319, July 1, 1974]

§ 57.4 Fire prevention and control.

GENERAL—SURFACE AND UNDERGROUND

57.4-1 *Mandatory.* No person shall smoke or use an open flame:

(a) Where flammable solvents, liquids, fluids, or other flammable materials are stored, transported, handled, or used; or

(b) Where oil or grease is stored, transported, handled, or used, if smoking or the use of an open flame may cause a fire; or

(c) Within an unsafe distance of any area where smoking or the use of an open flame may cause a fire or an explosion.

57.4-2 *Mandatory.* Signs warning against smoking and open flames shall be posted so they can be readily seen in areas or places where fire or explosion hazards exist.

57.4-3 Areas surrounding flammable-liquid-storage tanks and electric substations and transformers should be kept free from grass (dry), weeds, underbrush, and other combustible materials for at least 25 feet in all directions.

57.4-4 *Mandatory.* Flammable liquids shall be stored in accordance with standards of the National Fire Protection Association or other recognized agencies approved by the Mining Enforcement and Safety Administration. Small quantities of flammable liquids drawn from storage shall be kept in appropriately labeled safety cans.

57.4-5 Unburied flammable-liquid storage tanks should be mounted securely on firm foundations. Outlet piping should be provided with flexible connections or other special fittings to prevent adverse effects from tank settling.

57.4-6 Buildings or rooms in which oil, grease, flammable liquids, or similar flammable materials are stored should be of fire-resistant construction and well ventilated.

57.4-7 Means should be provided to confine, remove, control, or drain away spilled or flowing flammable liquids.

57.4-8 *Mandatory.* Fuel lines shall be equipped with valves to cut off fuel at the source and shall be located and maintained to minimize fire hazards.

57.4-9 *Mandatory.* All heat sources, including lighting equipment, capable of producing combustion shall be insulated or isolated from combustible materials.

57.4-10 *Mandatory.* Power wires and cables shall be adequately insulated where they pass through doors or walls or where they present a fire hazard.

57.4-11 *Mandatory.* Abandoned electrical circuits shall be deenergized and isolated so that they cannot become energized inadvertently.

57.4-12 Combustible materials, grease, lubricants, or flammable liquids should not be allowed to accumulate where they can create a fire hazard.

57.4-13 Materials, such as oily waste and rags, which are subject to spontaneous combustion should be placed in tightly covered metal containers until disposed of properly.

57.4-14 *Mandatory.* Solvents with flash points lower than 100° F. (38° C.) shall not be used for cleaning.

57.4-15 *Mandatory.* Solvents shall not be used near an open flame or other ignition source, or near any source of heat, or in an atmosphere that can elevate the temperature of the solvent above the flash point.

57.4-16 Drip pans should be provided to catch leakage or spillage when oil or flammable liquids are dispensed in a place or manner which may create a hazard.

57.4-17 Floors around drip pans should be covered with sand or other suitable non-combustible material and such sand or material should be replaced as necessary.

57.4-18 *Mandatory.* Oxygen cylinders shall not be stored in rooms or areas used or designated for oil or grease storage.

57.4-19 *Mandatory.* Gauges and regulators used with oxygen or acetylene cylinders shall be kept clean and free of oil and grease.

57.4-20 *Mandatory.* Battery-charging stations shall be located in well-ventilated areas.

57.4-21 *Mandatory.* Equipment powered by internal combustion engines (except diesel engines) where the fuel tank is an integral part of the equipment, shall be shut-off and stopped before being fueled.

57.4-22 *Mandatory.* Each mine shall have available or be provided with suitable fire-fighting equipment adequate for the size of the mine.

57.4-23 *Mandatory.* Firefighting equipment which is provided on the mine property shall be strategically located, readily accessible, plainly marked, properly maintained, and inspected periodically. Records shall be kept of such inspections.

57.4-24 Fire extinguishers should be:

(a) Of the appropriate type for the particular fire hazard involved.

(b) Adequate in number and size for the particular fire hazard involved.

(c) Replaced immediately with fully charged extinguishers after any discharge is made from the extinguisher.

(d) Inspected, tested, and maintained at regular intervals according to the manufacturer's recommendations.

(e) Approved by the Underwriter's Laboratories, Inc., or other competent testing agency acceptable to the Mining Enforcement and Safety Administration.

57.4-25 Fire hydrants should be of a standard type. Adapters should be provided if necessary to fit the hose equipment of local fire departments. Wrenches or keys to open the valves should be readily available.

57.4-26 Water pipes, valves, outlets, hydrants, and hoses designated for firefighting purposes should be inspected every 3 months and tested annually.

57.4-27 Suitable fire extinguishers should be provided on self-propelled mobile equipment with enclosed cabs.

57.4-28 [Reserved]

57.4-29 *Mandatory.* When welding or cutting, suitable precautions shall be taken to insure that smoldering metal or sparks do not result in a fire. Fire extinguishing equipment shall be immediately available at the site.

57.4-30 Employees should be trained in the use of firefighting equipment.

57.4-31 A firefighting organization should be established, equipped, and trained in firefighting; drills should be held at least twice a year.

57.4-32 [Reserved]

57.4-33 *Mandatory.* Valves on oxygen and acetylene tanks shall be kept closed when the contents are not being used.

57.4-34 through 57.4-39 [Reserved]

SURFACE ONLY

57.4-40 *Mandatory.* Fire alarm systems shall be provided and maintained in operating condition or adequate fire alarm procedures shall be established to warn promptly all persons endangered by a fire.

57.4-41 Two exits should be provided where men work or congregate.

57.4-42 Timber or other combustible materials in excess of 1 day's supply should not be stored within 100 feet of mine-ventilation fans or mine openings.

57.4-43 Buildings and other structures within 100 feet of mine openings should be fire-resistant.

57.4-44 Areas surrounding main fan installations and other mine openings should be kept free from grass, weeds, underbrush, and other combustible materials for a safe distance in all directions.

57.4-45 Blacksmith shops should be:

(a) A safe distance from mine openings and not in buildings or snowsheds adjoining mine openings.

(b) Of fire-resistant construction.

(c) Well ventilated and equipped with exhaust hoods over the forge and welding areas.

(d) Occupied when the forge fire is burning.

(e) Inspected carefully for smoldering fires at the end of the shift.

57.4-46 *Mandatory.* Gasoline, diesel fuel, liquefied petroleum gases, and other flammable liquids when not buried, shall not be stored within 100 feet of the following:

(a) Mine openings.

(b) Buildings or snowsheds connected to mine openings.

(c) Fan installations or housings.

(d) Hoist houses.

57.4-47 Belt-conveyors in locations where fire would create a hazard to personnel should be provided with safety switches to stop the drive pulley automatically in the event of excessive slippage.

57.4-48 *Mandatory.* All employees shall be instructed at least once each calendar year on fire-alarm signals and applicable procedures to be followed in case of fire or other emergency. Records of instruction shall be kept for 2 years.

UNDERGROUND ONLY

57.4-51 *Mandatory.* Fire-alarm systems adequate to warn all employees shall be provided and maintained in operating condition.

57.4-52 *Mandatory.* Gasoline shall not be stored underground, but may be used only to power internal combustion engines in non-gassy mines that have multiple horizontal or inclined roadways from the surface large enough to accommodate vehicular traffic. Roadways and other openings shall not be supported or lined with combustible material. All roadways and other openings shall be connected with another opening every 100 feet by a passage large enough to accommodate any vehicle in the mine.

57.4-53 *Mandatory.* The use of liquefied petroleum gases shall be limited to maintenance work.

57.4-54 *Mandatory.* Oil, grease, or diesel fuel stored underground shall be kept in suitable tightly sealed containers in fire-resistant areas, at safe distances from explosives' magazines, electrical installations, and shaft stations.

57.4-55 Transformer stations, pump rooms, compressor rooms, and similar installations should be in fire-resistant areas.

57.4-56 Oil or fuel storage areas should not be located in main ventilation airways.

57.4-57 Trailing cables should be fire-resistant.

57.4-58 *Mandatory.* Fires shall not be built underground; open-flame torches and candles shall not be left underground.

57.4-59 [Reserved]

57.4-60 Power circuits should be deenergized in all areas on idle shifts or idle days, except where power is required. Circuits which remain energized should be protected by fuses or circuit breakers of the correct type and capacity consistent with the power load on such idle shifts or idle days.

57.4-61 Fire doors should be provided at shaft stations or other appropriate locations

where necessary to prevent the spread of smoke or gas; the doors should be equipped with latches operable from both sides.

57.4-62 *Timbered mine entrances* should be fire resistant for at least 200 feet inside the mine portal or collar or provided with fire protection adequate to control a fire for at least 200 feet inside the mine portal or collar.

57.4-63 *Waterline outlets* should be located so as to be accessible if a fire is at a station.

57.4-64 *All air lines in timbered mines* should be readily convertible into waterlines if a water supply is available, unless the air lines are paralleled by waterlines.

57.4-65 *Mandatory.* When welding or cutting near combustible material, the surrounding area shall, if practical, be wet down thoroughly before and after work is done. A fire patrol of the area shall be maintained afterward for so long as necessary to assure that no danger of fire exists as determined by a responsible supervisor. In addition, when welding or cutting in shafts, winzes or raises, barriers, bulkheads or other protective measures shall be used to prevent injury to anyone working or traveling below.

57.4-66 *Adequate fire extinguishers or equivalent fire protection* should be provided at the head, tail, and drive pulleys of belt conveyors and at suitable intervals along the belt line.

57.4-67 *Mandatory.* A mine rescue station equipped with at least 10 sets of approved and properly maintained 2-hour self-contained breathing apparatus, adequate supplies, and spare parts shall be maintained at mines employing 75 or more men underground or, in lieu thereof, the mine shall be affiliated with a central mine rescue station.

57.4-68 *Mines at which individual mine rescue stations are not maintained* should affiliate with central or cooperative mine rescue stations.

57.4-69 *Mandatory.* Approved mine rescue apparatus shall be properly maintained for immediate use. The equipment shall be tested at least once a month and records kept of the tests.

57.4-70 *Mandatory.* At mines employing 75 or more men underground, at least two rescue crews (10 Men) shall be trained at least annually in the use, care, and limitations of self-contained breathing and firefighting apparatus and in mine-rescue procedures. Smaller mines shall have at least one man so trained for each 10 men employed underground.

57.4-71 *Rescue crews* should include supervisory and key personnel familiar with all mine installations that could prove vital to firefighting and rescue operations.

57.4-72 *Only trained mine rescue men* should participate in firefighting operations in advance of the fresh air base.

57.4-73 *Mandatory.* Mine evacuation drills shall be held for each shift once every 6 months. These evacuation drills shall in-

volve all employees on each shift and shall include:

(a) Activation of the fire-alarm system.

(b) Evacuation of all men from their work areas to the surface or to designated central evacuation points at some time other than a shift change.

Record of such drills, showing the time and date, shall be kept for at least 2 years after each drill.

57.4-74 *Mandatory.* All employees involved in the escape and evacuation plan for an underground operation shall be instructed at least once each calendar year on current escape and evacuation plans, fire-alarm signals, and applicable procedures to be followed in case of fire or other emergency. New employees shall receive such instructions before going underground. Whenever an employee is assigned to work in another area of the mine he shall be instructed on the escapeway for that area at the time of such assignment. However, employees who normally work in more than one area of the mine shall be instructed at least once each calendar year in the location of escapeways for all areas of the mine in which they normally work or travel. Whenever a change is made in escape and evacuation plans and procedures for any area of the mine, all affected employees shall be instructed of such change. Records of instruction shall be kept for 2 years.

57.4-75 *Mandatory.* Belt conveyors shall be equipped with slippage and sequence switches.

[34 F.R. 12517, July 31, 1969, as amended at 35 F.R. 3671, Feb. 25, 1970; 35 F.R. 18591, Dec. 8, 1970; 37 FR 14373, July 19, 1972; 38 FR 23382, Aug. 29, 1973; 38 FR 23781, Sept. 4, 1973; 39 FR 9653, Mar. 13, 1974]

§ 57.5 Air quality, ventilation, and radiation.

GENERAL—SURFACE AND UNDERGROUND

57.5-1 *Mandatory.* Except as permitted by § 57.5-5: (a) Except as provided in paragraph (b), the exposure to airborne contaminants shall not exceed, on the basis of a time weighted average, the threshold limit values adopted by the American Conference of Governmental Industrial Hygienists, as set forth and explained in the 1973 edition of the Conference's publication, entitled "TLV's Threshold Limit Values for Chemical Substances in Workroom Air Adopted by ACGIH for 1973," pages 1 through 54, which are hereby incorporated by reference and made a part hereof. This publication may be obtained from the American Conference of Governmental Industrial Hygienists by writing to the Secretary-Treasurer, P.O. Box 1937, Cincinnati, Ohio 45201, or may be examined in any Metal and Nonmetal Mine Health and Safety District or Subdistrict Office of the Mining Enforcement and Safety Administration. Excursions above the listed thresholds shall not be of a greater magnitude than is characterized as permissible by the Conference.

(b) The 8-hour time weighted average airborne concentration of asbestos dust to which employees are exposed shall not exceed 5 fibers per milliliter greater than 5 microns in length, as determined by the membrane filter method at 400-450 magnification (4 millimeter objective) phase contrast illumination. No employee shall be exposed at any time to airborne concentrations of asbestos fibers in excess of 10 fibers longer than 5 micrometers, per milliliter of air, as determined by the membrane filter method over a minimum sampling time of 15 minutes. "Asbestos" is a generic term for a member of hydrated silicates that, when crushed or processed, separate into flexible fibers made up of fibrils. Although there are many asbestos minerals, the term "asbestos" as used herein is limited to the following minerals; chrysotile, amosite, crocidolite, anthophyllite asbestos, tremolite asbestos, and actinolite asbestos.

(c) Employees shall be withdrawn from areas where there is present an airborne contaminant given a "C" designation by the Conference and the concentration exceeds the threshold limit value listed for that contaminant.

57.5-2 *Mandatory.* Dust, gas, mist, and fume surveys shall be conducted as frequently as necessary to determine the adequacy of control measures.

57.5-3 *Mandatory.* Holes shall be collared and drilled wet, or other efficient dust-control measures shall be used when drilling non-water-soluble material. Efficient dust-control measures shall be used when drilling water-soluble materials.

57.5-4 Muckpiles, haulage roads, rock transfer points, crushers, and other points where dust is produced in amounts sufficient to cause a health or safety hazard should be wetted down as often as necessary, unless the dust is controlled adequately by other methods.

57.5-5 *Mandatory.* Control of employee exposure to harmful airborne contaminants shall be, insofar as feasible, by prevention of contamination, removal by exhaust ventilation, or by dilution with uncontaminated air. However, where accepted engineering control measures have not been developed or when necessary by the nature of work involved (for example, while establishing controls or occasional entry into hazardous atmospheres to perform maintenance or investigation), employees may work for reasonable periods of time in concentration of airborne contaminants exceeding permissible levels if they are protected by appropriate respiratory protective equipment. Whenever respiratory protective equipment is used a program for selection, maintenance, training, fitting, supervision, cleaning, and use shall meet the following minimum requirements:

(a) Mining Enforcement and Safety Administration approved respirators which are applicable and suitable for the purpose in-

tended shall be furnished, and employees shall use the protective equipment in accordance with training and instruction.

(b) A respirator program consistent with the requirements of ANSI Z88.2-1969, published by the American National Standards Institute and entitled "American National Standards Practices for Respiratory Protection ANSI Z88.2-1969, approved August 11, 1969, which is hereby incorporated by reference and made a part hereof. This publication may be obtained from the American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018, or may be examined in any Metal and Non-metal Mine Health and Safety District or Subdistrict Office of the Mining Enforcement and Safety Administration.

(c) When respiratory protection is used in atmospheres immediately harmful to life, the presence of at least one other person with backup equipment and rescue capability shall be required in the event of failure of the respiratory equipment.

57.5-6 through 57.5-9 [Reserved]

SURFACE ONLY

57.5-10 through 57.5-14 [Reserved]

UNDERGROUND ONLY

57.5-15 Atmospheres in all active areas should contain at least 20 percent oxygen.

57.5-16 through 57.5-19 [Reserved]

VENTILATION

UNDERGROUND ONLY

57.5-20 [Reserved]

57.5-21 Main fans should be installed on the surface; if it is necessary to locate them underground, they should be in fire-resistant areas and should be provided with remote controls.

57.5-22 *Mandatory.* Fan housings and air ducts connecting main fans to underground openings shall be fire-resistant.

57.5-23 Separate mine openings should be provided for main intake- and return-air currents except during early stages of development. A multiple compartment shaft is a single opening for the purpose of this standard.

57.5-24 [Reserved]

57.5-25 Main fans should be inspected and maintained properly.

57.5-26 Instruments should be provided to test the mine atmosphere quantitatively for carbon monoxide, nitrogen dioxide, and other gases that occur in the mine. Tests should be conducted as frequently as necessary to assure that the required quality of air is maintained.

57.5-27 Flame safety lamps or other suitable devices should be used to test for acute oxygen deficiency.

57.5-28 *Mandatory.* Unventilated areas shall be sealed, or barricaded and posted against entry.

57.5-29 When used, ventilation tubing should be installed so that the air current sweeps the face areas effectively. Maximum distance of the end of the tubing from the face generally should be 30 feet for blowing and 6 feet for exhausting.

57.5-30 Ventilation doors not operated mechanically should be designed and installed so that they are self-closing and will remain closed regardless of the direction of the air movement.

57.5-31 through 57.5-36 [Reserved]

RADIATION

UNDERGROUND ONLY

57.5-37 *Mandatory.* Mine atmospheres shall be sampled to determine if hazardous concentrations of radon daughters are present. Where potentially hazardous concentrations are found, or known sources of radon exist, each active work area shall be sampled as often as necessary by a qualified person.

57.5-38 *Mandatory.* No employee shall be permitted to receive an exposure of more than 6 WLM (working level months) in any consecutive 3-month period and no more than 12 WLM in any consecutive 12-month period.

57.5-39 *Mandatory.* If samples show an atmospheric concentration of radon daughters of more than 1.1 working level, but less than 2.0 working levels, immediate corrective action shall be taken or the men shall be withdrawn. When concentrations higher than 2.0 working levels are found, the men shall be withdrawn from the area until corrective action is taken and the radon-daughter atmospheric concentrations are reduced to 1.0 working level or less.

57.5-40 *Mandatory.* (a) Where uranium is mined, if measurements in areas indicate exposure to concentrations of radon daughters in excess of 0.3 working level, complete individual exposure records shall be kept for all employees entering these areas.

(b)

57.5-41 *Mandatory.* Smoking shall be prohibited where uranium is mined.

57.5-42 *Mandatory.* If levels of permissible exposures to concentrations of radon daughters different from those prescribed in 57.5-38 are recommended by the Environmental Protection Agency and approved by the President, no employee shall be permitted to receive exposures in excess of those levels after the effective dates established by the Agency.

57.5-43 [Reserved]

[34 F.R. 12617, July 31, 1969, as amended at 35 F.R. 3672, Feb. 26, 1970; 35 F.R. 4515, Mar. 13, 1970; 35 F.R. 18591, Dec. 8, 1970; 39 F.R. 24319, 24320, July 1, 1974]

§ 57.6 Explosives.

The term "explosives" as used in this § 57.6 includes blasting agents. The standards in this section in which the term "explo-

sives" appears are applicable to blasting agents (as well as to other explosives) unless blasting agents are expressly excluded.

STORAGE

GENERAL—SURFACE AND UNDERGROUND

57.6-1 *Mandatory.* Detonators and explosives other than blasting agents shall be stored in magazines.

57.6-2 *Mandatory.* Detonators shall not be stored in the same magazine with explosives.

57.6-3 Blasting agents may be stored with other explosives in the same magazine.

57.6-4 Safety fuse or detonating cord may be stored with explosives in the same magazine.

57.6-5 *Mandatory.* Areas surrounding magazines and facilities for the storage of blasting agents shall be kept clear of rubbish, brush, dry grass, or trees (other than live trees 10 or more feet tall), for a distance not less than 25 feet in all directions, and other unnecessary combustible materials for a distance of not less than 50 feet.

57.6-6 *Mandatory.* Smoking and open flames shall not be permitted within 25 feet of a place where explosives or detonators are stored.

57.6-7 Explosives, detonators, and related materials such as safety fuse and detonating cord should be stored in a manner to assure use of oldest stocks first.

57.6-8 *Mandatory.* Ammonium nitrate-fuel oil blasting agents shall be physically separated from other explosives, safety fuse, or detonating cord stored in the same magazine and in such a manner that oil does not contaminate the other explosives, safety fuse, or detonating cord.

57.6-9 Cases of explosives should not be stored on their ends or sides.

57.6-10 Cases of explosives should not be stacked more than 6 feet high.

57.6-11 [Reserved]

57.6-12 *Mandatory.* Prior to interior repair of facilities for storage of explosives, including blasting agents, all materials stored within the facility shall be removed and the interior cleaned. Prior to the exterior repair of such facilities, all materials stored within the facility shall be removed, if there exists a possibility that such repairs may produce a spark or flame. The explosives removed from storage facilities to be repaired shall be placed either in other storage facilities appropriate for the storage of such materials under this section or a safe distance from the facilities under repair where they shall be properly guarded and protected until the repairs have been completed and the materials have been returned to storage within the facilities.

57.6-13 through 57.6-19 [Reserved]

SURFACE ONLY

57.6-20 *Mandatory.* Magazines shall be:

(a) Located in accordance with the current American Table of Distances for storage of explosives.

(b) Detached structures located away from powerlines, fuel storage areas, and other possible sources of fire.

(c) Constructed substantially of non-combustible material or covered with fire-resistant material.

(d) Reasonably bullet resistant.

(e) Electrically bonded and grounded if constructed of metal.

(f) Made of nonsparking material on the inside, including floors.

(g) Provided with adequate and effectively screened ventilation openings near the floor and ceiling.

(h) Kept locked securely when unattended.

(i) Posted with suitable danger signs so located that a bullet passing through the face of a sign will not strike the magazine.

(j) Used exclusively for storage of explosives or detonators and kept free of all extraneous materials.

(k) Kept clean and dry in the interior, and in good repair.

(l) Unheated, unless heated in a manner that does not create a fire or explosion hazard. Electrical heating devices shall not be used inside a magazine.

57.6-31 through 57.6-34 [Reserved]

UNDERGROUND ONLY

57.6-25 through 57.6-26 [Reserved]

57.6-27 *Mandatory.* Box-type underground-distribution storage magazines used to store explosives or detonators near working faces shall be constructed with only nonsparking material inside and equipped with covers or doors and shall be located out of the line of blasts.

57.6-28 Box-type underground-distribution storage magazines should be used to store detonators or explosives other than blasting agents near working faces and should be located not less than 50 feet from the face.

57.6-29 *Mandatory.* Secondary underground and box-type underground magazines shall be labeled suitably.

57.6-30 *Mandatory.* Detonator-storage magazines shall be of the same construction as explosives-storage magazines and shall be separated by at least 25 feet from explosive-storage magazines.

57.6-31 through 57.6-39 [Reserved]

TRANSPORTATION

GENERAL—SURFACE AND UNDERGROUND

57.6-40 *Mandatory.* Explosives and detonators shall be transported in separate vehicles unless separated by 4 inches of hardwood or the equivalent.

57.6-41 *Mandatory.* When explosives and detonators are hauled by trolley locomotives, covered, electrically-insulated cars shall be used.

57.6-42 *Mandatory.* Self-propelled vehicles used to transport explosives or detonators

shall be equipped with suitable fire extinguishers.

57.6-43 *Mandatory.* Vehicles containing explosives or detonators shall be posted with proper warning signs.

57.6-44 *Mandatory.* When vehicles containing explosives or detonators are parked, the brakes shall be set, the motive power shut off, and the vehicles shall be blocked securely against rolling.

57.6-45 *Mandatory.* Vehicles containing explosives or detonators shall not be taken to a repair garage or shop for any purpose.

57.6-46 *Mandatory.* Vehicles containing explosives or detonators shall be maintained in good condition and shall be operated at a safe speed and in accordance with all safe operating practices.

57.6-47 *Mandatory.* Vehicles used to transport explosives, other than blasting agents, shall have substantially constructed bodies, no sparking metal exposed in the cargo space, and shall be equipped with suitable sides and tail gates; explosives shall not be piled higher than the side or end enclosures.

57.6-48 Explosives or detonators should be transported at times and over routes that expose a minimum number of persons.

57.6-49 Explosives or detonators in open-body vehicles should be covered with fire-retardant and water-repellent materials.

57.6-50 *Mandatory.* Other materials or supplies shall not be placed on or in the cargo space of a conveyance containing explosives, detonating cord or detonators, except for safety fuse and except for properly secured, nonsparking equipment used expressly in the handling of such explosives, detonating cord or detonators.

57.6-51 *Mandatory.* Explosives or detonators shall not be transported on locomotives.

57.6-52 *Mandatory.* No person shall smoke while transporting or handling explosives or detonators.

57.6-53 *Mandatory.* Only the necessary attendants shall ride on or in vehicles containing explosives or detonators.

57.6-54 *Mandatory.* Explosives or detonators shall not be transported on mantrips.

57.6-55 Explosives or detonators should be transported promptly without undue delays in transit.

57.6-56 *Mandatory.* Substantial nonconductive containers shall be used to carry explosives to blasting sites.

57.6-57 *Mandatory.* Nonconductive containers with tight-fitting covers shall be used to transport or carry capped fuses and electric detonators to blasting sites.

57.6-58 through 57.6-64 [Reserved]

SURFACE ONLY

57.6-65 *Mandatory.* Vehicles containing detonators or explosives, other than blasting agents, shall not be left unattended except in blasting areas where loading or charging is in progress.

57.6-66 through 57.6-74 [Reserved]

UNDERGROUND ONLY

57.6-75 *Mandatory.* Men assigned to and responsible for hoisting shall be notified whenever explosives or detonators are being transported in a shaft conveyance.

57.6-76 *Mandatory.* Hoisting in adjacent shaft compartments shall be stopped when explosives or detonators are being handled.

57.6-77 *Mandatory.* Vehicles shall be attended, whenever practical and possible, while loaded with explosives or detonators.

57.6-78 Cars containing explosives or detonators should be pulled, except when hand-trammed.

57.6-79 through 57.6-89 [Reserved]

USE

GENERAL—SURFACE AND UNDERGROUND

57.6-90 *Mandatory.* Persons who use or handle explosives or detonators shall be experienced men who understand the hazards involved; trainees shall do such work only under the supervision of and in the immediate presence of experienced men.

57.6-91 *Mandatory.* Blasting operations shall be under the direct control of authorized persons.

57.6-92 *Mandatory.* Damaged or deteriorated explosives or detonators shall be destroyed in a safe manner

57.6-93 [Reserved]

57.6-94 *Mandatory.* Holes to be blasted shall be charged as near to blasting time as practical and such holes shall be blasted as soon as possible after charging has been completed. In no case shall the time elapsing between the completion of charging to the time of blasting exceed 72 hours unless prior approval has been obtained from the Mining Enforcement and Safety Administration.

57.6-95 *Mandatory.* No person shall smoke within 25 feet of explosives or detonators.

57.6-96 *Mandatory.* Explosives shall be kept separated from detonators until charging is started.

57.6-97 *Mandatory.* Capped primers shall be made up at the time of charging and as close to the blasting site as conditions allow.

57.6-98 A capped primer should be prepared so that the detonator is contained securely and is completely embedded within the explosive cartridge.

57.6-99 *Mandatory.* Only wooden or other nonsparking implements shall be used to punch holes in an explosive cartridge.

57.6-100 *Mandatory.* Tamping poles shall be blunt and squared at one end and made of wood, nonsparking material, or of special plastic acceptable to the Mining Enforcement and Safety Administration.

57.6-101 *Mandatory.* No tamping shall be done directly on a capped primer.

57.6-102 *Mandatory.* Unused explosives and detonators shall be moved to a safe location as soon as charging operations are completed.

57.6-103 *Mandatory.* Areas in which charged holes are awaiting firing shall be

guarded, or barricaded and posted, or flagged against unauthorized entry.

57.6-104 *Mandatory.* When safety fuse has been used, men shall not return to misfired holes for at least 30 minutes.

57.6-105 *Mandatory.* When electric blasting caps have been used, men shall not return to misfired holes for at least 15 minutes.

57.6-106 Faces and muckpiles should be examined for undetonated explosives after each blast and undetonated explosives found should be disposed of safely.

57.6-107 *Mandatory.* Holes shall not be drilled where there is danger of intersecting a charged or misfired hole.

57.6-108 *Mandatory.* Fuse and igniters shall be stored in a cool, dry place away from oils or grease.

57.6-109 Fuse should not be used if it has been kinked, bent sharply, or handled roughly in such a manner that the train of deflagration may be interrupted

57.6-110 *Mandatory.* Fuses shall be cut and capped in safe, dry locations posted with "No Smoking" signs.

57.6-111 *Mandatory.* Blasting caps shall be crimped to fuses only with implements designed for that specific purpose.

57.6-112 *Mandatory.* The burning rate of the safety fuse in use at any time shall be measured, posted in conspicuous locations, and brought to the attention of all men concerned with blasting.

57.6-113 *Mandatory.* When firing from 1 to 15 blastholes with safety fuse ignited individually using hand-held lighters, the fuses shall be of such lengths to provide the minimum burning time specified in the following table for a particular size round:

| Number of holes in a round | Minimum burning time, minutes |
|-------------------------------|----------------------------------|
| 1 | 2 |
| 2-5 | 2½ |
| 6-10 | 3½ |
| 11-15 | 5 |

In no case shall any 40-second-per-foot safety fuse less than 36 inches long or any 30-second-per-foot safety fuse less than 48 inches long be used.

57.6-114 *Mandatory.* At least two men shall be present when lighting fuses, and no man shall light more than 15 individual fuses. If more than 15 holes per man are to be fired, igniter cord and connectors or electric blasting shall be used.

57.6-115 [Revoked]

57.6-116 *Mandatory.* Fuse shall be ignited with hotwire lighters, lead spitters, igniter cord, or other such devices designed for this purpose. Carbide lights shall not be used to light fuses.

57.6-117 *Mandatory.* Fuse shall not be ignited before the primer and the entire charge are securely in place.

57.6-118 Timing should be such that the fuse in the last hole to fire is burning within the hole before the first hole fires.

57.6-119 *Mandatory.* Electric detonators of different brands shall not be used in the same round.

57.6-120 *Mandatory.* Except when being tested with a blasting galvanometer:

(a) Electric detonators shall be kept shunted until they are being connected to the blasting line or wired into a blasting round.

(b) Wired rounds shall be kept shunted until they are being connected to the blasting line.

(c) Blasting lines shall be kept shunted until immediately before blasting.

57.6-121 Completely wired rounds should be tested with a blasting galvanometer before connections are made to the blasting line.

57.6-122 *Mandatory.* Permanent blasting lines shall be properly supported, insulated, and kept in good repair.

57.6-123 *Mandatory.* When electric detonators are used, charging shall be stopped immediately when the presence of static electricity or stray currents is detected; the condition shall be remedied before charging is resumed.

57.6-124 *Mandatory.* When electric detonators are used, charging shall be suspended in surface mining, shaft sinking, and tunneling and men withdrawn to a safe location upon the approach of an electrical storm.

57.6-125 *Mandatory.* If branch circuits are used when blasts are fired from power circuits, safety switches located at safe distances from the blast areas shall be provided in addition to the main blasting switch.

57.6-126 [Reserved]

57.6-127 *Mandatory.* Blasting switches shall be locked in the open position, except when closed to fire the blast. Lead wires shall not be connected to the blasting switch until the shot is ready to be fired.

57.6-128 *Mandatory.* The key or other control to an electrical firing device shall be entrusted only to the person designated to fire the round or rounds.

57.6-129 *Mandatory.* Electric circuits from the blasting switches to the blast area shall not be grounded.

57.6-130 At least a 5-foot airgap should be provided between the blasting circuit and the power circuit.

57.6-131 *Mandatory.* Power sources shall be suitable for the number of electric detonators to be fired and for the type of circuits used.

57.6-132 Delay connectors for firing detonating cord should be treated and handled with the same safety precautions as blasting caps and electric detonators.

57.6-133 *Mandatory.* If any part of a blast is connected in parallel and is to be initiated from powerlines or lighting circuits, the time of current flow shall be limited to a maximum of 25 milliseconds by incorporating a control device in the blasting circuit or by interrupting the circuit with an explosive charge attached to one or both lead lines and initiated by a zero-delay electric blasting cap.

57.6-134 *Mandatory.* Tools used for opening metal or nailed wooden containers of explosives or detonators shall be of non-sparking materials.

57.6-135 *Mandatory.* Holes shall not be collared in bootlegs.

57.6-136 Black blasting powder should not be used for blasting except when a desired result cannot be obtained with another type of explosive such as in quarrying certain types of dimension stone.

57.6-137 *Mandatory.* In the use of black blasting powder:

(a) Containers shall not be opened in, or within 50 feet of any magazine; within any building in which a fuel-fired or exposed-element electric heater is in operation; where electrical or incandescent-particle sparks could result in powder ignition; or within 50 feet of any open flame.

(b) Granular powder shall be transferred from containers only by pouring.

(c) Spills of granular powder shall be cleaned up promptly with nonsparking equipment; contaminated powder shall be put into a container of water and its content disposed of promptly after the granules have disintegrated, or the spill area shall be flushed with a copious amount of water to completely disintegrate the granules.

(d) Containers of powder shall be kept securely closed at all times other than when the powder is being transferred from or into a container.

(e) Containers of powder transported by vehicles shall be in a wholly enclosed cargo space.

(f) Misfires shall be disposed of by: (1) Washing the stemming and powder charge from the borehole, and (2) removal and disposal of the initiator as a damaged explosive.

(g) Boreholes of shots that fire but fail to break, or fail to break properly, shall not be recharged for at least 12 hours.

57.6-138 through 57.6-158 [Reserved]

56.6-159 *Mandatory.* Power chests shall be:

(a) Substantially constructed of non-sparking material on the inside.

(b) Posted with suitable warning signs.

(c) Located out of the blast area and out of the line of blasts.

(d) Emptied and their contents returned to the main magazine at the end of each shift unless the powder chest is located within the area continually attended by employees during shift changes.

(e) Separate for detonators and explosives unless separated by 4 inches of hard wood or the equivalent.

(f) Kept locked when unattended.

SURFACE ONLY

57.6-160 *Mandatory.* Ample warning shall be given before blasts are fired. All persons shall be cleared and removed from the blasting area unless suitable blasting shelters are provided to protect men endangered by concussion or flyrock from blasting.

57.6-161 *Mandatory*. If explosives are suspected of burning in a hole, all persons in the endangered area shall move to a safe location and no one shall return to the hole until the danger has passed, but in no case within 1 hour.

57.6-162 *Mandatory*. Lead wires and blasting lines shall not be strung across power conductors, pipelines, railroad tracks, or within 20 feet of bare powerlines. They shall be protected from sources of static or other electrical contact.

57.6-163 *Mandatory*. The double-trunkline or loop system shall be used in detonating-cord blasting.

57.6-164 *Mandatory*. Trunklines, in multiple-row blasts, shall make one or more complete loops, with crosslines between loops at intervals of not over 200 feet.

57.6-165 [Reserved]

57.6-166 *Mandatory*. All detonating cord knots shall be tight and all connections shall be kept at right angles to the trunklines.

57.6-167 Detonating cord should not be used if it has been kinked, bent, or otherwise handled in such a manner that the train of detonation may be interrupted.

57.6-168 *Mandatory*. Misfires shall be reported to the proper supervisor and shall be disposed of safely before any other work is performed in that blasting area.

57.6-169 Blastholes in "hothole" areas and holes that have been sprung should not be charged before tests have been made to ensure that the heat has dissipated to a safe extent.

57.6-170 *Mandatory*. Where electric blasting is to be performed, electric circuits to equipment in the immediate area to be blasted shall be deenergized before electric detonators are connected to the blasting circuit; the power shall not be turned on until after the shots are fired or the blast is deactivated by removing or shunting each electric detonator.

57.6-171 through 57.6-174 [Reserved]

UNDERGROUND ONLY

57.6-175 *Mandatory*. Ample warning shall be given before blasts are fired. All persons shall be cleared and removed from areas endangered by the blast. Clear access to exits shall be provided for personnel firing the rounds.

57.6-176 Blasting areas should not be reentered after firing until concentrations of smoke, dust, and fumes have been reduced to safe limits.

57.6-177 *Mandatory*. Misfires shall be reported to the proper supervisor. The blast area shall be dangered-off until misfired holes are disposed of. Where explosives other than black powder have been used, misfired holes shall be disposed of as soon as possible by one of the following methods:

(a) Washing the stemming and charge from the borehole with water;

(b) Reattempting to fire the holes if leg wires are exposed; or

(c) Inserting new primers after the stemming has been washed out.

57.6-178 In secondary blasting, if more than one shot is to be fired at one time, blasting should be done electrically or with detonating cord.

57.6-179 Blastholes should be cleaned before charging is begun.

57.6-180 Explosives, detonators, and blasting lines should be isolated from sources of static electricity and stray currents and from extraneous electric contact.

57.6-181 Where electric blasting is to be performed, electric circuits to equipment in the immediate area to be blasted should be deenergized before explosives or detonators are brought into the area; the power should not be turned on again until after the shots are fired.

57.6-182 *Mandatory*. Blasts in shafts or winzes shall be initiated from a safe location outside the shaft or winze.

57.6-183 through 57.6-189 [Reserved]

SENSITIZED AMMONIUM NITRATE BLASTING AGENTS

All of the standards in this § 57.6 in which the term "explosives" appears are applicable to blasting agents (as well as to other explosives) unless blasting agents are expressly excluded.

GENERAL—SURFACE AND UNDERGROUND

57.6-190 Sensitized ammonium nitrate blasting agents, and the components thereof prior to mixing, should be mixed and stored in accordance with the recommendations in Bureau of Mines Information Circular 8179, "Safety Recommendations for Sensitized Ammonium Nitrate Blasting Agents," or subsequent revisions.

57.6-191 [Reserved]

57.6-192 Adequate priming should be employed to guard against misfires, increased toxic fumes, and poor performance.

57.6-193 *Mandatory*. Where pneumatic loading is employed, before any type of blasting operation using blasting agents is put into effect, an evaluation of the potential hazard of static electricity shall be made. Adequate steps, including the grounding and bonding of the conductive parts of pneumatic loading equipment, shall be taken to eliminate the hazard of static electricity before blasting agent use is commenced.

57.6-194 *Mandatory*. Pneumatic loading equipment shall not be grounded to waterlines, air lines, rails, or the permanent electrical grounding systems.

57.6-195 *Mandatory*. Hoses used in connection with pneumatic loading machines shall be of the semiconductive type, having a total resistance low enough to permit the dissipation of static electricity and high enough to limit the flow of stray electric currents to a safe level. Wire-countered hose shall not be used because of the potential hazard from stray electric currents.

57.6-196 Reasonable precautions should be exercised to exclude water from blasting agents other than slurries.

57.6-197 In small-diameter holes, blasting agents should be loaded so as to provide a continuous column that completely fills the cross section of the borehole.

57.6-198 *Mandatory*. Plastic tubes shall not be used as hole liners if blasting agents are loaded pneumatically into holes containing an electric detonator.

57.6-199 [Reserved]

57.6-200 *Mandatory*. Vehicles used to transport blasting agents shall have substantially constructed bodies, no zinc or copper exposed in the cargo space and shall be freely vented. Blasting agents shall not be piled higher than the side or end enclosures of open-body vehicles. If an enclosed screw conveyor is used to discharge blasting agents from the vehicle the conveyor shall be protected against excessive internal pressure and excessive frictional heat.

57.6-201 through 57.6-219 [Reserved]

UNDERGROUND ONLY

57.6-220 *Mandatory*. Ammonium nitrate-fuel oil blasting agents shall not be mixed or otherwise "formulated" underground.

[34 F.R. 12517, July 31, 1969; 34 F.R. 12947, Aug. 9, 1969; 35 F.R. 3672, Feb. 25, 1970; 35 F.R. 4515, Mar. 13, 1970; 35 F.R. 18591, Dec. 8, 1970; 37 FR 14373, July 19, 1972; 39 FR 24320, July 1, 1974]

§ 57.7 Drilling.

SURFACE ONLY

57.7-1 Equipment that is to be used during a shift should be inspected each shift by a competent person. Equipment defects affecting safety should be reported.

57.7-2 *Mandatory*. Equipment defects affecting safety shall be corrected before the equipment is used.

57.7-3 *Mandatory*. The drilling area shall be inspected for hazards before starting the drilling operations.

57.7-4 *Mandatory*. Men shall not be on a mast while the drill-bit is in operation unless they are provided with a safe platform from which to work and they are required to use safety belts to avoid falling.

57.7-5 *Mandatory*. Drill crews and others shall stay clear of augers or drill stems that are in motion. Persons shall not pass under or step over a moving stem or auger.

57.7-6 Receptacles or racks should be provided for drill steel stored on drills.

57.7-7 Tools and other objects should not be left loose on the mast or drill platform.

57.7-8 *Mandatory*. When a drill is being moved from one drilling area to another, drill steel, tools, and other equipment shall be secured and the mast placed in a safe position.

57.7-9 The drill helper, when used, should be in sight of the operator at all times while the drill is being moved to a new location.

57.7-10 *Mandatory*. In the event of power failure, drill controls shall be placed in the neutral position until power is restored.

57.7-11 *Mandatory*. The drill stem shall be resting on the bottom of the hole or on the platform with the stem secured to the mast before attempts are made to straighten a crossed cable on a reel.

57.7-12 *Mandatory*. While in operation, drills shall be attended at all times.

57.7-13 *Mandatory*. Drill holes large enough to constitute a hazard shall be covered or guarded.

57.7-14 Men operating or working near jackhammers or jackleg drills and other drilling machines should position themselves so that they will not be struck or lose their balance if the drill steel breaks or sticks.

57.7-15 Men should not drill from positions that hinder their access to the control levers, or from insecure footing or staging, or from atop equipment not designed for this purpose.

57.7-16 Bit wrenches or bit knockers should be used to remove detachable bits from drill steel.

57.7-17 Starter steels should be used when collaring holes with handheld drills.

57.7-18 *Mandatory*. Men shall not hold the drill steel while collaring holes, or rest their hands on the chuck or centralizer while drilling.

57.7-19 Air should be turned off and bled from the hose before handheld drills are moved from one working area to another.

57.7-20 through 57.7-24 [Reserved]

UNDERGROUND ONLY

57.7-25 Men operating or working near drilling machines should position themselves so that they will not be struck or lose their balance if the steel breaks or sticks.

57.7-26 Men should not attempt to operate drills from positions that hinder their access to the control levers.

57.7-27 Drilling should not be attempted from insecure footing or staging, or from atop equipment not designed for this purpose.

57.7-28 Men should not hold the drill steel while collaring holes, or rest their hands on the chuck or centralizer while drilling.

57.7-29 Air should be turned off before moving portable drills from one face to another.

57.7-30 Receptacles or racks should be provided for drill steel stored on jumbos.

57.7-31 Before drilling cycle is started, warning should be given to men working below jumbo decks.

57.7-32 Drills on columns should be anchored firmly before drilling is started and should be retightened frequently thereafter.

[34 F.R. 12517, July 31, 1969, as amended at 35 F.R. 3674, Feb. 25, 1970; 35 F.R. 18592, Dec. 8, 1970]

§ 57.8 Rotary jet piercing.

SURFACE ONLY

57.8-1 Jet drills should be provided with:
(a) A system to pressurize operator's cabs.

(b) A protective cover over the oxygen flow indicator.

57.8-2 *Mandatory.* Safety chains or other suitable locking devices shall be provided across connections to and between high pressure oxygen hose lines of 1-inch inside diameter or larger.

57.8-3 *Mandatory.* A suitable means of protection shall be provided for the employee when lighting the burner.

57.8-4 With equipment requiring refueling at locations other than fueling stations a system for fueling from the ground without spill should be provided.

57.8-5 *Mandatory.* Men shall not smoke and open flames shall not be used in the vicinity of the oxygen storage and supply lines. Signs warning against smoking and open flames shall be posted in these areas.

57.8-6 *Mandatory.* The oxygen intake coupling on jet-piercing drills shall be constructed so that only the oxygen hose can be coupled to it.

57.8-7 *Mandatory.* The combustion chamber of a jet drill stem which has been sitting unoperated in a drill hole shall be flushed with a suitable solvent after the stem is pulled up.

[34 FR 12517, July 31, 1969, as amended at 39 FR 24320, July 1, 1974]

§ 57.9 Loading, hauling, dumping.

GENERAL—SURFACE AND UNDERGROUND

57.9-1 Equipment that is to be used during a shift should be inspected by a competent person each shift. Equipment defects affecting safety should be reported.

57.9-2 *Mandatory.* Equipment defects affecting safety shall be corrected before the equipment is used.

57.9-3 *Mandatory.* Powered mobile equipment shall be provided with adequate brakes.

57.9-4 Powered mobile haulage equipment should be provided with audible warning devices. Lights should be provided on both ends when required.

57.9-5 *Mandatory.* Operators shall be certain, by signal or other means, that all persons are clear before starting or moving equipment.

57.9-6 *Mandatory.* When the entire length of a conveyor is visible from the starting switch, the operator shall visually check to make certain that all persons are in the clear before starting the conveyor. When the entire length of the conveyor is not visible from the starting switch, a positive audible or visible warning system shall be installed and operated to warn persons that the conveyor will be started.

57.9-7 *Mandatory.* Unguarded conveyors with walkways shall be equipped with emer-

gency stop devices or cords along their full length.

57.9-8 Adequate protection should be provided at dumping locations where men may be endangered by falling material.

57.9-9 *Mandatory.* Operators shall sound warning before starting trains, when trains approach crossings or other trains on adjacent tracks, and where vision is obscured.

57.9-10 Operators' cabs should be constructed to permit operators to see without straining and should be reasonably comfortable.

57.9-11 *Mandatory.* Cab windows shall be of safety glass or equivalent, in good condition and shall be kept clean.

57.9-12 *Mandatory.* Cabs of mobile equipment shall be kept free of extraneous materials.

57.9-13 *Mandatory.* Adequate backstops or brakes shall be installed on inclined-conveyor drive units to prevent conveyors from running in reverse if a hazard to personnel would be caused.

57.9-14 *Mandatory.* No person shall be permitted to ride a power-driven chain, belt, or bucket conveyor, unless the belt is specifically designed for the transportation of persons.

57.9-15 *Mandatory.* Unless the operator is otherwise protected, slushers in excess of 10 horsepower shall be provided with backslash guards. All slushers shall be equipped with rollers, and drum covers, and anchored securely before slushing operations are started.

57.9-16 Roadbeds, rails, joints, switches, frogs, and other elements on railroads should be designed, installed, and maintained in a safe manner consistent with the speed and type of haulage.

57.9-17 Equipment operating speeds should be prudent and consistent with conditions of roadway, grades, clearance, visibility, traffic, and the type of equipment used.

57.9-18 Dust control measures should be taken where dust significantly reduces visibility of equipment operators.

57.9-19 Track guardrails, lead rails, and frogs should be protected or blocked so as to prevent a person's foot from becoming wedged.

57.9-20 *Mandatory.* Positive-acting stop-blocks, derail devices, track skates, or other adequate means shall be installed wherever necessary to protect persons from runaway or moving railroad equipment.

57.9-21 Vehicles should follow at a safe distance; passing should be limited to areas of adequate clearance and visibility.

57.9-22 *Mandatory.* Berms or guards shall be provided on the outer bank of elevated roadways.

57.9-23 *Mandatory.* Trackless haulage equipment shall be operated under power control at all times.

57.9-24 *Mandatory.* Mobile equipment operators shall have full control of the equipment while it is in motion.

57.9-25 *Mandatory.* Dippers, buckets, loading booms, or heavy suspended loads shall not be swung over the cabs of haulage vehicles until the drivers are out of the cabs and in safe locations, unless the trucks are designed specifically to protect the drivers from falling material.

57.9-26 [Reserved]

57.9-27 *Mandatory.* When an operator is present, men shall notify him before getting on or off equipment.

57.9-28 *Mandatory.* Switch throws shall be installed so as to provide adequate clearance for switchmen.

57.9-29 Operators should sit facing the direction of travel while operating equipment with dual controls.

57.9-30 *Mandatory.* Men shall not work or pass under the buckets or booms of loaders in operation.

57.9-31 *Mandatory.* When traveling between work areas, the equipment shall be secured in the travel position.

57.9-32 *Mandatory.* Dippers, buckets, scraper blades, and similar movable parts shall be secured or lowered to the ground when not in use.

57.9-33 *Mandatory.* Men shall not ride in dippers, shovel buckets, forks, clamshells, or in the beds of ore-haulage trucks for the purpose of transportation.

57.9-34 Cars or trucks should be loaded in such manner as to minimize spillage while en route to a dumping site.

57.9-35 Movements of two or more pieces of rail equipment operating independently on the same track should be regulated by an efficient signal block, telephone, or radio system; movements on complex haulage systems should be adequately controlled.

57.9-36 *Mandatory.* Electrically-powered mobile equipment shall not be left unattended unless the master switch is in the off position, all operating controls are in the neutral position, and the brakes are set or other equivalent precautions are taken against rolling.

57.9-37 *Mandatory.* Mobile equipment shall not be left unattended unless the brakes are set. The wheels shall be turned into a bank or rib, or shall be blocked, when such equipment is parked on a grade.

57.9-38 When dumping cars by hand, the car dumps should be provided with tiedown chains or bumper blocks to prevent cars from overturning.

57.9-39 *Mandatory.* Men shall not get on or off moving equipment, except that trainmen may get on or off of slowly moving trains.

57.9-40 *Mandatory.* Men shall not ride on top of loaded haulage equipment.

57.9-41 *Mandatory.* Only authorized persons shall be permitted to ride on trains or locomotives and they shall ride in a safe position.

57.9-42 Rocker-bottom or bottom-dump cars should be equipped with positive locking devices.

57.9-43 *Mandatory.* Men shall not ride outside the cabs and beds of mobile equipment.

57.9-44 Men should not ride in conveyances equipped with unloading devices unless a positive means is provided to prevent accidental starting of the unloading mechanism.

57.9-45 *Mandatory.* Equipment which is to be hauled shall be loaded and protected so as to prevent sliding or spillage.

57.9-46 Backpoling of trolley poles should be avoided wherever possible; where backpoling is necessary, it should be done only at slow speeds.

57.9-47 *Mandatory.* Parked railcars, unless held effectively by brakes, shall be blocked securely.

57.9-48 *Mandatory.* Railroad cars with braking systems, when in use, shall be equipped with effective brake shoes.

57.9-49 Long material should be transported by a method designed to prevent any overhang from creating a hazard.

57.9-50 *Mandatory.* Railcars shall not be left on side tracks unless ample clearance is provided for traffic on adjacent tracks.

57.9-51 *Mandatory.* Persons shall not go over, under, or between cars unless the train is stopped and the motorman has been notified and the notice acknowledged.

57.9-52 *Mandatory.* Inability of a motorman to clearly recognize his brakeman's signals, when the train is under the direction of the brakeman, shall be construed by the motorman as a stop signal.

57.9-53 Dumping locations and haulage roads should be kept reasonably free of water, debris, and spillage.

57.9-54 *Mandatory.* Berms, bumper blocks, safety hooks, or similar means shall be provided to prevent overtravel and overturning at dumping locations.

57.9-55 Where the ground at a dumping place may fall to support the weight of a loaded dump truck, trucks should be dumped back from the edge of the bank.

57.9-56 Where necessary, bumper blocks or the equivalent should be provided at all track dead ends.

57.9-57 Grizzlies, grates, and other sizing devices at dump and transfer points should be anchored securely in place.

57.9-58 *Mandatory.* If truck spotters are used, they shall be well in the clear while trucks are backing into dumping position and dumping; lights shall be used at night to direct trucks.

57.9-59. *Mandatory.* Public and permanent railroad crossings shall be posted with warning signs or signals, or shall be guarded when trains are passing and shall be planked or otherwise filled between the rails.

57-9.60. *Mandatory.* Where overhead clearance is restricted, warning devices shall be installed and the restricted area shall be conspicuously marked.

57.9-61 *Mandatory.* Stockpile and muckpile faces shall be trimmed to prevent hazards to personnel.

57.9-62 *Mandatory.* Rocks too large to be handled safely shall be broken before loading.

57.9-63 Ramps and dumps should be of solid construction, of ample width, have ample clearance and headroom, and be kept reasonably free of spillage.

57.9-64 *Mandatory.* Chute-loading installations shall be designed so that the men pulling chutes are not required to be in a hazardous position while loading cars.

57.9-65 Cars should not be coupled or uncoupled manually from the inside of curves unless the railroad and cars are so designed to eliminate any hazard from coupling or uncoupling cars from inside of curves.

57.9-66 A locomotive on one track should not be used to move equipment on a different track unless a chain or drawbar is used.

57.9-67 *Mandatory.* Facilities used to transport men to and from work areas shall not be overcrowded.

57.9-68 *Mandatory.* Lights, flares, or other warning devices shall be posted when parked equipment creates a hazard to vehicular traffic.

57.9-69 *Mandatory.* Tires shall be deflated before repairs on them are started and adequate means shall be provided to prevent wheel locking rims from creating a hazard during tire inflation.

57.9-70 A tow bar should be used to tow heavy equipment. A safety chain should be used in conjunction with the tow bar.

57.9-71 through 57.9-80 [Reserved]

SURFACE ONLY

57.9-81 Trucks, shuttlecars, and front-end loaders should be equipped with emergency brakes separate and independent of the regular braking system when generally available for a particular class of equipment.

57.9-82 Haulage trucks with cabs should be equipped with heaters, air conditioners, or both, maintained in good condition, where needed because of extreme weather conditions.

57.9-83 *Mandatory.* Where possible at least 30 inches continuous clearance from the farthest projection of moving railroad equipment shall be provided on at least one side of the tracks; all places where it is not possible to provide 30-inch clearance shall be marked conspicuously.

57.9-84 Traffic rules, signals, and warning signs should be standardized at each mine and posted.

57.9-85 *Mandatory.* Supplies, materials, and tools other than small handtools shall not be transported with men in mantrip vehicles unless such vehicles are specifically designed to make such transportation safe.

57.9-86 Any load extending more than 4 feet beyond the rear of the vehicle body should be marked clearly with a red flag by day and a red light at night.

57.9-87 through 57.9-94 [Reserved]

UNDERGROUND ONLY

57.9-95 [Reserved]

57.9-96 Supplies, materials, or tools, except properly secured rerailing devices, should not be carried on top of locomotives.

57.9-97 *Mandatory.* Trains shall be brought to a complete stop, then moved very slowly when coupling or uncoupling cars manually.

57.9-98 *Mandatory.* Makeshift couplings shall not be used.

57.9-99 *Mandatory.* Supplies, materials, and tools other than small handtools shall not be transported with men in mantrip cars. Mantrips shall be operated independently of ore and supply trips.

57.9-100 Pneumatic-powered loading equipment should be provided with a valve to close the air line at the machine; this valve should be closed except when the machine is being operated.

57.9-101 [Reserved]

57.9-102 *Mandatory.* When a signalman is used during slushing operations he shall be positioned in a safe place.

57.9-103 *Mandatory.* Collars of open draw holes shall be kept free of muck and material.

57.9-104 Warning devices or conspicuous markings should be installed when chute lips create a hazard to personnel.

57.9-105 Empty chutes should be properly guarded prior to filling or sufficient material should be left in the chute bottom to prevent rock from flying out when broken material is dumped into the chute.

57.9-106 *Mandatory.* Ample warning shall be given to men who may be affected by the draw or otherwise exposed to danger from chute-pulling operations.

57.9-107 *Mandatory.* Men shall not stand on broken rock or ore over draw points if there is danger that the chute will be pulled. Suitable platforms or safety lines shall be provided when work must be done in such areas.

57.9-108 Men attempting to loosen hangups should work with extreme caution.

57.9-109 Men should not work or pass under hung draw openings unless the openings are blocked effectively.

57.9-110 *Mandatory.* Shelter holes shall be provided to ensure the safety of men along haulageways where continuous clearance of at least 30 inches from the farthest projection of moving equipment on at least one side of the haulageway cannot be maintained.

57.9-111 Shelter holes should be at least 4 feet wide, marked conspicuously, and should provide a minimum of 40 inches clearance from the farthest projection of moving equipment.

57.9-112 Trip lights or approved reflectors should be used on the rear of pulled trips and on the front of pushed trips.

57.9-113 *Mandatory.* Man trips shall be operated at speeds consistent with the condition of tracks and equipment used.

57.9-114 *Mandatory.* Where man trips are used, discharge and boarding points shall be designated. Men shall not board or leave moving man-trip cars.

57.9-115 *Mandatory.* Mantrip passengers should ride on the side of the car opposite the trolley wire when the trolley wire is not centrally located unless covered man cars are provided.

57.9-116 *Mandatory.* During shift changes the movement of rock or material trains shall be limited to areas where such trains could not present a hazard to men coming on or going off shift.

57.9-117 *Mandatory.* Men shall not ride between cars or on top of loaded cars.

[34 F.R. 12517, July 31, 1969, as amended at 35 F.R. 3674, Feb. 25, 1970; 37 FR 14374, July 19, 1972]

§ 57.10 Aerial tramways.

SURFACE ONLY

57.10-1 Buckets should not be overloaded, and feed should be regulated to prevent spillage.

57.10-2 Carriers, including loading and unloading mechanisms, should be inspected each shift; brakes should be inspected daily; ropes and supports should be inspected as recommended by the manufacturer or as physical conditions warrant. Records of rope maintenance and inspections should be kept.

57.10-3 *Mandatory.* Any hazardous defects shall be corrected before the equipment is used.

57.10-4 Positive-action type brakes should be provided on aerial tramways.

57.10-5 Track cable connections should be designed to offer minimum obstruction to the passage of wheels.

57.10-6 Guards should be installed to prevent swaying buckets from hitting towers.

57.10-7 *Mandatory.* Guard nets or other suitable protection shall be provided where tramways pass over roadways, walkways, or buildings.

57.10-8 *Mandatory.* Persons other than maintenance men shall not ride aerial tramways unless the following features are provided:

(a) Two independent brakes, each capable of holding the maximum load.

(b) Direct communication between terminals.

(c) Power drives with emergency power available in case of primary power failure.

(d) Buckets equipped with positive locks to prevent accidental tripping or dumping.

57.10-9 *Mandatory.* Men shall not ride loaded buckets.

57.10-10 *Mandatory.* Where possible aerial tramways shall not be started until the operator has ascertained that everyone is in the clear.

[34 F.R. 12517, July 31, 1969, as amended at 35 F.R. 3675, Feb. 25, 1970; 37 FR 14374, July 19, 1972]

§ 57.11 Travelways and escapeways.

TRAVELWAYS

GENERAL—SURFACE AND UNDERGROUND

57.11-1 *Mandatory.* Safe means of access shall be provided and maintained to all working places.

57.11-2 *Mandatory.* Crossovers, elevated walkways, elevated ramps, and stairways shall be of substantial construction, provided with handrails, and maintained in good condition. Where necessary, toeboards shall be provided.

57.11-3 *Mandatory.* Ladders shall be of substantial construction and maintained in good condition.

57.11-4 Portable straight ladders should be provided with nonslip bases, should be placed against a safe backing, and set on secure footing.

57.11-5 *Mandatory.* Fixed ladders shall be anchored securely and installed to provide at least 3 inches of toe clearance.

57.11-6 *Mandatory.* Fixed ladders shall project at least 3 feet above landings, or substantial handholds, shall be provided above the landings.

57.11-7 Wooden members of ladders should not be painted.

57.11-8 Ladderways, stairways, walkways, and ramps should be kept free of loose rock and extraneous materials.

57.11-9 *Mandatory.* Walkways with out-board railings shall be provided wherever persons are required to walk alongside elevated conveyor belts. Inclined railed walkways shall be nonskid or provided with cleats.

57.11-10 Vertical clearance above stair steps should be a minimum of 7 feet or adequate warning should be provided to indicate an impaired clearance.

57.11-11 Men climbing or descending ladders should face the ladders and have both hands free for climbing.

57.11-12 *Mandatory.* Openings above, below, or near travelways through which men or materials may fall shall be protected by railings, barriers, or covers. Where it is impractical to install such protective devices, adequate warning signals shall be installed.

57.11-13 *Mandatory.* Crossovers shall be provided where it is necessary to cross conveyors.

57.11-14 *Mandatory.* Moving conveyors shall be crossed only at designated crossover points.

57.11-15 Slippery walkways should be provided with cleats and handrails and/or ropes.

57.11-16 *Mandatory.* Regularly used walkways and travelways shall be sanded, salted, or cleared of snow and ice as soon as practicable.

57.11-17 Fixed ladders should not incline backwards at any point unless provided with backguards.

57.11-18 through 57.11-24 [Reserved]

SURFACE ONLY

57.11-25 Fixed ladders should be offset and have substantial railed landings at least every 30 feet unless backguards are provided.

57.11-26 Steep fixed ladders (70° to 90° from the horizontal) 30 feet or more in length, should be provided with backguards, cages, or equivalent protection, starting at a point not more than 7 feet from the bottom of the ladder.

57.11-27 *Mandatory.* Scaffolds and working platforms shall be of substantial construction and provided with handrails and maintained in good condition. Floorboards shall be laid properly and the scaffolds and working platform shall not be overloaded. Working platforms shall be provided with toeboards when necessary.

57.11-28 through 57.11-34 [Reserved]

UNDERGROUND ONLY

57.11-35 Flexible ladders should be used only where rigid ladders may be impractical.

57.11-36 *Mandatory.* Trap doors or adequate guarding shall be provided in ladders at each level. Doors shall be kept operable.

57.11-37 The minimum, unobstructed cross-sectional opening in laddersways should be 24 inches by 24 inches.

57.11-38 Warning should be given and acknowledged before entering a manway above or below where men are working.

57.11-39 Working floors in square-set stopes should be lagged closely and securely, and open sets should be equipped with guardrails.

57.11-40 Travelways steeper than 30° from the horizontal should be provided with ladders or stairways.

57.11-41 Ladders with an inclination of more than 70° off the horizontal should be offset and have landing gates, backguards or substantial landings at least every 30 feet.

57.11-42 through 57.11-49 [Reserved]

ESCAPEWAYS

UNDERGROUND ONLY

57.11-50 *Mandatory.* Every mine shall have two separate properly maintained escapeways to the surface which are so positioned that damage to one shall not lessen the effectiveness of the other, or a method of refuge shall be provided when only one opening to the surface is possible.

57.11-51 *Mandatory.* Escape routes shall be:

(a) Inspected at regular intervals and maintained in safe, travelable condition.

(b) Marked with conspicuous and easily read direction signs that clearly indicate the ways of escape.

57.11-52 *Mandatory.* Refuge areas shall be:

(a) Of fire-resistant construction, preferably in untimbered areas of the mine.

(b) Large enough to accommodate readily the normal number of men in the particular area of the mine.

(c) Constructed so they can be made gastight.

(d) Provided with compressed air lines, waterlines, suitable handtools, and stopping materials.

57.11-53 *Mandatory.*—A specific escape and evacuation plan and revisions thereof suitable to the conditions and mining system of the mine and showing assigned responsibilities of all key personnel in the event of an emergency shall be developed by the operator and set out in written form. Within 45 calendar days after promulgation of this standard a copy of the plan and revisions thereof shall be available to the Secretary or his authorized representative. Also copies of the plan and revisions thereof shall be posted at locations convenient to all persons on the surface and underground. Such a plan shall be updated as necessary and shall be reviewed jointly by the operator and the Secretary or his authorized representative at least once every six months from the date of the last review. The plan shall include:

(a) Mine maps or diagrams showing directions of principal air flow, location of escape routes and locations of existing telephones, primary fans, primary fan controls, fire doors, ventilation doors, and refuge chambers. Appropriate portions of such maps or diagrams shall be posted at all shaft stations and in underground shops, lunchrooms, and elsewhere in working areas where men congregate.

(b) Procedures to show how the miners will be notified of emergency.

(c) An escape plan for each working area in the mine to include instructions showing how each working area should be evacuated. Each such plan shall be posted at appropriate shaft stations and elsewhere in working areas where men congregate.

(d) A fire fighting plan.

(e) Surface procedure to follow in an emergency, including the notification of proper authorities, preparing rescue equipment, and other equipment which may be used in rescue and recovery operations.

(f) A statement of the availability of emergency communication and transportation facilities, emergency power and ventilation and location of rescue personnel and equipment.

57.11-54 *Mandatory.* Telephone or other voice communication shall be provided between the surface and refuge chambers and such systems shall be independent of the mine power supply.

57.11-55 *Mandatory.* Designated escapeways inclined more than 30° from the horizontal shall be equipped with stairways, ladders, cleated walkways, or emergency hoisting facilities.

57.11-56 Emergency hoisting facilities should conform to the extent possible to safety requirements for other man hoists, should be adequate to remove the men from the mine with a minimum of delay, be maintained in ready condition, and be tested at least every 30 days; records should be kept of these tests.

57.11-58 *Mandatory*. Each operator of an underground mine shall establish a check-in and check-out system which shall provide an accurate record of persons in the mine. These records shall be kept on the surface in a place chosen to minimize the danger of destruction by fire or other hazards. Every person underground shall carry a positive means of being identified.

[34 F.R. 12517, July 31, 1969, as amended at 35 F.R. 3676, Feb. 25, 1970; 37 FR 14874, July 19, 1972; 38 FR 23382, Aug. 29, 1973; 39 FR 9653, Mar. 13, 1974]

§ 57.12 Electricity.

GENERAL—SURFACE AND UNDERGROUND

57.12-1 *Mandatory*. Circuits shall be protected against excessive overloads by fuses or circuit breakers of the correct type and capacity.

57.12-2 *Mandatory*. Electric equipment and circuits shall be provided with switches or other controls. Such switches or controls shall be of approved design and construction and shall be properly installed.

57.12-3 *Mandatory*. Individual overload protection or short-circuit protection shall be provided for the trailing cables of mobile equipment.

57.12-4 Power wires and cables should have adequate current-carrying capacity and should be protected from mechanical injury.

57.12-5 Neither crawler-mounted nor rubber-tired equipment should run over trailing cables, unless the cables are properly bridged or protected.

57.12-6 Distribution boxes should be provided with disconnect switches.

57.12-7 *Mandatory*. Trailing cable and power-cable connections to junction boxes shall not be made or broken under load.

57.12-8 Power wires and cables should be insulated adequately where they pass into or out of electrical compartments.

57.12-9 [Reserved]

57.12-10 Telephone and low-potential electric signal wires should be protected from contacting energized powerlines.

57.12-11 *Mandatory*. High-potential transmission cables shall be covered, insulated, or placed according to acceptable electrical codes to prevent contact with low-potential circuits.

57.12-12 The potential on bare signal wires accessible to personal contact should not exceed 40 volts.

57.12-13 Splices in power cables, including ground conductor, where provided, should be:

(a) Mechanically strong with adequate electrical conductivity,

(b) Effectively insulated and sealed to exclude moisture,

(c) Provided with mechanical protection and electrical conductivity as near as possible to that of the original.

57.12-14 *Mandatory*. Shovel trailing cables shall not be moved with the shovel dipper unless cable slings or sleds are used.

57.12-15 [Reserved]

57.12-16 *Mandatory*. Electrical equipment shall be deenergized before work is done on such equipment. Switches shall be locked out or other measures taken which shall prevent the equipment from being energized without the knowledge of the individuals working on it. Such locks, or preventative devices shall be removed only by the persons who installed them or by authorized personnel.

57.12-17 *Mandatory*. Power circuits shall be deenergized before work is done on such circuits unless hot-line tools are used. Suitable warning signs shall be posted by the individuals who are to do the work. Switches shall be locked out or other measures taken which shall prevent the power circuits from being energized without the knowledge of the individuals working on them. Such locks, signs, or preventative devices shall be removed only by the person who installed them or by authorized personnel.

57.12-18 *Mandatory*. Principal power switches shall be labeled to show which units they control, unless identification can be made readily by location.

57.12-19 At least 3 feet of clearance should be provided around all parts of stationary electric equipment or switchgear where access or travel is necessary.

57.12-20 *Mandatory*. Dry wooden platforms, insulating mats, or other electrically nonconductive material shall be kept in place at all switchboards and power-control switches where shock hazards exist. However, metal plates on which a person normally would stand and which are kept at the same potential as the grounded, metal, non-current-carrying parts of the power switches to be operated may be used.

57.12-21 *Mandatory*. Suitable danger signs shall be posted at all major electrical installations.

57.12-22 Areas containing major electrical installations should be entered only by authorized persons.

57.12-23 *Mandatory*. Electrical connections and resistor grids that are difficult or impractical to insulate shall be guarded, unless protection is provided by location.

57.12-24 Reverse-current protection should be provided at storage-battery charging stations.

57.12-25 *Mandatory*. All metal enclosing or encasing electrical circuits shall be grounded or provided with equivalent protection. This requirement does not apply to battery-operated equipment.

57.12-26 **Mandatory.** Metal fencing and metal buildings enclosing transformers and switchgear shall be grounded.

57.12-27 **Mandatory.** Frame grounding or equivalent protection shall be provided for mobile equipment powered through trailing cables.

57.12-28 **Mandatory.** Continuity and resistance of grounding systems shall be tested immediately after installation.

57.12-29 Electric equipment and wiring should be inspected by a competent person as often as necessary to assure safe operating conditions.

57.12-30 **Mandatory.** When a potentially dangerous condition is found it shall be corrected before equipment or wiring is energized.

57.12-31 Electric motors, switches, and controls exposed to damaging dust or water should be of dusttight or watertight construction.

57.12-32 **Mandatory.** Inspection and cover plates on electrical equipment and junction boxes shall be kept in place at all times except during testing or repairs.

57.12-33 **Mandatory.** Hand-held electric tools shall not be operated at high potential voltages.

57.12-34 Portable extension lights and other lights that may present a shock or burn hazard should be guarded.

57.12-35 Lamp sockets exposed to the weather should be of a weatherproof type.

57.12-36 **Mandatory.** Fuses shall not be removed or replaced by hand in an energized circuit, and they shall not otherwise be removed or replaced in an energized circuit unless equipment and techniques especially designed to prevent electrical shock are provided and used for such purpose.

57.12-37 **Mandatory.** Fuse tongs or hot-line tools shall be used when fuses are removed or replaced in high-potential circuits.

57.12-38 Trailing cables should be clamped to machines in a manner to protect the cables from damage and to prevent strain on the electrical connections.

57.12-39 Surplus trailing cables to shovels, cranes, and similar equipment should be stored in cable boats or on reels mounted on the equipment or otherwise protected from mechanical damage.

57.12-40 **Mandatory.** Operating controls shall be installed so that they can be operated without danger of contact with energized conductors.

57.12-41 **Mandatory.** Switches and starting boxes shall be of safe design and capacity.

57.12-42 Both rails should be bonded or welded at every joint and rails should be crossbonded at least every 200 feet if the track serves as the return trolley circuit.

57.12-43 [Reserved]

57.12-44 Lightning arrester grounds should be connected to earth at least 10 feet from the track or mine return circuit.

57.12-45 **Mandatory.** Overhead high-potential powerlines shall be installed as specified by the National Electrical Code.

57.12-46 [Reserved]

57.12-47 **Mandatory.** Guy wires of poles supporting high-voltage transmission lines shall meet the requirements for grounding or insulator protection of the National Electrical Safety Code, Part 2, entitled "Safety Rules for the Installation and Maintenance of Electric Supply and Communication Lines," (also referred to as National Bureau of Standards Handbook 81, Nov. 1, 1961) and Supplement 2 thereof issued March 1968, which are hereby incorporated by reference and made a part hereof. These publications and documents may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, or may be examined in any Metal and Nonmetal Mine Health and Safety District or Subdistrict Office of the Mining Enforcement and Safety Administration.

57.12-48. **Mandatory.** Telegraph, telephone, or signal wires shall not be installed on the same crossarm with power conductors. When carried on poles supporting powerlines, they shall be installed as specified by the National Electrical Code.

57.12-49 Men should not stand on the ground in the vicinity of an electrically powered shovel or other similar heavy equipment during an electrical storm.

57.12-50 Trolley wires should be installed at least 7 feet above rails, where height permits, and aligned and supported to minimize sway and sag.

57.12-51 Trolley-wire hangers should be spaced so that the wire will not sag dangerously between hangers and so that the wire may be detached from any one hanger without creating a shock hazard.

57.12-52 Trolley wires and trolley-feeder wires should be provided with sectioning switches near the beginning of all branch lines and at mantrip stations unless suitably covered mantrip cars are used.

57.12-53 Ground wires for lighting circuits powered from trolley wires should be connected securely to the ground-return circuit.

57.12-54 Tools and supplies should be carried in the hands and not on the shoulders when men travel near bare power conductors.

57.12-55 through 57.12-64 [Reserved]

SURFACE ONLY

57.12-65 **Mandatory.** Powerlines, including trolley wires, and telephone circuits shall be protected against short circuits and lightning.

57.12-66 **Mandatory.** Where metallic tools or equipment can come in contact with trolley wires or bare powerlines, the lines shall be guarded or deenergized.

57.12-67 **Mandatory.** Transformers shall be totally enclosed, or shall be placed at least 8 feet above the ground, or installed in a transformer house, or surrounded by a substantial fence at least 6 feet high and at least 3 feet from any energized parts, casings, or wiring.

57.12-68 *Mandatory.* Transformer enclosures shall be kept locked against unauthorized entry.

57.12-69 Lightning arresters should be provided where telephone circuits enter a mine; mine telephone extensions in surface buildings should be provided with a lightning arrester for each circuit entering the building.

57.12-70 Each exposed power circuit that leads underground should be equipped with lightning arresters of an approved type at or near the point where the circuit enters the mine.

57.12-71 *Mandatory.* When equipment must be moved or operated near energized high-voltage powerlines (other than trolley lines) and the clearance is less than 10 feet, the lines shall be deenergized or other precautionary measures shall be taken.

57.12-72 through 57.12-79 [Reserved]

UNDERGROUND ONLY

57.12-80 *Mandatory.* Trolley wires and bare power conductors shall be guarded at man-trip loading and unloading points, and at shaft stations. Where such trolley wires and bare power conductors are less than 7 feet above the rail, they shall be guarded at all points where men work or pass regularly beneath.

57.12-81 Metal pipelines 1,000 feet or more in length along haulage roads where grounded return circuits are used should be bonded to the return at the ends and at intervals not exceeding 500 feet.

57.12-82 *Mandatory.* Powerlines shall be well separated or insulated from waterlines, telephone lines, and air lines.

57.12-83 Power cables in shafts and boreholes should be fastened securely in such manner as to prevent undue strain on the sheath, insulation, or conductors.

57.12-84 Disconnecting switches that can be opened safely under load should be provided underground at all primary power circuits near shafts, levels, and boreholes.

57.12-85 *Mandatory.* Transformer stations shall be enclosed to prevent persons from unintentionally or inadvertently contacting energized parts.

57.12-86 Trolley and trolley feeder wires should be installed opposite the clearance side of haulageways.

57.12-87 Not more than five splices should be made in any trailing cable unless they are vulcanized.

57.12-88 On machines not using cable reels, no splices should be present in the first 25 feet of tralling cable adjacent to the equipment.

57.12-89 [Revoked]

[34 F.R. 12617, July 31, 1969, as amended at 35 F.R. 3673, Feb. 25, 1970; 35 F.R. 18592, Dec. 8, 1970; 37 FR 14374, July 19, 1972; 39 FR 24320, July 1, 1974]

§ 57.13 Compressed air and boilers.

GENERAL—SURFACE AND UNDERGROUND

57.13-1 *Mandatory.* All boilers and pressure vessels shall be constructed, installed, and maintained in accordance with the standards and specifications of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code.

57.13-2 through 57.13-9 [Reserved]

COMPRESSED AIR

57.13-10 Air compressors should be equipped with automatic temperature-activated shutoff mechanisms set for 400° F., or with fusible plugs installed in the compressor discharge lines as near the compressor as possible. Fusible plugs should melt at temperatures 50° less than the flash points of the lubricating oils.

57.13-11 Compressors and compressed-air receivers should be equipped with automatic pressure-release valves, pressure gages, and drain valves.

57.13-12 Compressor air intakes should be installed to insure that only clean, uncontaminated air enters the compressors.

57.13-13 Compressed-air receivers should be drained of moisture and oil at least once each day.

57.13-14 Compressed-air receivers should have inspection openings which should be manholes when the tanks are over 36 inches in diameter.

57.13-15 Compressed-air receivers and other pressure vessels should be inspected internally at least once a year by qualified inspectors; records of such inspection should be kept.

57.13-16 Compressors should be operated and lubricated in accordance with the manufacturer's recommendations.

57.13-17 Compressor discharge pipes should be cleaned periodically.

57.13-18 Safety devices on compressed-air systems should be checked daily.

57.13-19 *Mandatory.* Repairs involving the pressure system of compressors, receivers, or compressed-air-powered equipment shall not be attempted until the pressure has been bled off.

57.13-20 *Mandatory.* At no time shall compressed air be directed toward a person. When compressed air is used, all necessary precautions shall be taken to protect persons from injury.

57.13-21 *Mandatory.* Except where automatic shutoff valves are used, safety chains or other suitable locking devices shall be used at connections to machines of high-pressure hose lines of ¾-inch inside diameter or larger, and between high-pressure hose lines of ¾-inch inside diameter or larger, where a connection failure would create a hazard.

57.13-22 through 57.13-29 [Reserved]

BOILERS

57.13-30 Boilers should be equipped with guarded, well-maintained water gages and pressure gages placed so that they can be

observed easily. Water gages and pipe passages to the gages should be kept clean and free of scale and rust.

57.13-31 Boilers should be equipped with automatic pressure-relief valves; valves should be opened manually at least once a week to determine that they will function properly.

57.13-32 Boiler installations should be provided with safety devices, acceptable to the Mining Enforcement and Safety Administration, to protect against hazards of flame outs, fuel interruptions, and low-water level.

57.13-33 Blowoff valves should be piped outside the building and should have outlets so located or protected that persons passing by, near, or under them will not be scalded.

57.13-34 Boilers should be inspected internally at least once a year by licensed inspectors; records of such inspections should be kept.

[34 F.R. 12617, July 31, 1969, as amended at 85 FR 3675, Feb. 25, 1970; 37 FR 14374, July 19, 1972]

§ 57.14 Use of equipment.

GUARDS

GENERAL—SURFACE AND UNDERGROUND

57.14-1 *Mandatory.* Gears; sprockets; chains; drive, head, tail, and takeup pulleys; flywheels; couplings; shafts; sawblades; fan inlets; and similar exposed moving machine parts which may be contacted by persons, and which may cause injury to persons shall be guarded.

57.14-2 *Mandatory.* Overhead belts shall be guarded if the whipping action from a broken line would be hazardous to persons below.

57.14-3 Guards at conveyor-drive, conveyor-head, and conveyor-tail pulleys should extend a distance sufficient to prevent a person from reaching behind the guard and becoming caught between the belt and the pulley.

57.14-4 Openings where conveyors pass through walls or floors should be guarded.

57.14-5 Protruding setscrews on revolving parts should be guarded.

57.14-6 *Mandatory.* Except when testing the machinery, guards shall be securely in place while machinery is being operated.

57.14-7 Guards should be sufficiently strong and maintained to provide the required protection.

57.14-8 *Mandatory.* Stationary grinding machines other than special bit grinders shall be equipped with:

(a) Peripheral hoods (less than 90° throat openings) capable of withstanding the force of a bursting wheel.

(b) Adjustable tool rests set as close as practical to the wheel.

(c) Safety washers.

57.14-9 *Mandatory.* Grinding wheels shall be operated within the specifications of the manufacturer of the wheel.

57.14-10 *Mandatory.* Hand-held power tools, other than rock drills, shall be equipped with controls requiring constant hand or finger pressure to operate the tools or shall be equipped with friction or other equivalent safety devices.

57.14-11 Guards or shields should be provided in areas where flying or falling materials present a hazard.

57.14-12 Industrial vehicles such as fork-lift trucks, front-end loaders, and bulldozers should be provided with roll protection when necessary to protect the operator.

57.14-13 *Mandatory.* Fork-lift trucks, front-end loaders, and bulldozers shall be provided with substantial canopies when necessary to protect the operator.

57.14-14 *Mandatory.* Face shields or goggles, in good condition, shall be worn when operating a grinding wheel.

57.14-15 through 57.14-24 [Reserved]

METHODS AND PROCEDURES

GENERAL—SURFACE AND UNDERGROUND

57.14-25 Machinery and equipment should be maintained properly.

57.14-26 *Mandatory.* Unsafe equipment or machinery shall be removed from service immediately.

57.14-27 Machinery and equipment should be operated only by authorized competent persons.

57.14-28 Adequate clearance should be provided at machine installations.

57.14-29 *Mandatory.* Repairs or maintenance shall not be performed on machinery until the power is off and the machinery is blocked against motion, except where machinery motion is necessary to make adjustments.

57.14-30 *Mandatory.* Men shall not work on or from a piece of mobile equipment in a raised position until it has been blocked in place securely. This does not preclude the use of equipment specifically designed as elevated mobile work platforms.

57.14-31 *Mandatory.* Drive belts shall not be shifted while in motion unless the machines are provided with mechanical shifters.

57.14-32 *Mandatory.* Belts, chains, and ropes shall not be guided onto power-driven moving pulleys, sprockets, or drums with the hands except on slow moving equipment especially designed for hand feeding.

57.14-33 *Mandatory.* Pulleys of conveyors shall not be cleaned manually while the conveyor is in motion.

57.14-34 *Mandatory.* Belt dressing shall not be applied manually while belts are in motion unless an aerosol-type dressing is used.

57.14-35 *Mandatory.* Machinery shall not be lubricated while in motion where a hazard exists, unless equipped with extended fittings or cups.

57.14-36 Tools and equipment should be used only for the purpose and within the capacity for which they were intended and designed.

57.14-37 through 57.14-44 [Reserved]

SURFACE ONLY

57.14-45 *Mandatory.* Welding operations shall be shielded and well-ventilated.

57.14-46 through 57.14-54 [Reserved]

UNDERGROUND ONLY

57.14-55 Welding operations should be shielded and well ventilated.

[34 F.R. 12517, July 31, 1969, as amended at 35 F.R. 3676, Feb. 25, 1970]

§ 57.15 Personal protection.

GENERAL—SURFACE AND UNDERGROUND

57.15-1 *Mandatory.* Adequate first-aid materials, including stretchers and blankets shall be provided at places convenient to all working areas. Water or neutralizing agents shall be available where corrosive chemicals or other harmful substances are stored, handled, or used.

57.15-2 *Mandatory.* All persons shall wear suitable hard hats when in or around a mine or plant where falling objects may create a hazard.

57.15-3 *Mandatory.* All persons shall wear suitable protective footwear when in or around an area of a mine or plant where a hazard exists which could cause an injury to the feet.

57.15-4 *Mandatory.* All persons shall wear safety glasses, goggles, or face shields or other suitable protective devices when in or around an area of a mine or plant where a hazard exists which could cause injury to unprotected eyes.

57.15-5 *Mandatory.* Safety belts and lines shall be worn when men work where there is danger of falling; a second person shall tend the lifeline when bins, tanks, or other dangerous areas are entered.

57.15-6 Protective clothing, rubber gloves, and goggles or face-shields should be worn by persons handling substances that are corrosive, toxic, or injurious to the skin.

57.15-7 *Mandatory.* Protective clothing or equipment and face-shields or goggles shall be worn when welding, cutting, or working with molten metal.

57.15-8 Snug-fitting clothing should be worn around moving equipment and machinery.

57.15-9 Protective gloves should be worn by employees handling materials which may cause injury.

57.15-10 Gloves should not be worn where they could create a hazard by becoming entwined or caught in moving parts of machinery.

57.15-11 Finger rings should not be worn while working in or around a mine or plant.

57.15-13 Where there is a danger of a vehicle overturning and where roll protec-

tion is provided, seatbelts should be used.

57.15-14 through 57.15-19 [Reserved]

SURFACE ONLY

57.15-20 *Mandatory.* Life jackets or belts shall be worn where there is danger from falling into water.

57.15-30 *Mandatory.*—A 1-hour self-rescue device approved by the Mining Enforcement and Safety Administration shall be made available by the operator to all personnel underground. Each operator shall maintain self-rescue devices in good condition.

57.15-31 *Mandatory.*—(a) except as provided in paragraph (b) and (c) of this section, self-rescue devices meeting the requirements of standard 57.15-30 shall be worn or carried by all persons underground.

(b) Where the wearing or carrying of self-rescue devices meeting the requirements of standard 57.15-30 is hazardous to a person, such self-rescue devices shall be located at a distance no greater than 25 feet from such person.

(c) Where a person works on or around mobile equipment, self-rescue devices may be placed in a readily accessible location on such equipment.

[34 F.R. 12517, July 31, 1969, as amended at 35 F.R. 3676, Feb. 25, 1970; 36 F.R. 16592, Dec. 8, 1970; 39 FR 9658, Mar. 13, 1974; 39 FR 24320, July 1, 1974]

§ 57.16 Materials storage and handling.

GENERAL—SURFACE AND UNDERGROUND

57.16-1 Materials should be stored and stacked in a manner which minimizes stumbling or fall-of-material hazards.

57.16-2 Men working on surge piles or storage piles should not walk or stand immediately above a reclaiming area during reclaiming.

57.16-3 *Mandatory.* Materials that can create hazards if accidentally liberated from their containers shall be stored in a manner that minimizes the dangers.

57.16-4 *Mandatory.* Hazardous materials shall be stored in containers of a type approved for such use by recognized agencies; such containers shall be labeled appropriately.

57.16-5 *Mandatory.* Compressed and liquid gas cylinders shall be secured in a safe manner.

57.16-6 *Mandatory.* Valves on compressed gas cylinders shall be protected by covers when being transported or stored, and by a safe location when the cylinders are in use.

57.16-7 Hitches and slings used to hoist materials should be designed and use properly for the particular material handled.

57.16-8 Taglines should be attached to suspended materials that require steadying or guidance.

57.16-9 *Mandatory.* Men shall stay clear of suspended loads.

57.16-10 Materials should not be dropped from an elevation unless the drop area is guarded or sufficient warning is given.

57.16-11 *Mandatory.* Men shall not ride on loads being moved by cranes or derricks,

nor shall they ride the hoisting hooks unless such method eliminates a greater hazard.

57.16-12 Substances that react violently or liberate dangerous fumes when mixed should be stored in such a manner that they cannot come in contact with each other.

57.16-13 Only men wearing protective equipment should stand near pots or ladles when molten material is being handled; warning should be given before a pour is made or the pot is moved.

57.16-14 *Mandatory.* Operator - carrying overhead cranes shall be provided with:

- (a) Burners at each end of each rail.
- (b) Automatic switches to halt uptravel of the blocks before they strike the hoist.
- (c) Effective audible warning signals within easy reach of the operator.
- (d) A means to lockout the disconnect switch.

57.16-15 *Mandatory.* No person shall work from or travel on the bridge of an overhead crane unless the bridge is provided with substantial footwalks with toeboards and railings the length of the bridge.

57.16-16 Forklift trucks should be moved with the load in a low position and should descend ramps with the load behind.

57.16-17 through 57.16-34 [Reserved]

UNDERGROUND ONLY

57.16-35 Chairs should be used to land shaft conveyances when heavy supplies or equipment are being handled.

[34 F.R. 12517, July 31, 1969, as amended at 35 F.R. 3676, Feb. 25, 1970]

§ 57.17 Illumination.

SURFACE ONLY

57.17-1 *Mandatory.* Illumination sufficient to provide safe working conditions shall be provided in and on all surface structures, paths, walkways, stairways, switch panels, loading and dumping sites, and working areas.

57.17-2 through 57.17-9 [Reserved]

UNDERGROUND ONLY

57.17-10 *Mandatory.* Individual electric lamps shall be carried for illumination by all persons underground.

§ 57.18 Safety programs.

GENERAL—SURFACE AND UNDERGROUND

57.18-1 The employer should establish a definite effective program and continually functioning safety program and make every attempt to prevent accidents and increase safety. Employees should actively participate in the safety program.

57.18-2 Regular safety inspection should be made by company officials or safety committees. Written reports should be made of the findings and actions recommended or taken; this information should be made available to the employees.

57.18-3 Serious accidents, whether resulting in injury or not, should be investigated to determine the cause and the means of

preventing recurrences. Records of these investigations should be kept and the information should be made available to the employees.

57.18-4 Company safety regulations pertinent to the various operations should be published or posted for employee information.

57.18-5 All employees and officials should be familiar with company, State, and Federal health and safety regulations applicable to their jobs.

57.18-6 *Mandatory.* New employees shall be indoctrinated in safety rules and safe work procedures.

57.18-7 Inexperienced employees should be assigned to work with experienced men until such employees have acquired the necessary skills to perform their duties safely.

57.18-8 Each working place should be visited by a supervisor or a designated person at least once each shift and more frequently as necessary to insure that work is being done in a safe manner.

57.18-9 A competent person should be in charge at all times when men are working.

57.18-10 *Mandatory.* Selected supervisors shall be trained in first aid. First aid training shall be made available to all interested employees.

57.18-11 All supervisors and employees should be trained in accident prevention.

57.18-12 *Mandatory.* Emergency telephone numbers shall be posted at appropriate telephones.

57.18-13 Where telephone service is not available, emergency communications should be provided to the nearest point of assistance.

57.18-14 *Mandatory.* Arrangements shall be made in advance for obtaining emergency medical assistance and transportation for injured persons.

57.18-15 through 57.18-19 [Reserved]

SURFACE ONLY

57.18-20 *Mandatory.* No employee shall be assigned, or allowed, or be required to perform work alone in any area where hazardous conditions exist that would endanger his safety unless he can communicate with others, can be heard, or can be seen.

57.18-21 through 57.18-24 [Reserved]

UNDERGROUND ONLY

57.18-25 *Mandatory.* No employee shall be assigned, or allowed, or be required to perform work alone in any area where hazardous conditions exist that would endanger his safety unless his cries for help can be heard or he can be seen.

57.18-26 Operations should not be resumed in a mine following an event which has caused or can cause widespread unsafe conditions until such mine has been inspected by a Federal mine inspector and the mine is found to be in a safe condition to resume operations.

57.18-28 *Mandatory.*—(a) Within 6 months after promulgation of this standard and thereafter on an annual basis all persons who

are required to go underground shall be instructed in the Mining Enforcement and Safety Administration approved course contained in Bureau of Mines Instruction Guide 19, "Mine Emergency Training" (September 1972). The instruction shall be given by MESA personnel or by persons who are certified by the Mining Enforcement and Safety Administration, Division of Education and Training Operations, to give such instruction.

(b) Within 6 months after promulgation of this standard and thereafter on an annual basis all persons who go underground shall be instructed in the Mining Enforcement and Safety Administration course contained in Bureau of Mines Instruction Guide 2, "MSA W-65 Self-Rescuer" (March 1972) or Bureau of Mines Instruction Guide 3, "Permissible Drager 810 Respirator for Self-Rescue" (March 1972). The instruction shall be given by MESA personnel or by persons who are certified by the Mining Enforcement and Safety Administration, Division of Education and Training Operations to give such instructions: provided, however, that if a Mining Enforcement and Safety Administration instructor or a certified instructor is not immediately available such instruction of new employees in self-rescuers may be conducted by qualified company personnel who are not certified, but who have obtained provisional approval from the Mining Enforcement and Safety Administration, Division of Education and Training Operations, to give such instruction. Any person who has not had self-rescuer instruction within 12 months immediately preceding going underground shall be instructed in the use of self-rescuers before going underground.

(c) All instructional material, handouts, visual aids, and other such teaching accessories used by the operator in the courses prescribed in paragraphs (a) and (b) shall be available for inspection by the Secretary or his authorized representative.

(d) Records of all instruction shall be kept at the mine site or nearest mine office at least 2 years from the date of instruction. Upon completion of such instruction, copies of the record shall be submitted to the nearest Mining Enforcement and Safety Administration training center.

(e) The Bureau of Mines instruction guides to which reference is made in items (a) and (b) of this standard are hereby incorporated by reference and made a part hereof. The incorporated instruction guides are available and shall be provided upon request made to any Mining Enforcement and Safety Administration training center or Metal and Nonmetal Mine Health and Safety Subdistrict Office.

[34 F.R. 12517, July 31, 1969, as amended at 35 FR 3676, Feb. 25, 1970; 38 FR 23382, Aug. 29, 1973; 39 FR 13969, Apr. 19, 1974]

§ 57.19 Man hoisting.

The hoisting standards in this section apply to those hoists and appurtenances used

for hoisting men. However, where men may be endangered by hoists and appurtenances used solely for handling ore, rock, and materials, the appropriate standards should be applied.

Hoists

57.19-1 *Mandatory.* Hoists shall have rated capacities consistent with the loads handled and the recommended safety factors of the ropes used.

57.19-2 *Mandatory.* Hoists shall be anchored securely.

57.19-3 *Mandatory.* Belt, rope, or chains shall not be used to connect driving mechanisms to man hoists.

57.19-4 *Mandatory.* Any hoist used to hoist men shall be equipped with a brake or brakes which shall be capable of holding its fully loaded cage, skip, or bucket at any point in the shaft.

57.19-5 *Mandatory.* The operating mechanism of the clutch of every man-hoist drum shall be provided with a locking mechanism, or interlocked electrically or mechanically with the brake to prevent accidental withdrawal of the clutch.

57.19-6 *Mandatory.* Automatic hoists shall be provided with devices that automatically apply the brakes in the event of power failure.

57.19-7 *Mandatory.* All man hoists shall be provided with devices to prevent overtravel. When utilized in shafts exceeding 100 feet in depth, such hoists shall also be provided with overspeed devices.

57.19-8 Friction hoists should be provided with synchronizing mechanisms that recalibrate the overtravel devices and position indicators to correct for rope creep or stretch.

57.19-9 *Mandatory.* An accurate and reliable indicator of the position of the cage, skip, bucket, or cars in the shaft shall be provided.

57.19-10 *Mandatory.* Hoist controls shall be placed or housed so that the noise from machinery or other sources will not prevent hoistmen from hearing signals.

57.19-11 Flanges on drums should extend radially a minimum of two rope diameters and not less than 4 inches beyond the last wrap.

57.19-12 Where grooved drums are used, the grooves should be of the proper size and pitch for the ropes used.

57.19-13 *Mandatory.* Where any diesel or similar fuel-injection engine is used to power a hoist, the engine shall be equipped with a damper or other cutoff in its air intake system. The control handle shall be clearly labeled to indicate that its intended function is for emergency stopping only.

57.19-14 through 57.19-19 [Reserved]

WIRE ROPE

57.19-20 The United States of America Standards Institute specifications cited in "Wire Ropes for Mines", M11.1-1960, or the latest revision thereof, should be used as a guide in the selection, installation, and maintenance of wire ropes used for hoisting.

except in those instances where the recommendations cited herein are more stringent.

57.19-21 *Mandatory.* The following static-load safety factors shall be used for selecting ropes to be used for hoisting men and for determining when such ropes shall be removed from man hoists.

| Length of rope in shaft (feet) | Minimum factor of safety (new rope) | Minimum factor of safety (remove) |
|--------------------------------|-------------------------------------|-----------------------------------|
| 500 or less..... | 8 | 6.4 |
| 501-1,000..... | 7 | 5.8 |
| 1,001-2,000..... | 6 | 5.0 |
| 2,001-3,000..... | 5 | 4.3 |
| 3,001 or more..... | 4 | 3.6 |

57.19-22 At least three wraps of rope should be left on the drum when the conveyance is at the bottom of the hoistway. This provision does not apply to friction hoists.

57.19-23 The end of the rope at the drum should make at least one full turn on the drum shaft, or a spoke of the drum in the case of a free drum, and should be fastened securely by means of rope clips or clamps. This standard does not apply to friction hoists.

57.19-24 *Mandatory.* The rope shall be attached to the load by the thimble-and-clip method, the socketing method, or other approved method. If the socketing method is employed, zinc or its equivalent shall be used. The use of Babbitt metal or lead for socketing wire ropes is prohibited. If the thimble-and-clip method is used, the following shall be observed:

(a) The rope shall be attached to the load by passing one end around an oval thimble that is attached to the load bending the end back so that it is parallel to the long or "live" end of the rope and fastening the two parts of the rope together with clips.

(b) The U-bolt of each clip shall encircle the short or "dead" end of the rope and the distance between clips shall not be less than the figures given in the accompanying table.

(c) As a minimum the following number of clips or equivalent shall be used for various diameters of six-stand 19-wire plow steel ropes:

(Follow manufacturer's recommendations for other kinds of wire rope and clips.)

| Diameter of rope, inches | Number of clips | Center-to-center spacing, of clips, inches |
|--------------------------|-----------------|--|
| 3/8..... | 4 | 4 1/2 |
| 7/16..... | 4 | 5 1/4 |
| 1..... | 4 | 6 |
| 1 1/8..... | 5 | 6 3/4 |
| 1 1/4..... | 5 | 7 1/2 |
| 1 3/8..... | 6 | 8 1/4 |
| 1 1/2..... | 6 | 9 |
| 1 5/8..... | 6 | 9 3/4 |
| 1 3/4..... | 7 | 10 1/2 |
| 1 7/8..... | 8 | 11 1/4 |
| 2..... | 8 | 12 |
| 2 1/4..... | 8 | 13 |
| 2 1/2..... | 8 | 14 |

(d) For all ropes less than three-quarter inch in diameter, at least four clips or equivalent shall be used.

(e) When special conditions require the attachment of a sling to the hoisting cable to handle equipment in the shaft, the sling shall be attached by clips or equivalent in accordance with the table in paragraph (c) of this standard.

57.19-25 New ropes should be broken-in in accordance with the manufacturer's recommendations.

57.19-26 *Mandatory.* Safety device attachments to hoist ropes shall be selected, installed, and maintained according to manufacturers' specifications to minimize internal corrosion and weakening of the hoist rope.

57.19-27 Where possible, conveyances attached to single ropes used to hoist men should be provided with secondary safety connections.

57.19-28 through 57.19-34 [Reserved]

HEADFRAMES AND SHEAVES

57.19-35 Headframes should be designed and constructed to withstand pulls by the hoists greater than the breaking strengths of the hoist ropes.

57.19-36 Headframes should be high enough to provide at least 15 feet of clearance between the bottom of the sheave or drum and the uppermost part of the highest rope connection of the conveyance when the conveyance is at its uppermost man-landing.

57.19-37 Fleet angles should not exceed 1 1/2 degrees.

57.19-38 *Mandatory.* Platforms with toe-boards and handrails shall be provided around elevated head sheaves.

57.19-39 Diameters of head sheaves and hoist drums should conform to the following specifications:

| Rope construction | Diameter of sheave and drum | |
|--------------------------------------|-----------------------------|----------------------------|
| | Recommended | Minimum |
| | <i>Times rope diameter</i> | <i>Times rope diameter</i> |
| 6 x 7 classification..... | 72 | 42 |
| 6 x 19..... | 45 | 30 |
| 6 x 37..... | 27 | 18 |
| 6 x 25 type B, flattened strand..... | 45 | 30 |
| 6 x 27 type H, flattened strand..... | 45 | 30 |
| 6 x 30 type G, flattened strand..... | 45 | 30 |
| 18 x 7 classification..... | 51 | 34 |

57.19-40 Head, idler, knuckle, and curve sheaves should have grooves that support the ropes properly. Before installing new ropes, the grooves should be inspected and where necessary machined to the proper contour and the proper groove diameter.

57.19-41 through 57.19-44 [Reserved]

CONVEYANCES

57.19-45 *Mandatory.* Man cages and skips used for hoisting or lowering employees or other persons in any vertical shaft or any incline shaft with an angle of inclination of forty-five (45) degrees from the horizontal, shall be covered with a metal bonnet.

57.19-46 through 57.19-48 [Reserved]

57.19-49 *Mandatory.* Buckets shall not be used to hoist men except during shaft sinking operations, inspection, maintenance, and repairs.

57.19-50 *Mandatory.* Buckets used to hoist men during vertical shaft sinking operations shall have:

(a) A crosshead the height of which is at least $1\frac{1}{2}$ times its width if used on wooden guides or a minimum height of 4 feet if used on rope or steel guides.

(b) Overhead protection when the shaft depth exceeds 50 feet.

(c) Sufficient depth or a suitably designed platform to transport men safely in a standing position.

(d) Devices to prevent accidental dumping where the bucket is supported by a ball attached to its lower half.

57.19-51 [Reserved]

57.19-52 [Reserved]

57.19-53 *Mandatory.* In shaft sinking where a platform is suspended by wire ropes, such ropes shall have an approved rating for the suspended load.

57.19-54 *Mandatory.* Where rope guides are used in shafts they shall be of locked coil construction.

HOISTING PROCEDURES

57.19-55 *Mandatory.* When a manually operated hoist is used, a qualified hoistman shall remain within hearing of the telephone or signal device at all times while any person is underground.

57.19-56 When automatic hoisting is used, a qualified hoistman should be in attendance on the premises while any person is underground.

57.19-57 Hoistmen should be physically fit and should undergo yearly examinations to determine their continued fitness; certification to this effect should be available at the mine.

57.19-58 *Mandatory.* Only experienced hoistmen shall operate the hoist except in cases of emergency and in the training of new hoistmen.

57.19-59 [Reserved]

57.19-60 Hoistmen should use extreme caution when hoisting or lowering men.

57.19-61 The safe speed for hoisting men should be determined for each shaft, and this speed should not be exceeded. Men should not be hoisted at a speed faster than 2,500 feet per minute, except in an emergency, be done while persons are on cages.

57.19-62 Maximum acceleration and deceleration should not exceed 6 feet per second.

57.19-63 Only authorized persons should be in hoist rooms.

57.19-64 [Reserved]

57.19-65 *Mandatory.* Conveyances shall not be lowered by the brakes alone except during emergencies.

57.19-66 Management should designate the maximum number of men permitted to ride on a trip at one time; this limit should be posted on each landing.

57.19-67 Authorized persons should be in charge of all man trips.

57.19-68 Men should enter, ride, and leave conveyances in an orderly manner.

57.19-69 *Mandatory.* Men shall not enter or leave conveyances which are in motion or after a signal to move the conveyance has been given to the hoistman.

57.19-70 *Mandatory.* Cage doors or gates shall be closed while men are being hoisted; they shall not be opened until the cage has come to a stop.

57.19-71 *Mandatory.* Men shall not ride in skips or buckets with muck, supplies, materials, or tools other than small hand tools.

57.19-72 When combinations of cages and skips are used, the skips should be empty while men are being transported.

57.19-73 *Mandatory.* Rock or supplies shall not be hoisted in the same shaft as men during shift changes, unless the compartments and dumping bins are partitioned to prevent spillage into the cage compartment.

57.19-74 Men should not ride the ball, rim, or bonnet of any shaft conveyance, except where necessary for the inspection and maintenance of the shaft and lining.

57.19-75 *Mandatory.* Open hooks shall not be used to hoist buckets or other conveyances.

57.19-76 When men are hoisted, bucket speeds should not exceed 500 feet a minute, and should not exceed 200 feet a minute when within 100 feet of a landing.

57.19-77 *Mandatory.* Buckets shall be stopped about 15 feet from the shaft bottom to await a signal from one of the crew on the bottom for further lowering.

57.19-78 Buckets should be stopped after being raised 3 feet when men are hoisted from the bottom; a second hoisting signal should be given after the bucket has been stabilized. Hoisting should be at a minimum speed and the bellicord should be attended constantly until the crosshead has been engaged.

57.19-79 *Mandatory.* Where mine cars are hoisted by cage or skip, means for blocking cars shall be provided at all landings and also on the cage.

57.19-80 *Mandatory.* When tools, timbers, or other materials are being lowered or raised in a shaft by means of a bucket, skip, or cage, they shall be secured or so placed that they will not strike the sides of the shaft.

57.19-81 Conveyances not in use should be released and raised or lowered at least 10 feet from the floor of the landing.

57.19-82 through 57.19-89 [Reserved]

SIGNALING

57.19-90 *Mandatory*. There shall be at least two effective approved methods of signaling between each of the shaft stations and the hoist room, one of which shall be a telephone or speaking tube.

57.19-91 Hoistmen should not accept hoisting instructions by telephone unless the regular signaling systems are out of order. During such an emergency one person should be designated to direct movement of the conveyance.

57.19-92 *Mandatory*. A method shall be provided to signal the hoist operator from cages or other conveyances at any point in the shaft.

57.19-93 A standard code of hoisting signals should be adopted and used at each mine.

57.19-94 *Mandatory*. A legible signal code shall be posted prominently in the hoist house within easy view of the hoistmen, and at each place where signals are given or received.

57.19-95 Hoisting signal devices should be maintained within easy reach of men on the shaft bottom during sinking operation.

57.19-96 *Mandatory*. Any person responsible for receiving or giving signals for cages, skips, and mantrips when men or materials are being transported shall be familiar with the posted signaling code.

57.19-97 through 57.19-99 [Reserved]

SHAFTS

57.19-100 *Mandatory*. Shaft landings shall be equipped with substantial safety gates so constructed that materials will not go through or under them; gates shall be closed except when loading or unloading shaft conveyances.

57.19-101 *Mandatory*. Positive stopblocks or a derail switch shall be installed on all tracks leading to a shaft collar or landing.

57.19-102 Guides should be provided in each hoisting compartment in shafts inclined more than 45° from the horizontal.

57.19-103 Dumping facilities should be so constructed as to minimize spillage into the shaft.

57.19-104 Adequate clearance should be maintained at shaft stations to allow men to pass safely and to allow materials to be handled safely.

57.19-105 *Mandatory*. A safe means of passage around open shaft compartments shall be provided on landings with more than one entrance to the shaft.

57.19-106 Shaft timbers should be kept clean of rocks and other loose material.

57.19-107 *Mandatory*. Hoistmen shall be informed when men are working in a compartment affected by that hoisting operation and "Men Working in Shaft" sign shall be posted at the hoist.

57.19-108 *Mandatory*. When men are working in a shaft "Men Working in Shaft" signs shall be posted at all devices controlling hoisting operations that may endanger such men.

57.19-109 *Mandatory*. Shaft inspection and repair work in vertical shafts shall be performed from substantial platforms equipped with bonnets or equivalent overhead protection.

57.19-110 *Mandatory*. A substantial bulkhead or equivalent protection shall be provided above men at work deepening a shaft.

57.19-111 Substantial fixed ladders should be maintained as near the shaft bottom as practical during shaft-sinking operations. Chain, wire rope, or other extension ladders should be used from the fixed ladder to the shaft bottom.

57.19-112 through 57.19-119 [Reserved]

INSPECTION AND MAINTENANCE

57.19-120 *Mandatory*. A systematic procedure of inspection, testing, and maintenance of shaft and hoisting equipment shall be developed and followed. If it is found or suspected that any part is not functioning properly, the hoist shall not be used until the malfunction has been located and repaired or adjustments have been made.

57.19-121 Complete records should be kept of installation, lubrication, inspection, tests, and maintenance of shafts and hoisting equipment.

57.19-122 Parts used to repair hoists should have properties equal to or better than the original parts; replacement parts should be designed to fit the original installation.

57.19-123 Ropes should be kept well lubricated from end to end as recommended by the manufacturer.

57.19-124 On other than friction hoists, ropes should be cut off and reconnected to the conveyance as often as necessary to assure adequate inspection of rope condition and to distribute wear of the rope. At least 6 feet should be cut from the rope above the highest connection; this portion should be examined carefully for corrosion, damage, wear, and fatigue by the rope manufacturer or a competent agency.

57.19-125 Hoisting ropes wound in multiple layers should be cut off and repositioned on the drum at regular intervals as necessary to distribute wear of the rope. The length of cutoff at the drum end should not be an even multiple of the circumference of the drum.

57.19-126 Ropes should be calipered at regular intervals as necessary to effectively determine the rate of wear and damage. Caliper measurements should be taken:

(a) Immediately above the socket or clips and above the safety connection.

(b) Where the ropes rest on the sheaves.

(c) Where the ropes leave the drums when the conveyances are at the regular stopping points.

(d) Where a layer of rope begins to overlap another layer on the drum.

57.19-127 Electromagnetic or other non-destructive rope testing systems should be used only as supplements to and not as sub-

stitutes for recommended inspection and tests.

57.19-128 *Mandatory*. Ropes shall not be used for hoisting when they have:

(a) More than six broken wires in any lay.

(b) Crown wires worn to less than 65 percent of the original diameter.

(c) A marked amount of corrosion or distortion.

(d) A combination of similar factors individually less severe than those above but which in aggregate might create an unsafe condition.

57.19-129 *Mandatory*. Hoistmen shall examine their hoists and shall test overtravel, deadman controls, position indicators, and braking mechanisms at the beginning of each shift.

57.19-130 Empty conveyances should be operated up and down shafts at least one round trip before hoisting men after any shaft or equipment repairs and before regular man trips are hoisted or lowered.

57.19-131 Rope and conveyance connections to conveyances should be inspected daily.

57.19-132 Safety catches should be inspected daily; drop tests should be made at the time of installation. Every 2 months the cage should be rested on chairs or proper blocking to check the operation or activation of the safety catches by allowing the rope to slacken suddenly.

57.19-133 Shafts should be inspected at least weekly.

57.19-134 Sheaves should be inspected daily and kept properly lubricated.

57.19-135 Rollers used in inclined shafts should be lubricated, properly aligned and kept in good repair.

[34 F.R. 12517, July 31, 1969, as amended at 35 F.R. 3676, Feb. 25, 1970; 35 F.R. 4518, Mar. 13, 1970; 35 F.R. 18592, Dec. 8, 1970; 37 FR 14374, July 19, 1972; 39 FR 24320, July 1, 1974]

§ 57.20 Miscellaneous.

GENERAL—SURFACE AND UNDERGROUND

57.20-1 *Mandatory*. Intoxicating beverages and narcotics shall not be permitted or used in or around mines. Persons under the influence of alcohol or narcotics shall not be permitted on the job.

57.20-2 *Mandatory*. Potable water shall be available to all employees during working hours.

57.20-3 Good housekeeping should be practiced in and around a mine.

57.20-4 Men should not engage in horseplay.

57.20-5 *Mandatory*. Carbon tetrachloride shall not be used.

57.20-6 Protruding nails which may cause injury should be removed or completely bent over.

57.20-7 Employees should be constantly alert to the potential of accidents on their jobs.

57.20-8 Toilet facilities should be provided at convenient locations and should be kept clean and sanitary.

57.20-9 *Mandatory*. Dusts suspected of being explosive shall be tested for explosibility. If tests prove positive, appropriate control measures shall be taken.

57.20-10 *Mandatory*. If failure of a water or silt retaining dam will create a hazard it shall be of substantial construction and inspected at regular intervals.

57.20-11 through 57.20-19 [Reserved]

SURFACE ONLY

57.20-20 *Mandatory*. Access to unattended mine openings shall be restricted by gates or doors, or the openings shall be fenced and posted.

57.20-21 *Mandatory*. Upon abandonment of a mine, the owner or operator shall effectively close or fence off all surface openings down which persons could fall or through which persons could enter. Upon or near all such safeguards, trespass warnings and appropriate danger notices shall be posted.

57.20-22 through 57.20-29 [Reserved]

UNDERGROUND ONLY

57.20-30 [Reserved]

57.20-31 *Mandatory*. In areas where dangerous accumulations of water, gas, mud, or fire atmosphere could be encountered, men shall be removed to safe places before blasting.

57.20-32 Telephone service or equivalent two-way communication facilities should be provided from underground working areas to the surface.

[34 F.R. 12517, July 31, 1969, as amended at 35 F.R. 3677, Feb. 25, 1970]

§ 57.21 Gassy mines.

Gassy mines shall be operated in accordance with all mandatory standards in this part. Such mines shall also be operated in accordance with the mandatory standards in this section. The standards in this section apply only to underground operations.

MINE CLASSIFICATION

57.21-1 *Mandatory*. A mine shall be deemed gassy, and thereafter operated as a gassy mine, if:

(a) The State in which the mine is located classifies the mine as gassy; or

(b) Flammable gas emanating from the orebody or the strata surrounding the orebody has been ignited in the mine; or

(c) A concentration of 0.25 percent or more, by air analysis, of flammable gas emanating only from the orebody or the strata surrounding the orebody has been detected not less than 12 inches from the back, face, or ribs in any open workings; or

(d) The mine is connected to a gassy mine.

57.21-2 *Mandatory*. Flammable gasses detected while unwatering mines and similar operations shall not be used to class a mine gassy.

57.21-3 through 57.21-9 [Reserved]

FIRE PREVENTION AND CONTROL

57.21-10 *Mandatory.* Men shall not smoke or carry smoking materials, matches, or lighters underground. The operator shall institute a reasonable program to ensure that persons entering the mine do not carry smoking materials, matches, or lighters.

57.21-11 *Mandatory.* Except when necessary for welding or cutting, open flames shall not be used in other than fresh air or in places where flammable gases are present or may enter the air current.

57.21-12 *Mandatory.* Welding or cutting with arc or flame underground in other than fresh air or in places where flammable gases are present or may enter the air current shall be under the direct supervision of a qualified person who shall test for flammable gases before and frequently during such operations.

57.21-13 *Mandatory.* Welding or cutting shall not be performed in atmospheres, containing more than 1.0 percent of flammable gases.

57.21-14 through 57.21-19 [Reserved]

VENTILATION

57.21-20 *Mandatory.* Main fans shall be:

- (a) Installed on the surface.
- (b) Powered electrically from a circuit independent of the mine power circuit. Internal combustion engines shall be used only for standby power, or where electrical power is not available.
- (c) Installed in fireproof housing provided with fireproof air ducts.
- (d) Offset not less than 15 feet from the nearest side of the mine opening and equipped with ample means of pressure relief unless:
 - (1) The opening is not in direct line with forces which would come out of the mine should an explosion occur; and
 - (2) Another opening not less than 15 feet nor more than 100 feet from the fan opening is equipped with a weak-wall stoppling or explosion doors in direct line with the forces which would come out of the mine should an explosion occur.

- (e) Installed to permit prompt reversal of airflow.
- (f) Attended constantly, or provided with automatic devices to give alarm when the fans slow down to stop. Such devices shall be placed so they will be seen or heard by responsible persons.

57.21-21 Main fans should be:

- (a) Operated continuously except when the mine is shut down for an extended period.
- (b) Provided with pressure-recording gages.
- (c) Inspected daily and records kept of such inspections and of fan maintenance.

57.21-22 The main intake and return air currents in mines should be in separate shafts, slopes, or drifts.

57.21-23 *Mandatory.* When single shafts are used for intake and return the curtain wall or partition shall be constructed of rein-

forced concrete or equivalent and provided with pressure relief devices.

57.21-24 *Mandatory.* When a main fan fails or stops and ventilation is not restored in a reasonable time, action shall be taken to cut off the power to the areas affected and to withdraw all men from such areas.

57.21-25 When there has been a failure of ventilation and ventilation has been restored in a reasonable time, all places where flammable gas may have accumulated should be examined by a qualified person and determined to be free of flammable gas before power is restored and work resumed.

57.21-26 *Mandatory.* When ventilation is not restored in a reasonable time, all men shall be removed from the areas affected, and after ventilation has been restored, the areas affected shall be examined by qualified persons for gas and other hazards and made safe before power is restored and before men, other than the examiners and other authorized persons, return to the areas affected.

57.21-27 *Mandatory.* When the main fan or fans have been shut down with all men out of the mine, no person, other than those qualified to examine the mine, or other authorized persons, shall go underground until the fans have been started and the mine examined for gas and other hazards and declared safe.

57.21-28 *Mandatory.* Booster fans shall be:

- (a) Operated by permissible drive units maintained in permissible condition.
- (b) Operated only in air containing not more than 1.0 percent flammable gas.

57.21-29 *Mandatory.* A booster fan shall be:

- (a) Equipped with an automatic device to give alarm when the fan slows or stops, or equipped with a device that automatically cuts off the power in the area affected if the fan slows or stops.
- (b) Provided with air locks, the doors of which open automatically if the fan stops.

57.21-30 *Mandatory.* Auxiliary fans shall be:

- (a) Operated by permissible drive units maintained in permissible condition.
- (b) Operated only in air containing not more than 1.0 percent flammable gas.

57.21-31 Auxiliary fans should be inspected by competent persons at least twice each shift.

57.21-32 *Mandatory.* Men shall be withdrawn from areas affected by auxiliary or booster fans when such fans slow down or stop.

57.21-33 *Mandatory.* The volume and velocity of the current of air coursing through all active areas shall be sufficient to dilute and carry away flammable gases, smoke and fumes.

57.21-34 *Mandatory.* The quantity of air coursing through the last open crosscut in pairs or sets of entries or through other ventilation openings nearest the face, shall be at least 6,000 cubic feet a minute.

57.21-35 *Mandatory.* At least once each week, a qualified person shall measure the

volume of air entering the main intakes and leaving the main returns, the volume of the intake and return of each split, and the volume through the last open crosscuts or other ventilation openings nearest the active faces. Records of such measurements shall be kept in a book on the surface.

57.21-36 Permanently installed battery-charging and transformer stations should be ventilated by separate splits of air conducted directly to return-air courses.

57.21-37 Electrically operated pumps, compressors, and portable substations should be in intake air.

57.21-38 *Mandatory.* Changes in ventilation that materially affect the main air current or any split thereof and may affect the safety of persons in the mine shall be made only when the mine is idle. Only those persons engaged in making such changes shall be permitted in the mine during the change. Power shall be removed from the areas affected by the change before work starts and not restored until the effect of the change has been ascertained and the affected areas determined to be safe by a qualified person.

57.21-39 *Mandatory.* If flammable gas in excess of 1.0 percent by volume is detected in the air not less than 12 inches from the back, face, and rib of an underground working place, or in air returning from a working place or places, adjustments shall be made in the ventilation immediately so that the concentration of flammable gas in such air is reduced to 1.0 percent or less.

57.21-40 *Mandatory.* If 1.5 percent or higher concentration of flammable gas is detected in air returning from an underground working place or places, the men shall be withdrawn and the power cut off to the portion of the mine endangered by such flammable gas until the concentration of such gas is reduced to 1.0 percent or less.

57.21-41 *Mandatory.* Air that has passed by an opening of any unsealed abandoned area and contains 0.25 percent or more of flammable gas shall not be used to ventilate working areas. Examinations of such air shall be conducted during the preshift examinations required by § 57.21-59.

57.21-42 *Mandatory.* Air that has passed through an abandoned panel or area which is inaccessible or unsafe for inspection shall not be used to ventilate any working place in such mine. No air which has been used to ventilate an area from which the pillars have been removed shall be used to ventilate any working place in such mine, except that such air, if it does not contain 0.25 volume per centum or more of methane, may be used to ventilate enough advancing working places immediately adjacent to the line of retreat to maintain an orderly sequence of pillar recovery on a set of entries.

57.21-43 *Mandatory.* Abandoned areas shall be sealed or ventilated; areas that are not sealed shall be barricaded and posted against unauthorized entry.

57.21-44 *Mandatory.* Seals shall be of substantial construction. Exposed surfaces shall

be made of fire-resistant material or, if the commodity mined is combustible, seals shall be made of incombustible material.

57.21-45 *Mandatory.* One or more seals of every sealed area shall be fitted with a pipe and a valve or cap to permit sampling of the atmosphere and measurement of the pressure behind such seals.

57.21-46 *Mandatory.* Crosscuts shall be made at intervals not in excess of 100 feet between entries and between rooms.

57.21-47 Crosscuts should be closed where necessary to provide adequate face ventilation.

57.21-48 *Mandatory.* Line brattice or other suitable devices shall be installed from the last open crosscut to a point near the face to assure positive air flow to the face of every active underground working place, unless the Secretary or his authorized representative permits an exception to this requirement.

57.21-49 Brattice close should be of flame-resistant material.

57.21-50 *Mandatory.* Damaged brattices shall be repaired promptly.

57.21-51 Crosscuts should be provided, where practicable, at or near the faces of entries and rooms before they are abandoned.

57.21-52 *Mandatory.* Entries or rooms shall not be started off entries beyond the last open crosscuts, except that room necks and entries not to exceed 18 feet in depth may be turned off entries beyond the last open crosscuts if such room necks or entries are kept free of accumulations of flammable gas by use of line brattice or other adequate means.

57.21-53 Stoppings in crosscuts between intake and return airways, on entries other than room entries, should be built of solid, substantial material; exposed surfaces should be made of fire-resistant material or, if the material mined is combustible, stoppings should be made of incombustible material.

57.21-54 Stoppings should be reasonably airtight.

57.21-55 *Mandatory.* The main ventilation shall be so arranged by means of air locks, overcasts, or undercasts that the passage of trips or persons does not cause interruptions of air currents. Where air locks are impracticable, single doors may be used if they are attended constantly while the areas of the mine affected by the doors are being worked, unless they are operated mechanically or are self-closing.

57.21-56 *Mandatory.* Air locks shall be ventilated sufficiently to prevent accumulations of flammable gas inside the locks.

57.21-57 *Mandatory.* Doors shall be kept closed except when men or equipment are passing through the doorways.

57.21-58 Overcasts and undercasts should be:

(a) Constructed tightly of incombustible material.

(b) Of sufficient strength to withstand possible falls from the back.

(c) Kept clear of obstructions.

57.21-59 *Mandatory*. Preshift examinations shall be made of all working areas by qualified persons within 3 hours before any workmen, other than the examiners, enter the mine.

57.21-60 [Reserved]

57.21-61 *Mandatory*. Only qualified examiners and persons authorized to correct the dangerous conditions shall enter places or areas where danger signs are posted.

57.21-62 *Mandatory*. Danger signs shall not be removed until the dangerous conditions have been corrected.

57.21-63 through 57.21-64 [Reserved]

57.21-65 Examinations for dangerous conditions, including tests for flammable gas with a device approved by the Secretary should be made at least once each week, and at intervals of not more than 7 days, by the mine foreman or other designated mine official, except during weeks in which the mine is idle for the entire week. The foreman or other designated mine official should:

- (a) Examine and make tests:
 - (1) In the return of each split where it enters the main return,
 - (2) On accessible pillar falls,
 - (3) At seals,
 - (4) In the main return,
 - (5) In at least one entry of each intake and return airway in its entirety,
 - (6) In idle workings,
 - (7) In abandoned workings, insofar as conditions permit.
- (b) Mark his initials and the date at the places examined;
- (c) Report dangerous conditions promptly to the mine operator or other designated person;
- (d) Record the results of his examination with ink or indelible pencil in a book kept for that purpose at a designated place on the surface of the mine.

57.21-66 The mine foreman or other designated mine official should read and counter-sign promptly the reports of daily and weekly examinations by qualified persons and should take prompt action to have dangerous conditions corrected.

57.21-67 through 57.21-74 [Reserved]

EQUIPMENT

57.21-75 [Reserved]

57.21-76 *Mandatory*. Diesel-powered equipment shall not be taken into or operated in places where flammable gas exceeds 1.0 percent at any point not less than 12 inches from the back, face, and rib.

57.21-77 *Mandatory*. Trolley wires and trolley feeder wires shall be on intake air and shall not extend beyond the last open crosscut or other ventilation opening. Such wires shall be kept at least 150 feet from pillar workings.

57.21-78 *Mandatory*. Only permissible equipment maintained in permissible condition shall be used beyond the last open crosscut or in places where dangerous quantities of flammable gases are present or may enter the air current.

57.21-79 *Mandatory*. Only permissible distribution boxes shall be used in working places and other places where dangerous quantities of flammable gas may be present or may enter the air current.

57.21-80 [Reserved]

57.21-81 *Mandatory*. No electric equipment shall be taken into or operated in places where flammable gas can be detected in the amount of 1.0 percent or more at any point not less than 12 inches from the back, face, and rib.

57.21-82 through 57.21-89 [Reserved]

ILLUMINATION

57.21-90 *Mandatory*. Only permissible electric lamps shall be used for portable illumination underground.

57.21-91 through 57.21-94 [Reserved]

EXPLOSIVES

57.21-95 *Mandatory*. Explosives not designated as permissible by the Bureau of Mines or the Mining Enforcement and Safety Administration shall not be used in any underground gassy mine until the Bureau of Mines and State Inspector of Mines have given written approval for each such specific explosive to be used.

57.21-96 *Mandatory*. The Mining Enforcement and Safety Administration and the State Inspector of Mines, in granting approval referred to in standard § 57.21-95, shall provide the operator with a written list of conditions for using the specific explosives covered by the approval and adapted to the mining operation.

57.21-97 *Mandatory*. Blasts in gassy mines shall be initiated electrically, and multiple-shot blasts shall be initiated only with millisecond-delay detonators. Permissible blasting units of capacity suitable for the number of holes in a round to be blasted shall be used unless the round is fired from the surface when all men are out of the mine.

57.21-98 *Mandatory*. Boreholes shall be stemmed as prescribed for the explosives used.

57.21-99 *Mandatory*. Examinations for gas shall be made immediately before and after firing each shot or round.

57.21-100 *Mandatory*. Shots or rounds shall not be fired in places where flammable gas can be detected with a permissible flame safety lamp, or where 1.0 percent or more of flammable gas can be detected by any other Bureau of Mines or Mining Enforcement and Safety Administration approved device or method, at a point not less than 12 inches from the back, face, and rib.

57.21-101 Shots and rounds should be fired by qualified persons.

[34 F.R. 12517, July 31, 1969, as amended at 35 F.R. 3877, Feb. 25, 1970; 35 F.R. 4515, Mar. 13, 1970; 35 F.R. 18592, Dec. 8, 1970]

§ 57.22 Savings provision.

57.22-1 through 57.22-3 [Reserved]

§ 57.24 Variances: Mandatory standards other than those relating to exposure to concentrations of radon daughters.

57.24-1. Except as provided in § 57.24-7, the Administrator, Mining Enforcement and Safety Administration, may, in accordance with the provisions of this § 57.24, permit a variance from a mandatory standard in this part other than those relating to exposure to concentrations of radon daughters. The Administrator may permit such a variance only by means of a written decision specifically describing the variance permitted and the restrictions and conditions to be observed and finding that, in the circumstances, the health and safety of all persons which the mandatory standard is designed to protect will be no less assured under the variance permitted. The Administrator may, in writing delegate the authority conferred by this § 57.24 to the Deputy Administrator, Mining Enforcement and Safety Administration, the Assistant Administrator, Metal and Nonmetal Mine Health and Safety District Managers.

57.24-2 An application for a variance must be in writing and filed with the Administrator, Mining Enforcement and Safety Administration, Department of the Interior, Washington, D.C. 20240. A copy of the application must be mailed or otherwise delivered to the District Manager of the Metal and Nonmetal Mine Health and Safety District of the Mining Enforcement and Safety Administration in which the mine is located and a copy must be mailed or otherwise delivered to the State agency responsible for health and safety in the mine.

57.24-3 Before an application for a variance is filed, the person making such application shall give notice of the contents of the application to all persons employed in the area of the mine that would be affected by the variance if granted. Such notice may be given by the delivery of a copy to each such employee individually; or by the delivery of a copy of the application to an organization, agency, or individual authorized by the employees to represent them; or by posting a copy on a bulletin board at the mine office or in some other appropriate place at the mine adequate to give notice to the employees. An application will be rejected if it does not show that the notice required by this subsection has been given.

57.24-4 An application for a variance must:

- (a) Specify the mandatory standard or standards from which the variance is requested;
- (b) Describe the variance requested;
- (c) Identify the areas of the mine that would be affected by the variance;
- (d) Give the reasons why the standard or standards cannot or should not be strictly complied with;
- (e) Specify the time period for which the variance is requested;

(f) Describe the work assignments of persons employed in affected areas of the mine, specifying the number of persons having each work assignment;

(g) Explain how the health and safety of persons employed in the affected areas of the mine will be no less assured if the requested variance is granted than through strict compliance with the standard or standards;

(h) Indicate the authority of the person signing the application;

(i) Include a statement describing how, and on what dates, the notice required in subsection 57.24-3 was given.

57.24-5 For a period of 15 days following the date on which an application for a variance is filed, any interested person may submit to the Administrator, Mining Enforcement and Safety Administration, written data, views, or arguments, respecting the application. Copies of such comments shall be mailed or otherwise delivered to the District Manager of the Health and Safety District of the Mining Enforcement and Safety Administration in which the mine is located, to the State agency responsible for health and safety in the mine, and to the person making the application. The Administrator may hold a public hearing if he determines that such a hearing would contribute to his consideration of the application. The Administrator shall issue a decision on an application promptly following the expiration of the period of 15 days and the conclusion of a hearing, if any.

57.24-6 Notwithstanding the provisions of subsection 57.24-5, a temporary variance from a mandatory standard may be approved before the expiration of the 15-day period for a specified time not to exceed 45 calendar days after receipt of the application, if the application is for a variance that would, in the judgment of the Administrator, clearly provide a level of health and safety to the persons employed in the areas of the mine that would be affected thereby no less than would be provided by compliance with a particular mandatory standard.

57.24-7 This § 57.24 does not authorize the Administrator to permit a variance from any mandatory standard relating to exposure to airborne contaminants. A variance from mandatory standards relating to exposure to radon daughters may be granted in accordance with the provisions of § 57.25.

[85 F.R. 18592, Dec. 8, 1970, as amended at 37 FR 12636, June 27, 1972]

§ 57.25 Variance: Mandatory standards relating to exposure to radon daughters.

57.25-1 The Administrator, Mining Enforcement and Safety Administration, in accordance with the provisions of this § 57.25 is authorized to permit a variance from standard 57.5-5 in this Part 57 relating to the use of respirators in lieu of environmental controls in mines subject to standards relating to exposures to radon daughters. The

Administrator may permit such a variance only by means of a written decision specifically describing the variance permitted and the restrictions and conditions to be observed. The Administrator may, in writing, delegate the authority conferred by this § 57.25 to the Deputy Administrator, Mining Enforcement and Safety Administration, the Assistant Administrator, Metal and Nonmetal Mine Health and Safety, and the Metal and Nonmetal Mine Health and Safety District Managers.

57.25-2 (a) No variance shall be granted to the provisions of § 57.5-5 which permits any person to receive a cumulative exposure in excess of 4 WLM per year.

(b) No variance shall be granted for a period of time longer than that necessary for the operator to establish environmental controls and to achieve conditions in the mine which will assure that individuals employed in any capacity in such mine will not receive an exposure in excess of 4 WLM per year. The period of time for which a variance may be permitted shall not exceed six (6) months: *Provided, however*, That two extensions, not to exceed 6 months each, may be granted if the terms, conditions, and other provisions of the variance as approved have been met and the holder of the variance establishes that he has exercised his best efforts to achieve conditions which will make respiratory protection unnecessary to avoid overexposure.

(c) A written application for an extension of a variance must be received by the Administrator at least 30 days prior to the expiration or termination of the existing variance. The applicant for an extension of a variance shall comply with the filing and notice requirements provided in §§ 57.25-3 and 57.25-4.

57.25-3 An application for a variance or an extension of a variance must be in writing and filed with the Administrator, Mining Enforcement and Safety Administration, Department of the Interior, Washington, D.C. 20240. A copy of the application must be mailed or otherwise delivered to the District Manager of the Metal and Nonmetal Mine Health and Safety District of the Mining Enforcement and Safety Administration in which the mine is located and a copy must be mailed or otherwise delivered to the State agency responsible for health and safety in the mine.

57.25-4 Before an application for a variance or an extension of a variance is filed, the person making such application shall give notice of the contents of the application to all persons employed in the mine that would be affected by the variance if granted. Such notice may be given by the delivery of a copy to each such employee individually; or by the delivery of a copy of the application to an organization, agency, or individual authorized by the employees to represent them; or by posting a copy on a bulletin board at the mine office; or in some other appropriate place at the

mine adequate to give notice to the employees. An application will be rejected if it does not show that such notice has been given.

57.25-5 An application for a variance shall include:

(a) The name and address of the applicant and of the mine for which the variance is requested.

(b) A statement that the application is a request for a variance from mandatory standard 57.5-5.

(c) A statement that the applicant is unable to establish environmental controls and achieve conditions in the mine which will make respiratory protection unnecessary to avoid overexposure and shall set forth the reasons therefor.

(d) A plan which, on approval, shall become a condition of the variance if granted which specifies the actions to be taken which will assure that when the plan has been completed no employee in the mine will receive an exposure in excess of 4 WLM per year.

(e) A program for respiratory protection of all employees likely to receive exposure to radon daughters in excess of 4 WLM per year based on current measurements of radon daughter concentrations and prior recordkeeping. In order to receive approval the program shall meet the following conditions and requirements:

(1) The program shall provide that employees shall wear protective equipment which has been approved by the Bureau of Mines under Bureau of Mines Schedule 21B, "Filter-type Dust, Fume, and Mist Respirators" (see 30 CFR Part 14, revised edition January 1, 1972; 30 F.R. 616, January 19, 1965, as amended at 34 F.R. 9617, June 19, 1969); or approved under Title 30, Code of Federal Regulations, Part 11—"Respiratory Protective Devices; Tests for Permissibility; Fees", promulgated in 37 F.R. 6244, March 25, 1972, and employees shall be protected by the use of such equipment so that their annual exposure shall not exceed 4 WLM.

(2) The program shall describe the protective equipment to be employed, including the efficiency of the equipment for radon daughters. Approved respirators of the types described as follows may be used in the manner and circumstances as follows:

(i) Approved dust respirators may be used for protection in radon daughter concentrations up to 1 WL. The protection factor for approved dust respirators shall be 0.2, that is, such respirators shall be capable of removing 80 percent of the radon daughters from the respired air.

(ii) Respirators approved for protection against radon daughters and those approved for protection against radioactive aerosols up to 10 times the MPC may be used for protection in radon daughter concentrations up to 3 WL. The protection factor for such approved respirators shall be 0.1, that is the respirator shall be capable of removing 90

percent of the radon daughters from the respired air.

(iii) Approved powered air-purifying respirators when equipped with a high efficiency filter or with a filter approved for use with radon daughters may be used for protection in radon daughter concentrations up to 10 WL. The protection factor for such approved respirators shall be 0.03, that is, the respirator shall be capable of removing 97 percent of the radon daughters from the respired air.

(iv) Approved continuous flow air line respirators or pressure demand type self-contained breathing apparatus shall be used for protection in radon daughter concentrations above 10 WL.

(3) The program shall provide that respirators shall be selected, fitted, used, and maintained in accordance with the provisions of the American National Standard Z88.1 "Safety Guide for Respiratory Protection against Radon Daughters," or Z88.2 "Practices for Respiratory Protection," obtainable from American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.

(4) The program shall prescribe procedures governing the use of protective equipment, including supervisory procedures, and the approximate length of time the equipment will be used by individuals in each work week. The proposed periods of use of such equipment by an individual should not be of such duration as will discourage observance by the individual of the established procedures, nor should respirators be used under conditions where they may otherwise be detrimental to safety and health of employees.

(5) Filters on reusable respirators shall not be used longer than one shift (8 hours) before changing, and filters shall be changed at the beginning of each shift regardless of the length of time used on the previous shift.

(6) The program may consist of the use of respirators in combination with work rotation procedures or other methods of protection.

(7) The program shall set forth average concentration of radon daughters present in the areas of the mine occupied by the affected employees.

(8) The program shall contain a summarization of the exposure of affected employees for the 12-month period preceding the application by showing on a quarterly basis the number of workers exceeding 1, 2, 3, etc., working level months.

(9) The program shall contain a description of the work assignments of affected employees, specifying the number of persons having each work assignment.

(f) Specify the time period for which the variance is requested.

(g) Indicate the authority of the person signing the application.

(h) A statement describing how, and on what dates, the notice required by § 57.25-4 was given.

57.25-6 While a variance is in effect, in addition to any other requirements of this part and as a condition of the variance the operator shall comply with the following:

(a) Mine atmospheres shall be sampled to determine the concentrations of radon daughters.

(1) Sampling shall be in accordance with the procedures contained in American National Standards Institute N 7.1a-1969, "Supplement to radiation protection in uranium mines and mills concentrators," except that the sampling frequency for primary air courses not using vent tubing shall be at least monthly and the sampling frequency for areas ventilated by secondary systems or through vent tubing shall be at least weekly. Where samples are required to be taken weekly, such samples shall be taken randomly throughout the week in any given work place, for example, if a work place is sampled on Thursday at 10 a.m. on week, it shall not be sampled on Thursday at 10 a.m. the following week, but rather it shall be sampled on another day at another time of the day.

(2) Samples used for exposure determinations shall be taken as near as possible to the breathing zone of workers in each work place.

(3) Sampling shall be done during the course of a regular work shift.

(b) Exposure records for each employee exposed to radon daughters shall be kept in accordance with American National Standards Institute N 7.1a-1969, "Supplement to radiation protection in uranium mines and mills (concentrators)," except that the interval for calculating cumulative exposure shall be monthly.

(c) Clear and legible forms containing the same information as given in Appendix C of American National Standards Institute N 7.1a-1969 shall be used for recordkeeping. Occupancy time shall be recorded to the nearest half-hour. Periods of respirator use shall be clearly indicated on the form including the protection factor for each respirator used. Annual exposure shall be kept on a calendar year basis. The annual period shall start on the first Sunday of the year and end on the Saturday preceding the first Sunday of the following year. If existing timekeeping or recordkeeping procedures make this impractical, another period may be used that starts as soon after the first day of the calendar year as practical and that continues to an equivalent day of the succeeding year so that all days are covered.

(d) All sampling and exposure records required to be kept by this § 57.25-6, or any provision of the variance, shall be open for inspection by all affected employees, representatives of employees, State agencies, and authorized representatives of the Secretary of the Interior.

(e) American National Standards Institute N 7.1a-1969, "Supplement to radiation protection in uranium mines and mills (concentrators)", is obtainable from American

National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.

57.25-7 (a) For a period of 15 days following the date on which an application for a variance or extension is filed, any interested person may submit to the Administrator, Mining Enforcement and Safety Administration, written data, views, objections, or arguments respecting the application. Copies of such comments shall be mailed or otherwise delivered to the District Manager of the Metal and Nonmetal Mine Health and Safety District of the Mining Enforcement and Safety Administration in which the mine is located, and to the State agency responsible for health and safety in the mine. The Administrator may forward copies of such data, views, objections, or arguments to the applicant after removing any identification of the source of such comments, if requested to do so by the person filing such comments and such person is an employee in the mine for which the variance or extension is requested.

(b) Upon the written request of any affected party, made and filed with the Administrator within 15 days following the date on which an application for a variance or extension is filed, the Administrator shall hold a public hearing to consider the application. The Administrator on his own initiative may hold a public hearing on the application. A notice of the time and place of such hearing shall be published in the FEDERAL REGISTER as soon as practicable after receipt of the request.

Requests for hearings shall be addressed to the Administrator, and copies shall be mailed or otherwise delivered to the District Manager, the State agency responsible for health and safety in the mine, and the applicant. The request for hearing shall include a concise statement of facts showing how the person requesting the hearing would be affected by the variance or extension, if granted, and shall also specify any statement or representation in the application for variance or extension which is denied or contested, and a concise summary of the evidence that will be adduced in support of such denial or contest, and any views or arguments on any issue of fact or law presented.

(c) The Director may cause radiation surveys to be made at the mine when he deems such necessary to assist him in his consideration of the application for a variance or extension.

(d) The Director shall issue a decision on the application as soon as practicable following the expiration of the period of 15 days, or the conclusion of any hearing held, or completion of radiation surveys which may be conducted.

57.25-8 Notwithstanding the provisions of § 57.25-7, the Administrator may issue a temporary variance, specifying the conditions thereof, for a period of time, not to exceed 60 days, necessary to permit his full con-

sideration of an application made under the provisions of § 57.25.

57.25-9 (a) The Administrator may make such changes and impose such conditions in the applicant's plans for establishment of environmental controls, program of respiratory protection, sampling procedures and recordkeeping, and other matters, as he may deem appropriate before granting a variance.

(b) The Administrator may at any time while a variance is in effect cancel, revoke, or make revisions in the terms and conditions of the variance if he finds that the plans or programs which have been instituted are not accomplishing the expected results, or changed mine conditions prevent the plans and programs from functioning as intended, or the operator fails to observe the terms and conditions of the variance.

[37 FR 12636, June 27, 1972]

§ 57.26 Procedures.

NOTIFICATION OF COMMENCEMENT OF OPERATIONS AND CLOSING OF MINES

57.26-1 *Mandatory.* The owner, operator, or person in charge of any metal and non-metal mine shall notify the nearest Mining Enforcement and Safety Administration Metal and Nonmetal Mine Health and Safety subdistrict office or the State agency if the mine is located in a State which has a State Plan Agreement in effect, before starting operations, of the approximate or actual date mine operation will commence. The notification shall include the mine name, location, the company name, mailing address, person in charge, and whether operations will be continuous or intermittent.

When any mine is closed, the person in charge shall notify the nearest subdistrict office or State agency as provided above and indicate whether the closure is temporary or permanent.

[38 FR 23382, Aug. 29, 1973]

PART 58—NOTIFICATION, INVESTIGATION, REPORTS AND RECORDS OF ACCIDENTS, INJURIES AND OCCUPATIONAL ILLNESSES IN METAL AND NONMETAL MINES

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- 58.31 Metal-Nonmetal Injury and Illness Report.
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- 58.33 Place to file reports; initial supply; additional forms.

AUTHORITY: The provisions of this Part 58 are issued under section 13 of the Federal Metal and Nonmetallic Mine Safety Act (80 Stat. 782, 30 U.S.C. 732).

SOURCE: 37 FR 24181, Nov. 14, 1972, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 38 FR 18666, July 13, 1973.

Subpart A—Purpose and Definitions

§ 58.1 Purpose.

The provisions of the regulations in this Part 58 apply to all metal and non-metal mines subject to the provisions of the Federal Metal and Nonmetallic Mine Safety Act (80 Stat. 772, 30 U.S.C. sections 721-740). Under the provisions of the Act, the Secretary of the Interior is authorized to cause investigations to be made for the purpose of obtaining information relating to the causes of accidents involving the loss of life or bodily injury and health and safety conditions in such mines. The purpose of the regulations in this Part 58 is to provide for immediate notice to the Mining Enforcement and Safety Administration, Department of the Interior, of the occurrence of certain types of accidents in order to afford the Administration an opportunity to conduct a prompt investigation, to obtain the operator's report of the occurrence, and to gather current and timely information pertaining to injuries and illnesses.

§ 58.2 Definitions.

As used in this part:

(a) "Metal and nonmetal mine" means: (1) An area of land from which minerals other than coal or lignite are extracted in nonliquid form or if in liquid form, are extracted with workers underground; (2) private ways and roads appurtenant to such area; and (3) land, excavations, underground passages, and workings, structures, facilities, equipment, machines, tools, or other property, on the surface or underground used in the work of extracting such minerals other than coal or lignite from their natural deposits in nonliquid form

or if in liquid form, with workers underground, or used in the milling of such minerals, except that with respect to the protection against radiation hazards such term shall not include property used in the milling of source material as defined in the Atomic Energy Act of 1954, as amended.

(b) "Accident" means: (1) Any injury to or illness of any person, as defined in paragraphs (g), (h), and (j) of this section; (2) any outbreak of fire that endangers human life or a fire underground which is not brought under control within 30 minutes; (3) any unplanned ignition of dust or strata gas; (4) any unplanned explosion of dust or gas; (5) any unplanned inundation by water or gas that endangers human life; (6) any unplanned initiation of explosives, including blasting agents; (7) any entrapment that endangers human life; (8) any damage to shafts and ventilation facilities that endangers human life; and (9) any damage to hoisting or haulage facilities used for the transportation of men when such damage endangers human life.

(c) "Ignition" means: The burning of a flammable mixture of gas or dust without evidence of violence from expansion of gases.

(d) "Explosion" means: The burning of a flammable mixture of gas or dust with evidence of violence from expansion of gases.

(e) "State Agency" means: A State agency responsible for administering a State plan agreement on behalf of a State and throughout the State.

(f) "State Plan Agreement" means: An agreement entered into between the United States of America, and a State pursuant to section 16 of the Federal Metal and Nonmetallic Mine Safety Act.

(g) "Nonfatal injury" means: Any occupational injury other than a fatal injury suffered by any worker which results from a work accident arising out of and in the course of work. A nonfatal injury does not include an injury requiring only first aid treatment.

(h) "Fatal injury" means: Any occupational injury of a person resulting in death regardless of the time intervening between injury and death.

(i) "First aid treatment" means: Any one-time treatment, and any followup visit for the purpose of observation for minor headaches, head colds, flu, virus, scratches, cuts, burns, splinters, and other minor injury or illness, which do

not ordinarily require medical care. Such one-time treatment, and followup visit for the purpose of observation, is considered first aid even though provided by a physician or registered professional personnel.

(j) "Illness" means: Any occupational illness, that is, any abnormal condition or disorder, other than one resulting from an occupational injury, caused by exposure to environmental factors associated with employment. It includes acute and chronic illnesses or diseases which may be caused by inhalation, absorption, ingestion, or direct contact, and which fall within the listing under the heading "Occupational Illness" on Forms No. 6-1555 and 6-1555-S. An illness does not include an illness requiring only first aid treatment.

(k) "Subdistrict Manager" means: The Metal and Nonmetal Mine Health and Safety Subdistrict Manager of the Subdistrict Office of the Mining Enforcement and Safety Administration of the Subdistrict in which the metal and nonmetal mine is located.

(l) "That endangers human life" means: Danger to the life of any person on mine property which is subject to the Act.

Subpart B—Notification of Accidents

§ 58.10 Scope.

The regulations in this Subpart B provide for the immediate notification to the Mining Enforcement and Safety Administration, U.S. Department of the Interior, of the occurrence of any accident described in § 58.11 in order to afford the Bureau the opportunity to conduct a prompt investigation, or to require the operator to investigate the accident and submit a written report as provided in Subpart C of this part.

§ 58.11 Notification by operator.

The operator of a metal and nonmetal mine subject to the Act, using the fastest available means of communication, shall immediately notify the Subdistrict Manager of any of the following accidents that occur at a metal and nonmetal mining operation:

(a) Any injury, excluding illness, which results in death or may reasonably be expected to result in death;

(b) Any outbreak of fire that endangers human life or a fire underground which is not brought under control within 30 minutes;

(c) Any unplanned ignition of dust or strata gas;

(d) Any unplanned explosion of dust or gas;

(e) Any unplanned inundation by water or gas that endangers human life;

(f) Any unplanned initiation of explosives, including blasting agents;

(g) Any entrapment that endangers human life;

(h) Any damage to shafts and ventilation facilities that endangers human life; and

(i) Any damage to hoisting or haulage facilities used for the transportation of men when such damage endangers human life.

§ 58.12 Investigation by Mining Enforcement and Safety Administration.

Following any notification received in accordance with § 58.11, the Subdistrict Manager shall determine whether an investigation of the accident will be conducted by the Mining Enforcement and Safety Administration. If he determines that such an investigation will be conducted (a) in a State with which a State plan agreement is in effect the Subdistrict Manager shall promptly notify the State agency and the operator or, (b) in a State with which a State plan agreement is not in effect, the Subdistrict Manager shall promptly notify the operator directly, of the approximate date and time of such investigation. If an investigation is to be made by the Mining Enforcement and Safety Administration, the operator shall, to the extent compatible with rescue and recovery work, take appropriate measures to preserve anything and everything which might assist an investigator in determining the cause or causes of the accident. Neither the operator's immediate report nor an investigation by the Mining Enforcement and Safety Administration of an accident specified in § 58.11 shall relieve the operator of the reporting requirements for an injury prescribed in Subpart D of this part.

Subpart C—Operator's Investigation, Record, and Report of Accidents

§ 58.20 Scope.

The Secretary of the Interior or his duly authorized representative may require a detailed investigation and written report of an accident specified in § 58.11. The operator's investigation shall

develop sufficient information to determine the cause of the accident and to describe all facts which contributed to or resulted in the accident. The regulations in this Subpart C prescribe the nature and the extent of the information to be included in such records, and the period and manner in which report of accidents shall be recorded and submitted to the Mining Enforcement and Safety Administration.

§ 58.21 Investigations required by operators.

Following the occurrence of an accident specified in § 58.11, and if required, an operator shall be notified by the sub-district manager of the requirement to submit a detailed written report of the accident as soon as practicable to the Mining Enforcement and Safety Administration. The operator shall conduct an investigation and, on completion of the investigation, the operator shall submit a written report to the subdistrict manager. If the metal and nonmetal mine is located in a State where a State plan agreement is in effect, the operator shall upon request by the State agency, submit a copy of the written report to the State agency.

§ 58.22 Written record.

(a) The operator's written record of his investigation of an accident shall contain:

(1) The Mining Enforcement and Safety Administration mine identification number;

(2) The date and hour on which the accident occurred;

(3) The date and hour the investigation was started;

(4) The name of the person, or persons, who made the investigation;

(5) The name, occupation at the time of the accident, and pertinent occupational experience for each person who received injury, together with the type of each injury incurred;

(6) A narrative description of the accident, including all pertinent events prior to, during, and after the accident; all relevant facts, such as dimension and clearance measurements; manufacturer, model, and type of equipment or machinery involved; in general terms the noise level, visibility, and lighting environment; and identifiable human behavior factors contributing to the accident; and any other factor believed to

have related or contributed to the accident;

(7) A diagram of the location of the accident; and

(8) The operator shall attach to his written detailed investigation report, a description of steps taken, or to be taken in the future, along with a reasonable timetable for execution, so that the possibility of recurrence of that type of accident may be eliminated.

(b) A written report submitted by the operator under this Subpart C, which includes an injury, does not relieve the operator from the injury reporting requirements prescribed in Subpart D of this part.

§ 58.23 Maintenance of records.

The operator's written records of investigations of accidents required by this Subpart C, or a true legible facsimile thereof (microfilm or other) shall be maintained at the metal and nonmetal mine or nearest mine office for a period of 3 years from the date of the accident. These records shall be open for inspection by the Secretary of the Interior and his duly authorized representatives, authorized representatives of the official mine inspection agency of the State in which the mine is located, representatives of the mine workers, and the worker who is the subject of the report or his legal representative.

Subpart D—Operator's Reports to the Mining Enforcement and Safety Administration

§ 58.30 Scope.

The regulations in this Subpart D prescribe records of injuries and illnesses to be maintained by all operators of metal and nonmetal mines, the time and manner in which required information is to be reported to the Mining Enforcement and Safety Administration, and the availability of such records to inspection.

§ 58.31 Metal-nonmetal injury and illness report.

(a) The operator of a metal or non-metal mine shall maintain at the mine a Metal-Nonmetal Injury and Illness Report (Form 6-1555 or 6-1555-S, whichever is applicable) on which there shall be entered and recorded specified information with respect to each injury by date of occurrence, and each illness by date of diagnosis or occurrence. The Metal-Nonmetal Injury and Illness Report is organized to facilitate the record-

ing and compilation of information for each occurrence. The operator's copy (white) or a true legible facsimile thereof (microfilm or other) shall be maintained at the mine or nearest mine office for a period of 3 years from the date of occurrence or diagnosis, whichever is applicable, and shall be open for inspection by the Secretary of the Interior and his duly authorized representatives, authorized representatives of the official mine inspection agency of the State in which the mine is located, representatives of the mine workers, and the worker who is the subject of the report or his legal representative.

(b) For metal and nonmetal lines located in States in which a State plan agreement is not in effect, the Metal-Nonmetal Injury and Illness Report (Form 6-1555) shall consist of a set of three forms: An original (white) operator's copy and two carbon copies (one yellow and one blue), which shall be maintained, filled in, and disposed of in accordance with the provisions of this Subpart D.

(c) For metal and nonmetal mines located in States in which a State plan agreement is in effect, the Metal-Nonmetal Injury and Illness Report (Form 6-1555-S) shall consist of a set of five forms, an original (white) operator's copy, and four carbon copies (two yellow and two blue) which shall be maintained, filled in, and disposed of in accordance with the provisions of this Subpart D.

(d) The operator shall maintain at the metal and nonmetal mine, a supply of the Metal-Nonmetal Injury and Illness Report Forms (Form 6-1555 or 6-1555-S). Promptly after an injury occurs, or an illness occurs or is diagnosed, a responsible supervisor or individual of the mine where the injury occurred shall fill out one set of forms for each injury or illness. Where more than one person is injured, or is afflicted simultaneously with the same illness, a separate and additional set of forms shall be used and completed for each person injured or afflicted.

(e) Metal-Nonmetal Injury and Illness Reports shall be retained, completed and information recorded, disposed of and distributed and mailed to the Bureau of Mines as follows:

(1) Promptly after the occurrence of an injury or an illness occurs or is diagnosed, the operator shall record the information required, and upon comple-

tion of the recording of the information shall retain the original (white) copy for the operator's records.

(2) The operator shall retain the yellow and blue copies for a period of time not to exceed 10 calendar days after the occurrence of the injury or illness, or diagnosis of an illness. Depending upon whether the person affected does, or does not return to work within the period of 10 calendar days, the operator shall proceed in accordance with subparagraphs (3) and (5) of this paragraph.

(3) If the injured or ill person returns to his regular job at full capacity within 10 calendar days following an injury, or occurrence or diagnosis of an illness, the operator shall enter the "Total number of lost workdays," the "Number lost from regular job," the "Date returned to work," and other relevant data on the white and yellow copies and promptly mail the yellow Federal-copy to the Mining Enforcement and Safety Administration and may discard the blue Federal-copy.

(4) Operators in States in which State plan agreements are in effect shall proceed as in subparagraph (3) of this paragraph except that the operator shall mail the yellow State-copy to the State agency and discard the blue State-copy.

(5) If the injured or ill person has not returned to his regular job within 10 calendar days following an injury, or occurrence or diagnosis of an illness, the operator shall leave blank the spaces designated "Total number of lost workdays," "Number lost from regular job," "Date returned to work," and also those spaces for other relevant but unknown data or information, and promptly upon the expiration of the period of 10 calendar days the operator shall mail the yellow Federal-copy to the bureau of Mines. Thereafter, when the person returns to his regular job, the operator shall enter the total number of lost workdays, the number of days lost from regular job, the date the person returned to work, and complete and record all other relevant data or information in the spaces provided on the white and blue copies, and mail the blue Federal-copy to the Mining Enforcement and Safety Administration.

(6) Operators in States in which State plan agreements are in effect shall proceed as in subparagraph (5) of this paragraph except that at the appropriate times, the operator shall mail the yellow State-copy and the blue State-

copy to the State agency, and the yellow Federal-copy and the blue Federal-copy to the Mining Enforcement and Safety Administration.

§ 58.32 Metal-Nonmetal Quarterly Employment Report.

(a) On or before the 15th day of the first month following the end of each calendar quarter; that is, April 15, July 15, October 15, and January 15, the operator of a metal and nonmetal mine in which one or more men have worked during any day of a calendar quarter shall file with the Mining Enforcement and Safety Administration a Metal-Nonmetal Quarterly Employment Report (Form 6-1556 or 6-1556-S, whichever is applicable). The Metal-Nonmetal Quarterly Employment Report shall be submitted to the Mining Enforcement and Safety Administration by all metal and nonmetal mine operators for each quarter, or portion thereof, in which the mine is in operation even though the metal and nonmetal mine may be idle for all or a portion of the quarter. If an operator permanently closes or abandons the mine, the operator shall immediately notify the Mining Enforcement and Safety Administration of the last day of operation and no report will be required from a metal and nonmetal mine which has been permanently closed or abandoned, except for the portion of a quarter during which the mine may have been in operation.

(b) For metal and nonmetal mines located in States in which a State plan agreement is not in effect, the operator shall use Form 6-1556 and retain the original and file the copy with the Mining Enforcement and Safety Administration.

(c) For metal and nonmetal mines located in States in which State plan agreements are in effect, the operator shall use Form 6-1556-S and retain the original and file the Federal-copy with the Mining Enforcement and Safety Administration and the State-copy with the appropriate State Agency.

(d) The operator's original of Form 6-1556 or 6-1556-S or a true legible facsimile thereof (microfilm or other) shall be maintained at the metal and nonmetal mine or nearest mine office for a period of 3 years from the date of filing.

§ 58.33 Place to file reports; initial supply; additional forms.

Unless otherwise provided, all reports required by this Subpart D to be submitted (a) to the State agency in States with State plan agreements in effect, shall be filed with the appropriate State agency, and (b) to the Bureau of Mines shall be filed with the U.S. Bureau of agency, and (b) to the Mining Enforcement and Safety Administration shall be filed with the U.S. Mining Enforcement and Safety Administration, Health and Safety Analysis Center, Building 20, Denver Federal Center, Denver, Colo. 80225. An initial supply of the Metal-Nonmetal Mine Injury and Illness Report and the Metal-Nonmetal Quarterly Employment Report and preaddressed envelopes for the Mining Enforcement and Safety Administration forms will be mailed to each operator. Additional report forms and envelopes may be obtained as needed, upon request, from the Metal and Nonmetal Mine Health and Safety District and Subdistrict Office of the Mining Enforcement and Safety Administration of the District or Subdistrict in which the mine is located.

SUBCHAPTER O—COAL MINE HEALTH AND SAFETY

PART 70—MANDATORY HEALTH STANDARDS — UNDERGROUND COAL MINES

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AUTHORITY: The provisions of this Part 70 issued under title II, sec. 308(b), and sec. 508 of the Federal Coal Mine Health and Safety Act of 1969 (83 Stat. 742; 30 U.S.C. 801).

SOURCE: The provisions of this Part 70 appear at 35 F.R. 5544, Apr. 3, 1970, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 38 FR 18666, July 13, 1973.

Subpart A—General

§ 70.1 Scope.

This Part 70 sets forth health standards compliance with which is mandatory in each underground coal mine subject to the Federal Coal Mine Health and Safety Act of 1969. Regulations supplementary to these standards also are set forth in this part.

§ 70.2 Definitions.

For the purpose of this Part 70, the term—

(a) "Certified" or "registered" as applied to any person means a person certified or registered by the State in which the coal mine is located to perform duties prescribed by such titles, except that, in a State where no program of certification or registration is provided or where the program does not meet at least minimum Federal standards established by the Secretary, such certification or registration shall be by the Secretary;

(b) "Qualified person" means, as the context requires, an individual deemed qualified by the Secretary and designated by the operator to make tests and examinations required by this Act; and

(c) "Permissible" as applied to equipment used in the operation of a coal mine, means equipment, other than permissible electric face equipment, to which an approval plate, label, or other

device is attached as authorized by the Secretary for the construction and maintenance of such equipment and are designed to assure that such equipment will not cause a mine explosion or a mine fire;

(d) "Working face" means any place in a coal mine in which work of extracting coal from its natural deposit in the earth is performed during the mining cycle;

(e) "Working place" means the area of a coal mine in by the last open crosscut;

(f) "Working section" means all areas of the coal mine from the loading point of the section to and including the working face; when two or more mechanized mining sections (as defined in § 75.319-1 of Part 75, Subchapter O this chapter) are engaged in the production of coal within the same working section, each such mechanized mining section shall be considered a separate "working section" for the purpose of this Part 70;

(g) "Active workings" means any place in a coal mine where miners are normally required to work or travel;

(h) "Normal production shift" (as differentiated from a maintenance shift) means a shift during which the amount of coal produced in a working section is representative of the average amount of coal produced in such working section during all production shifts worked during the life of such working section or during the 6 months immediately preceding such production, whichever is the shorter period. With regard to a new working section, a "normal production shift" means a shift during which the amount of coal produced is comparable to the amounts produced during "normal production shifts" in other comparable working sections.

(i) "Respirable dust" means only dust particulates 5 microns or less in size;

(j) "Coal mine" includes areas of adjoining mines connected underground;

(k) "Secretary" means the Secretary of the Interior or his delegate;

(l) "Act" means the Federal Coal Mine Health and Safety Act of 1969;

(m) "Concentrations of respirable dust" means the average concentration of respirable dust if measured with an MRE instrument or such equivalent concentrations if measured with another device approved by the Secretary and the Secretary of Health, Education, and Welfare;

(n) "MRE instrument" means the gravimetric dust sampler with four channel horizontal elutriator developed by the Mining Research Establishment of the National Coal Board, London, England; and

(o) "Average concentration" means a determination which accurately represents the atmospheric conditions with regard to respirable dust to which each miner in the active working of a mine is exposed (1) as measured, during the period ending June 30, 1971, over a number of continuous production shifts to be determined by the Secretary and the Secretary of Health, Education, and Welfare and (2) as measured thereafter, over a single shift only, unless the Secretary and the Secretary of Health, Education, and Welfare find, in accordance with the provisions of § 101 of the Act, that such single shift measurement will not, after applying valid statistical techniques to such measurement, accurately represent such atmospheric conditions during such shift.

Subpart B—Dust Standards

§ 70.100 Dust standards; respirable dust.

(a) Effective June 30, 1970, each operator shall continuously maintain the average concentration of respirable dust in the mine atmosphere during each shift to which each miner in the active workings of such mine is exposed at or below 3.0 milligrams of respirable dust per cubic meter of air.

(b) Effective December 30, 1972, each operator shall continuously maintain the average concentration of respirable dust in the mine atmosphere during each shift to which each miner in the active workings of such mine is exposed at or below 2.0 milligrams of respirable dust per cubic meter of air.

(c) An operator need not comply with paragraph (a) or paragraph (b) of this section during the period of time specified in a permit of noncompliance issued by the Interim Compliance Panel established by the Act, but during that period the operator shall continuously maintain the average concentration of respirable dust in the mine atmosphere during each shift to which each miner in the active workings of the mine is exposed at or below the limit specified in the permit of noncompliance.

(d) Effective June 30, 1971, each operator shall continuously maintain the

average concentration of respirable dust in the intake air courses in the mine during each shift to which each miner in the active workings of such mine is exposed at or below 2 milligrams of respirable dust per cubic meter of air.

(e) Effective December 30, 1972, each operator shall continuously maintain the average concentration of respirable dust in the intake air courses in the mine during each shift to which each miner in the active workings of such mine is exposed at or below 1 milligram of respirable dust per cubic meter of air.

[35 F.R. 5544, Apr. 3, 1970, as amended at 36 F.R. 12213, June 29, 1971]

§ 70.101 Respirable dust standard when quartz is present.

When the concentration of respirable dust in the mine atmosphere of any working place contains more than 5 percent quartz, the operator shall continuously maintain the average concentration of respirable dust in the mine atmosphere to which each miner in such working place is exposed at or below a concentration of respirable dust, expressed in milligrams per cubic meter of air, computed by dividing the percent of quartz into the number 10: *Provided*, That the application of this formula shall not result in a concentration in excess of any standard for respirable dust established pursuant to the Act.

EXAMPLE: Given the respirable dust in a particular working place in a mine contains quartz in the amount of 6.6 percent. The total respirable dust limit in the particular working place must, therefore, be maintained at or below 1.5 milligrams of respirable dust per cubic meter of air $\left(\frac{10}{6.6} = 1.5 \text{ mg/m.}^3\right)$.

[36 F.R. 4981, Mar. 16, 1971]

Subpart C—Sampling Procedures

§ 70.201 Sampling; general requirement.

Each operator of a coal mine shall, as prescribed in this Part 70, take accurate samples of the amount of respirable dust in the mine atmosphere to which each miner in the active workings of such mine is exposed.

§ 70.202 Sampling; by whom done.

The dust sampling required by this Part 70 shall be done by, or as directed by, a person—

(a) Who has had practical experience in an underground coal mine;

(b) Who has a working knowledge of the mining equipment employed in the mine in which samples are taken;

(c) Who has a working knowledge of the coal mine ventilation system in the mine in which samples are taken;

(d) Who has a working knowledge of the operation and care of the sampling devices mentioned in § 70.203 and the filters employed in such devices; and

(e) Who has satisfactorily completed a course approved by the Secretary in sampling and evaluation of respirable coal mine dust concentrations with the sampling devices mentioned in § 70.203.

§ 70.203 Approved sampling devices.

Except as provided in § 70.204, the samples which this Part 70 requires to be taken shall be taken only with a coal mine dust personal sampler unit approved under Part 74 of this chapter or with an MRE instrument.

§ 70.205 Approved sampling devices; operation, rates of air flow.

An approved coal mine dust personal sampler unit shall be operated at a flow rate of 2.0 liters of air per minute. An MRE instrument shall be operated at a flow rate of 2.5 liters of air per minute.

§ 70.206 Approved sampling devices; equivalent concentrations.

The concentration of respirable dust expressed in milligrams per cubic meter of air shall be determined by dividing the weight of dust in milligrams collected on the filter by the volume of air in cubic meters passing through the filter. To convert a concentration of respirable dust as measured with an approved coal mine dust personal sampler unit to an equivalent concentration of respirable dust as measured with an MRE instrument, the concentration of respirable dust measured with an approved coal mine dust personal sampler unit shall be multiplied by a constant factor of 1.6 and the product shall be the equivalent concentration as measured with an MRE instrument.

ORIGINAL DETERMINATION OF RESPIRABLE DUST CONCENTRATION

§ 70.210 Original sampling cycle; establishment of basic sample.

(a) Samples of respirable dust with respect to each working section of a coal mine shall be taken on 10 consecutive normal production shifts, each of which is worked on a separate calendar day, beginning with a normal production

shift completed on or after December 30, 1972, except that, with respect to working sections located in multisection mines, original sampling may be conducted in accordance with the provisions of § 70.241 of this part. An original sampling cycle shall be begun with respect to each working section of a coal mine no later than the 11th day upon which normal production shifts are worked in that section. For each working section, this series of 10 samples, or a series of 10 samples submitted in accordance with the provisions of § 70.230 of this part, shall constitute the basic sample with respect to that working section.

(b) Where a working section is opened after December 30, 1972, the original sampling cycle required in accordance with the provisions of paragraph (a) of this section shall be begun on a normal production shift (as defined in § 70.220) on the first production day in such working section and thereafter on consecutive production shifts (as defined in § 70.220). [35 FR 5544, Apr. 3, 1970, as amended at 37 FR 28631, Dec. 28, 1972]

§ 70.211 Violation of dust standard; original sampling cycle.

(a) If the data recorded pursuant to § 70.261 for an original sampling cycle with respect to a working section of a coal mine establish a cumulative concentration of respirable dust in excess of the cumulative concentration stated in paragraph (b) of this section with respect to the particular applicable limit, without regard to the number of samples analyzed, the Secretary shall issue a notice to the operator that he is in violation of paragraph (b) or paragraph (c) of § 70.100 of this Part 70. Paragraph (b) of § 70.100 prescribes a limit of 2.0 milligrams of respirable dust per cubic meter of air. Paragraph (c) of § 70.100 covers permits for noncompliance issued by the Interim Compliance Panel established by the Act. Such a permit may establish a limit in excess of 2.0 milligrams but not in excess of 3.0 milligrams.

(b) The cumulative concentration of respirable dust recorded from samples which establish noncompliance with a particular applicable limit may be as follows:

(1) When a limit of 3.0 milligrams per cubic meter of air is in effect, the cumulative concentration shall not exceed 30 milligrams of respirable dust;

(2) When a limit of 2.5 milligrams per cubic meter of air is in effect, the cumulative concentration shall not exceed 25 milligrams of respirable dust;

(3) When a limit of 2.0 milligrams per cubic meter of air is in effect, the cumulative concentration shall not exceed 20 milligrams of respirable dust; and,

(4) When any other limit is in effect under a standard based on the presence of quartz or under a permit for noncompliance, the cumulative concentration shall not exceed 10 times the specified limit of respirable dust per cubic meter of air.

[37 FR 28631, Dec. 28, 1972]

§ 70.212 Violation of dust standard; intake air samples.

(a) If the data recorded pursuant to § 70.261 for a single intake air sample with respect to a working section of a coal mine establish a concentration of respirable dust in excess of the concentration stated in paragraph (d) or (e) of § 70.100, as applicable, the Secretary shall require the operator to submit five additional intake air samples to determine whether such working section is in compliance with the applicable respirable dust limit.

(b) Upon receipt of advice that additional sampling is required, the operator shall commence such sampling on the first day on which there is a production shift following the day upon which he receives such advice from the Secretary pursuant to this paragraph, and shall continue to take such consecutive samples until he is advised in writing by the Secretary that the total number of valid samples required have been received.

(c) Where additional samples are received by the Secretary in accordance with paragraph (b) of this section, they shall be combined with the valid intake air sample already received, and a determination of compliance or noncompliance shall be made with respect to the working section.

(d) If the data recorded pursuant to § 70.261 with respect to the working section establish an average concentration of respirable dust in excess of the concentration stated in paragraph (d) or (e) of § 70.100 with respect to the particular applicable limit, the Secretary shall issue a notice to the operator that he is in violation of paragraph (d) or (e) of § 70.100.

[36 F.R. 12213, June 29, 1971]

STANDARD SAMPLING CYCLE

§ 70.220 Standard sampling cycle.

(a) (1) Except as provided in subparagraph (2) of this paragraph, during the calendar month beginning on the day the operator receives notice that a working section of a coal mine is in compliance, samples of respirable dust with respect to that working section shall be taken each calendar month thereafter during five consecutive normal production shifts, each of which is worked on a separate calendar day.

(2) In order to ensure that the procedures and methods for sampling set forth in this part result in the transmission of an adequate number of reliable samples, the Secretary, with the concurrence of the Secretary of Health, Education, and Welfare, may require any operator of a coal mine to sample at more frequent intervals than are prescribed in subparagraph (1) of this paragraph.

(3) Upon the issuance of a notice of violation of paragraph (b) or (c) of § 70.100 of this part with respect to any working section of a coal mine, paragraph (a) of this section shall not apply in respect of that working section until the violation is abated, and the operator shall take samples with respect to that working section during each production shift as required by § 104(i) of the Act.

(4) Upon receipt of a notice of the abatement of a violation with respect to a working section for which a notice of violation has been issued in accordance with the provisions of § 104(i) of the Act, or upon receipt of a notice of modification of a permit for noncompliance establishing a new dust standard, or upon the expiration of a permit for noncompliance, the operator shall initiate (in accordance with provisions of § 70.210) an original sampling cycle on the first day following receipt of such notice or such expiration on which there is a normal production shift.

(b) For the purpose of this Subpart C:

(1) "Normal production shift" (as differentiated from a maintenance shift) means a shift during which the amount of coal produced in a working section is representative of the average amount of coal produced in such working section during all production shifts worked during the life of such working section or during the six months immediately preceding such production, whichever is the shorter period. With regard to a new working section, a "normal production

shift" means a shift during which the amount of coal produced is comparable to the amounts produced during normal production shifts in other comparable working sections.

(2) A production shift during a calendar day (for example, the day shift on June 4) following a production shift during an earlier calendar day (for example, the afternoon shift on June 1) shall be considered consecutive production shifts even though a nonproducing calendar day or days (June 2 and June 3) may have intervened.

(3) The calendar month with respect to any working section for which a basic sample has been established pursuant to § 70.210 shall begin on the day upon which the operator receives notice from the Secretary that the working section is in compliance.

(4) A calendar month (regardless of whether the month or months of the calendar involved have 28, 29, 30, or 31 days) is a period terminating with the day of the succeeding month (of the calendar) numerically corresponding to the day (date) of its beginning, less one, except, if there be no corresponding day of the succeeding month, the period terminates with the last day of the succeeding month. (For example, if the calendar month begins on July 20, it ends on August 19 of the same year and on the 19th day of each succeeding month.)

[35 FR 5544, Apr. 3, 1970, as amended at 37 FR 28632, Dec. 28, 1972]

§ 70.221 Daily determination of average respirable dust concentrations; notice of violation.

(a) Each sample transmitted by an operator with respect to a working section from the standard sampling cycle shall be combined with the 10 samples taken in such working section during the original sampling cycle. After combining these 11 samples, the first sample transmitted during the original sampling cycle shall be discarded. The remaining 10 samples will then constitute a current basic sample with respect to that working section and a daily determination of compliance or noncompliance shall be made on the basis of the data recorded from the 10 samples contained in the current basic sample. Thereafter, as each subsequent sample is received during a standard sampling cycle the most recent sample transmitted in accordance with the provisions of § 70.220 will be combined with the 10 samples contained

in the current basic sample, the oldest sample discarded, and a determination of compliance or noncompliance made on the basis of the data recorded from the current basic sample.

(b) If the data recorded pursuant to § 70.261 for a current basic sample with respect to a working section of a coal mine establish an average concentration of respirable dust in excess of the average concentration stated in paragraph (b) of § 70.211, as applicable, the Secretary shall issue a notice to the operator that he has exceeded the applicable limit and is in violation of paragraph (b) or (c) of § 70.100 of this Part 70, as the case may be.

[35 FR 5544, Apr. 3, 1970, as amended at 37 FR 28632, Dec. 28, 1972]

§ 70.222 Reduction in monthly standard sampling cycle.

(a) Where the samples from a standard sampling cycle with respect to a working section of a coal mine have been included in the current basic sample and the data recorded for the current basic sample pursuant to § 70.261 establish a cumulative concentration at or below 20 milligrams of respirable dust per cubic meter of air, the Secretary may in writing, establish an alternating sampling cycle for such working section.

(b) Under an alternating standard sampling cycle established by the Secretary for a working section under the provisions of paragraph (a) of this section, the operator will not be required to take samples with respect to that working section during the following calendar month. If the current basic sample following completion of a standard sampling cycle during the third month shows that the cumulative concentration of respirable dust with respect to that working section has not exceeded the limit of 20 milligrams per cubic meter of air, the operator will not be required to take samples from the working section during the following month or during any alternating months after which a determination of compliance has been made in accordance with the provisions of paragraph (c) of § 70.221. For example:

July, basic sample in compliance: August, standard sampling cycle;
 September, no sampling cycle: October, standard sampling cycle;
 November, no sampling cycle: December, standard sampling cycle;

January, no sampling cycle: February, standard sampling cycle;
 March, no sampling cycle: April, standard sampling cycle;
 May, no sampling cycle: June, standard sampling cycle.

[35 FR 5544, Apr. 3, 1970, as amended at 37 FR 28632, Dec. 28, 1972]

§ 70.223 Alternating standard sampling cycle; return to monthly standard sampling cycle.

When an alternating standard sampling cycle has been established for a working section under the provisions of § 70.222, the operator shall revert to the original sampling cycle provided in § 70.210, if, at any time, analysis of the samples contained in the current basic sample or an analysis based on a Mining Enforcement and Safety Administration inspection with respect to such section show the cumulative dust concentration to be in excess of the limit of 20 milligrams per cubic meter of air.

[35 FR 5544, Apr. 3, 1970, as amended at 37 FR 28632, Dec. 28, 1972]

PARTIAL SAMPLING CYCLE

§ 70.230 Sampling cycles consisting of less than the required samples; general.

(a) If the Secretary fails to receive the number of valid samples with respect to a working section required under the provisions of § 70.210 or § 70.220, or if any number of samples taken during a sampling cycle in accordance with the provisions of § 70.210 or § 70.220 have been rejected by the Secretary as invalid samples, the Secretary shall, in accordance with the provisions of § 70.261, analyze the samples transmitted to determine whether such working section is in compliance with the applicable respirable dust limit.

(b) If the Secretary receives less than the required number of valid samples with respect to a working section, and has determined in accordance with the provisions of paragraph (a) of this section that the cumulative concentration of respirable dust does not exceed the applicable limit set forth in paragraph (b) of § 70.211, the Secretary shall require the operator to initiate additional sampling. Upon receipt of advice that additional sampling is required, the operator shall commence such sampling on the first day on which there is a production shift following the day upon which he receives such advice from the Secretary

pursuant to this paragraph, and shall continue to take such consecutive samples until he is advised in writing by the Secretary that the total number of valid samples required have been received. If such additional sampling requires that samples be taken during a subsequent calendar month, the additional samples taken during the subsequent calendar month shall not relieve the operator of his duty to sample during that month in accordance with the provisions of § 70.220.

(c) Where additional sampling is required under the provisions of paragraph (b)' of this section and the Secretary receives more than the number of samples required under the provisions of § 70.210 or § 70.220 of this part, such additional samples shall be combined with the samples previously received and the most recent 10 samples shall constitute the basic sample under § 70.210 or the current basic sample under § 70.210.

(d) As additional samples are received by the Secretary in accordance with paragraph (b) of this section and combined with the valid samples already received, a daily determination of compliance or noncompliance shall be made with respect to that working section. If the data recorded pursuant to § 70.261 with respect to that working section, establish a cumulative concentration of respirable dust in excess of the cumulative concentration stated in paragraph (b) of § 70.211 with respect to the particular applicable limit, the Secretary shall issue a notice to the operator that he is in violation of paragraph (b) or paragraph (c) of § 70.100 of this Part 70. [35 FR 5544, Apr. 3, 1970, as amended at 37 FR 28632, Dec. 28, 1972]

METHODS OF SAMPLING WORKING SECTIONS

§ 70.240 Monthly sampling procedures; general.

The monthly sampling procedures set forth in this part with respect to working sections are designed to determine the average concentration of respirable dust to which the miners assigned to a working section of a coal mine are exposed, portal to portal. Accordingly, a provision that samples of respirable dust be taken "with respect to" a working section means that an approved sampling device should be attached to the miner or carried into the working section to which he is assigned when he

enters or leaves the mine and that the device should remain operative during the entire shift—portal to portal.

§ 70.241 Multisection mines.

In a coal mine in which there are two or more working sections, the sampling cycle with respect to each working section shall be staggered with those taken in other working sections to provide continuous sampling of the mine atmosphere. For example, if there are three working sections, samples from each working section should be taken during different time periods. In order to provide continuous sampling, staggered sampling cycles may be overlapped.

§ 70.242 Working sections; conventional mining.

(a) Unless otherwise directed by an authorized representative of the Secretary, in a working section in which conventional mining methods are employed, the samples taken in the working section shall be confined to the operation of the cutting machine.

(b) In the working section, the approved sampling device may remain on the operator (if it is a coal mine dust personal sampler unit) or be placed on the machine which he operates. If the sampling device is placed on a machine, the device shall be installed adjacent to the operator within 36 inches in by his normal working position. In no case shall the device be installed behind the operator.

§ 70.243 Working sections; continuous mining.

Unless otherwise directed by an authorized representative of the Secretary:

(a) In a working section in which a continuous mining machine is employed, the approved sampling device may remain on the operator (if it is a coal mine dust personal sampler unit) or be placed on the machine which he operates; and

(b) If the sampling device is placed on a machine, the device shall be installed adjacent to the operator within 36 inches in by his normal working position. In no case shall the device be installed behind the operator.

§ 70.244 Working sections; longwall mining.

Unless otherwise directed by an authorized representative of the Secretary, with respect to a working section in which a longwall mining machine is used, the

miner who works nearest the return air side of the longwall face may wear the approved sampling device (if it is a coal mine dust personal sampler unit) or the device may be placed at a point in the return air current but in no case farther than 48 inches from the corner on the return side on the longwall face.

§ 70.245 Working sections; hand loading.

(a) With respect to a working section in which coal is loaded by hand, 10 percent of the hand loaders, and in no case less than one hand loader, shall wear an approved coal mine dust personal sampler unit.

(b) In the working section, the sampling units may remain on the hand loaders or, the devices may be placed at sites which represent the maximum concentrations of dust to which the hand loaders are exposed in the working section.

§ 70.246 Working sections; intake air.

During one production shift in every sampling cycle with respect to a working section, an approved sampling device shall be placed in the intake air course of that working section and a sample will be taken within 200 feet outby the working faces of such section.

SAMPLING OF INDIVIDUAL MINERS

§ 70.250 Individual sampling procedures; at least once every 180 days.

(a) Except as provided in paragraphs (b) and (c) of this section, one sample of respirable dust shall be taken from the mine atmosphere to which each individual miner is exposed at least once every 180 days, except those miners already sampled during such 180-day period in sampling cycles conducted under the provisions of §§ 70.210, 70.220, and 70.230.

(b) One sample of respirable dust shall be taken from the mine atmosphere to which each individual miner assigned to a working section is exposed at least once every 120 days, except those miners already sampled during such 120-day period in sampling cycles conducted under the provisions of §§ 70.210, 70.220, and 70.230 of this part.

(c) One sample of respirable dust shall be taken from the mine atmosphere to which each individual miner who has exercised his option to transfer in accordance with the provisions of § 203(b)

(1) of the Act is exposed at least once every 90 days.

(d) The samples required under the provisions of this section shall be taken during any shift where the miner is employed in his usual occupation or in the occupation to which he was transferred.

TRANSMISSION AND ANALYSIS OF SAMPLES

§ 70.260 Respirable dust samples; transmission.

(a) At the conclusion of each production shift in a sampling cycle, the operator shall promptly collect and transmit all samples in a container provided by the manufacturer of the filter to:

Pittsburgh Health and Safety Technical Support Center, Mining Enforcement and Safety Administration, Department of the Interior, Pittsburgh, Pa. 15213.

(b) Each sample shall be accompanied by a completed 3 x 5 inch white data card identical to the card contained in Figure 1 of this Part 70, provided for this purpose by the cassette manufacturer. The card shall have an identification number identical to that on the cassette used to take the sample, and the name and Social Security number of the miner whose environment was being sampled. The data card shall be initialed by the miner whose environment was being sampled and the representative of the company responsible for the dust sampling procedure.

§ 70.261 Respirable dust samples; analysis by the Secretary; report to the operator.

Upon receipt by the Mining Enforcement and Safety Administration of respirable dust samples taken with respect to a working section, each sample shall be analyzed and the following data shall be recorded:

(a) The mine identification number;
 (b) The working section within the mine from which the samples were taken;

(c) The dust concentration, expressed in milligrams per cubic meter of air, for each sample;

(d) The cumulative total of respirable dust for all valid samples, exclusive of intake air, expressed in milligrams per cubic meter of air;

(e) The average dust concentration for all valid samples, exclusive of the

sample of intake air, expressed in milligrams per cubic meter of air;

(f) The dust concentration, expressed in milligrams per cubic meter of air, for the intake air sample of each working section; and,

(g) The Social Security number of the individual miner whose environment was sampled.

§ 70.262 Report of data.

The Secretary shall provide the operator with a report of the data recorded pursuant to § 70.261 as soon as practicable.

MISCELLANEOUS

§ 70.270 Installation of sampling devices.

For purposes of sampling under the provisions of Subpart C of this part, the operator shall install all MRE sampling devices in a near level position and all coal mine dust personal sampler units in a near upright or vertical position.

§ 70.271 Spot inspections.

In order to obtain compliance with the provision of Part 70, the Mining Enforcement and Safety Administration shall conduct frequent spot inspections of the active workings of coal mines.

§ 70.272 Report and certification of conditions in active mine workings.

Each operator of a coal mine shall, on or before June 30, 1970, and annually thereafter on the anniversary date of each initial report and certification, report and certify to the Secretary the conditions relative to dust control which exist in the active workings of all mines operated. Such reports shall be submitted on Mining Enforcement and Safety Administration Form No. 6-1497. Report forms may be obtained from any Coal Mine Health and Safety District Office of the Mining Enforcement and Safety Administration. Reports shall be submitted to the District Manager of the Coal Health and Safety District in which the mine is located.

[38 FR 18667, July 13, 1973]

Subpart D—Respiratory Equipment

§ 70.300 Respiratory equipment; respirable dust.

(a) Respiratory equipment approved by the Secretary and by the Secretary of Health, Education, and Welfare shall be made available to all persons when-

ever exposed to concentrations of respirable dust in excess of the levels required to be maintained under this Part 70. Use of respirators shall not be substituted for environmental control measures in the active workings. Each operator shall maintain a supply of respiratory equipment adequate to deal with occurrences of concentrations of respirable dust in the mine atmosphere in excess of the levels required to be maintained under this Part 70.

§ 70.300-1 Approved respiratory equipment; respirable dust.

(a) Filter-type respirators approved on and after January 19, 1965, under Part 14 of this chapter (Bureau of Mines Schedule 21B) and supplied-air respirators, Type G, approved on and after April 19, 1965, under Part 12 of this chapter (Bureau of Mines Schedule 19B) for protection against pneumoconiosis-producing dust, toxic dust, pneumoconiosis-producing mist, toxic mist, and toxic fumes are approved respiratory equipment for the purposes of § 70.300.

(b) Respirators approved during the period April 12, 1953, through January 18, 1965, under Part 14 of this chapter (Bureau of Mines Schedule 21A), and in use on or before June 30, 1970, for protection against pneumoconiosis-producing dust, toxic dust, pneumoconiosis-producing mist, toxic mist, and toxic fumes are approved respirators for the purposes of § 70.300 until December 31, 1970. Such respirators shall not be provided for protection under the provisions of § 70.300 on or after January 1, 1971.

§ 70.305 Respiratory equipment; gas, dusts, fumes, or mists.

Respiratory equipment approved by the Secretary and the Secretary of Health, Education, and Welfare shall be provided persons exposed for short periods to inhalation hazards from gas, dusts, fumes, or mist. When the exposure is for prolonged periods, other measures to protect such persons or to reduce the hazard shall be taken.

§ 70.305-1 Approved respiratory equipment; gas, dusts, fumes, or mists.

Respiratory equipment which has been approved by the Bureau of Mines or the Mining Enforcement and Safety Administration under the parts of this chapter, on and after the dates listed in this section, are approved respiratory equipment for the purposes of § 70.305

but only with respect to the specific hazards referred to in the approved labels:

Part 13—Gas Masks (Bureau of Mines Schedule 14F) April 23, 1955;

Part 14—Filter-type, Dust, Fume, and Mist Respirators (Bureau of Mines Schedule 21B) January 10, 1965;

Part 14a—Non-Emergency Gas Respirators (Chemical Cartridge Respirators Including Paint Spray Respirators) (Bureau of Mines Schedule 23B) August 4, 1959.

Subpart E—Dust From Drilling Rock

§ 70.400 Dust from drilling rock; control.

The dust resulting from drilling in rock shall be controlled by use of permissible dust collectors, or by water or water with a wetting agent, or by ventilation, or by any other method or device approved by the Secretary which is at least as effective in controlling such dust.

§ 70.400-1 Dust from drilling rock; approved devices.

Dust collectors approved by the Bureau of Mines or the Mining Enforcement and Safety Administration under Part 33 of this chapter (Bureau of Mines Schedule 25B) are permissible dust collectors for the purposes of § 70.400.

§ 70.400-2 Dust from drilling rock; water.

Water used to control dust from drilling rock shall be applied through a hollow drill steel or stem or by the flooding of vertical drill holes in the floor.

§ 70.400-3 Dust from drilling rock; ventilation.

In order to control adequately dust from drilling rock, the air current shall be so directed that the dust is readily dispersed and carried away from the drill operator or any other worker in the area.

Subpart F—Noise Standard

AUTHORITY: The provisions of this Subpart F issued under sections 101 and 206, 88 Stat. 745 and 765; 30 U.S.C. 801 and 846.

SOURCE: The provisions of this Subpart F appear at 36 F.R. 12739, July 7, 1971, unless otherwise noted.

§ 70.500 Definitions.

As used in this Subpart F, the term:

(a) "dBA" means noise level in decibels, as measured with the A-weighted network of a standard sound level meter using slow response;

(b) "Noise exposure" means a period of time during which the noise level is 90 or more dBA;

(c) "Multiple noise exposure" means the daily noise exposure is composed of two or more different noise levels;

(d) "Noise level" is the average dBA during a noise exposure; and,

(e) "Qualified person" means, as the context requires, an individual deemed qualified by the Secretary and designated by the operator to make tests and examinations required by this Act.

§ 70.501 Requirements.

Every operator of an underground coal mine shall maintain the noise levels during each shift to which each miner in the active workings of the mine is exposed at or below the permissible noise levels set forth in Table I of this subpart.

EXAMPLE: If a noise is recorded to be 110 dBA then exposure shall not exceed 30 minutes during an 8-hour shift.

§ 70.502 Computation of multiple noise exposure.

The standard will be considered to have been violated in the case of multiple noise exposure where such exposure totals exceed one as computed by adding the total time of exposure at each specified level (C₁, C₂, C₃ etc.) divided by the total time of exposure permitted at that level (T₁, T₂, T₃). Thus,

$$\frac{C_1}{T_1} + \frac{C_2}{T_2} + \frac{C_3}{T_3} \text{ must not exceed } 1.$$

EXAMPLE I: Exposure of 2 hours at 92 dBA and 1 hour at 100 dBA during an 8-hour shift.

Total minutes of noise exposure at dBA level

Total minutes of permissible noise exposure at dBA level

$$\frac{120 \text{ min.}}{360 \text{ min.}} + \frac{60 \text{ min.}}{120 \text{ min.}} = \frac{1}{3} + \frac{1}{2} = \frac{2}{6} + \frac{3}{6} = \frac{5}{6}$$

The sum of the fractions does not exceed one; hence the exposure for the shift would not violate the standard.

EXAMPLE II: Exposure of 3 hours at 95 dBA and 1 hour at 100 dBA during an 8 hour shift.

$$\frac{1}{2} + \frac{1}{2} = \frac{2}{2} = 1$$

The sum of the fractions exceeds one; hence the exposure for the shift would violate the standard.

§ 70.503 Noise level measurements; general.

Every coal mine operator shall take accurate readings of the noise levels to which each miner in the active workings of the mine is exposed during the per-

formance of the duties to which he is normally assigned.

§ 70.504 Noise level measurements; by whom done.

The noise level measurements required by this Subpart F shall be taken by, or as directed by, a person who has met the minimum requirements set forth in § 70.504-1, and has been certified by the Administrator, Mining Enforcement and Safety Administration as qualified to take noise level measurements as prescribed in this Subpart F.

§ 70.504-1 Persons qualified to measure noise levels; minimum requirements.

The following persons shall be considered qualified to take noise level measurements as prescribed in this Subpart F;

(a) Any person who has been certified by the Mining Enforcement and Safety Administration as an instructor in noise measurement training programs;

(b) Any person who has satisfactorily completed a noise training course conducted by the Mining Enforcement and Safety Administration and has been certified by the Administration as a qualified person; and,

(c) Any person who has satisfactorily completed a noise training course approved by the Mining Enforcement and Safety Administration and has been certified by the Administration as a qualified person.

§ 70.504-2 Certification of qualified persons by the Mining Enforcement and Safety Administration.

Upon a satisfactory showing that a person has met the minimum requirements set forth in § 70.504-1, the Mining Enforcement and Safety Administration shall certify that such person has the ability and capacity to conduct tests of the noise levels in a coal mine and to report and certify the results of such tests to the Secretary and the Secretary of Health, Education, and Welfare.

§ 70.505 Noise level measurement equipment.

(a) Noise level measurements shall be taken only with instruments which are approved by the Bureau of Mines or the Mining Enforcement and Safety Administration, as permissible electric face equipment under the provisions of Part 18 of this chapter (Bureau of Mines,

Schedule 2G), and which meet the operational specifications of the American National Standards Institute for Sound Level Meters S1.4-1971 (Type S2A).

(b) Noise level measurement equipment shall be set to operate with the A-weighted network and slow response and shall be acoustically calibrated in accordance with the manufacturer's instructions before, during and after each shift on which such equipment is used.

§ 70.506 Noise level measurement procedures.

(a) Noise level measurements shall be made at locations where the noise is typical of that entering the ears of the miner whose exposure is under consideration.

(b) Five measurements shall be made for each type of noise exposure producing operation to which the miner under consideration is exposed.

(c) Each measurement shall be made by observing the A-scale readings for 30 seconds and recording the noise level.

(d) The average of the five noise level measurements shall be considered as the noise level measurement which is representative of the operation.

(e) Where different and distinct noise levels occur at various phases of an operation, noise level measurements shall be made in accordance with this section for each distinct phase.

(f) The noise levels and the estimated length of time the miner is exposed to each level during a normal work shift shall be reported for the operation. The range of the five noise level measurements used in paragraph (d) of this section shall also be reported.

§ 70.507 Initial noise level survey.

On or before June 30, 1971, each operator shall:

(a) Conduct, in accordance with this subpart, a survey of the noise levels to which each miner in the active workings of the mine is exposed during his normal work shift; and,

(b) Report and certify to the Mining Enforcement and Safety Administration, and the Department of Health, Education, and Welfare, the results of such survey using the Coal Mine Noise Data Report, Figure 1. Reports shall be sent to:

Division of Automatic Data Processing, Mining Enforcement and Safety Administration, Building 53, Denver Federal Center, Colo. 80225.

§ 70.508 Periodic noise level survey.

(a) At intervals of at least every 6 months after June 30, 1971, but in no case shall the interval be less than 3 months, each operator shall conduct, in accordance with this subpart, periodic surveys of the noise levels to which each miner in the active workings of the mine is exposed and shall report and certify the results of such surveys to the Mining Enforcement and Safety Administration, and the Department of Health, Education, and Welfare, using the Coal Mine Noise Data Report Form. Reports shall be sent to:

Division of Automatic Data Processing, Mining Enforcement and Safety Administration, Building 53, Denver Federal Center, Colo. 80225.

(b) Where no A-scale reading recorded for any miner during an initial or periodic noise level survey exceeds 90 dBA, the operator shall not be required to survey such miner during any subsequent periodic noise level survey required by this section: *Provided, however*, That the name and job position of each such miner shall be reported in every periodic survey and the operator shall certify that such miner's job duties and noise exposure levels have not changed substantially during the preceding 6-month period.

§ 70.509 Supplemental noise level survey; reports and certification.

(a) Where the certified results of an initial noise level survey conducted in accordance with § 70.507, or a periodic noise level survey conducted in accordance with § 70.508, show that any miner in the active workings of the mine is exposed to a noise level in excess of the permissible noise level prescribed in Table I, the operator shall conduct a supplemental noise level survey with respect to each miner whose noise exposure exceeds this standard. This survey shall be conducted within 15 days following notification to the operator by the Mining Enforcement and Safety Administration to conduct such survey.

(b) Supplemental noise level surveys shall be conducted by taking noise level measurements in accordance with § 70.506, however, noise level measurements shall be taken during the entire period of each individual operation to which the miner under consideration is

actually exposed during his normal work shift.

(c) Each operator shall report and certify the results of each supplemental noise level survey conducted in accordance with this section to the Mining Enforcement and Safety Administration and the Department of Health, Education, and Welfare using the Coal Mine Noise Data Report Form to record noise level readings taken with respect to all operations during which such measurements were taken.

(d) Supplemental noise level surveys shall, upon completion, be mailed to:

Division of Automatic Data Processing, Mining Enforcement and Safety Administration, Building 53, Denver Federal Center, Colo. 80225.

§ 70.510 Violation of noise standard; notice of violation; action required by operator.

(a) Where the results of a supplemental noise level survey conducted in accordance with § 70.509 show that any miner in the active workings of the mine is exposed to noise levels which exceed the permissible noise levels prescribed in Table I, the Secretary shall issue a notice to the operator that he is in violation of this subpart.

(b) Upon receipt of a Notice of Violation issued pursuant to paragraph (a) of this section, the operator shall:

(1) Institute promptly administrative and/or engineering controls necessary to assure compliance with the standard. Such controls may include protective devices other than those devices or systems which the Secretary or his authorized representative finds to be hazardous in such mine.

(2) Within 60 days following the issuance of any Notice of Violation of this subpart, submit for approval to a joint Mining Enforcement and Safety Administration-Health, Education, and Welfare committee, a plan for the administration of a continuing, effective hearing conservation program to assure compliance with this subpart, including provision for:

(i) Reducing environmental noise levels;

(ii) Personal ear protective devices to be made available to the miners;

(iii) Preemployment and periodic audiograms.

(3) Plans required under subparagraph (2) of this paragraph shall be submitted to:

Assistant Administrator, Coal Mine Health and Safety, Mining Enforcement and Safety Administration, Department of the Interior, Washington, D.C. 20240.

TABLE I—PERMISSIBLE NOISE EXPOSURES

| Duration per day (hours) | Noise level (dBA) |
|--------------------------|-------------------|
| 8 | 90 |
| 6 | 92 |
| 4 | 95 |
| 3 | 97 |
| 2 | 100 |
| 1½ | 102 |
| 1 | 105 |
| ¾ | 107 |
| ½ | 110 |
| ¼ or less | 115 |

Figure 1

(Submit one form for each miner)

COAL MINE NOISE DATA REPORT

Date: _____ Mine ID No.: _____
 Section ID No.: _____ Miner's SSA No.: _____
 Occupation: _____
 Actual production—tons this shift: _____
 Type of mining: _____
 Development _____
 Retreat _____
 Method of mining: _____
 Continuous _____
 Conventional _____
 Longwall _____
 Other _____
 Equipment in operation: _____
 Electric _____
 Pneumatic _____
 Other _____
 Voltage _____ Pressure-p.s.i. _____
 a.c. or d.c. _____
 Total horsepower _____
 Description of equipment (make, model No., order No., etc.): _____

 Seam conditions: Name of seam: _____

 Coal height—inches: _____
 Average width of place: _____
 Type of roof (sandstone, slate, etc.): _____
 Hearing protective device used?
 Yes _____ No _____
 Type and model number of sound level meter: _____
 Check if section will be closed before next sampling: Yes _____ No _____
 Initial survey Periodic survey supplementary survey
 Signature of qualified person: _____

Figure 1
Page 2

Coal Mine Noise Data Report

Date: _____ Mine ID No.: _____
 List noise level measurements for each level of exposure

| Operation (loading, tramming, etc.) | Noise level dBA average | Range (high and low readings) | Cumulative exposure—minutes |
|-------------------------------------|-------------------------|-------------------------------|-----------------------------|
| Mantrip | _____ | _____ | _____ |

Signature of qualified person: _____

PART 71—MANDATORY HEALTH STANDARDS—SURFACE WORK AREAS OF UNDERGROUND COAL MINES AND SURFACE COAL MINES

Subpart A—General

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Subpart C—Airborne Contaminants

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- 71.200 Inhalation hazards; threshold limit values for gases, dusts, fumes, mists, and vapors.
- 71.201 Sampling; general requirements.

Subpart D—Noise Standard

- 71.300 Noise standard; general requirements.
- 71.301 Measurement of noise levels.
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Subpart E—Surface Bathing Facilities, Change Rooms, and Sanitary Flush Toilet Facilities at Surface Coal Mines

- 71.400 Bathing facilities; change rooms; sanitary flush toilet facilities.
- 71.401 Location of facilities.
- 71.402 Minimum requirements for bathing facilities, change rooms, and sanitary flush toilet facilities.
- 71.403 Waiver of surface facilities requirements; posting of waiver.
- 71.404 Application for waiver of surface facilities requirements.

Subpart F—Sanitary Toilet Facilities at Surface Worksites of Surface Coal Mines

- 71.500 Sanitary toilet facilities at surface worksites; approved sanitary toilets; installation requirements.
- 71.501 Sanitary toilet facilities; maintenance.

Subpart G—Drinking Water

- 71.600 Drinking water; general.
- 71.601 Drinking water; quality.
- 71.602 Drinking water; distribution.
- 71.603 Drinking water; dispensing requirements.

AUTHORITY: The provisions of this Part 71 issued under sec. 101, 83 Stat. 745; 30 U.S.C. 811.

SOURCE: 37 FR 6368, Mar. 28, 1972, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 38 FR 18667, July 13, 1973.

Subpart A—General

§ 71.1 Scope.

This Part 71 sets forth mandatory health standards for surface work areas of each underground coal mine and at each surface coal mine, as specified herein, subject to the Federal Coal Mine Health and Safety Act of 1969. This part also sets forth certain actions, conditions, and requirements which must be met by

each coal mine operator in carrying out the mandatory health standards.

§ 71.2 Definitions.

Any term defined in the Act and not defined below has the meaning given it in the Act. As used in this part—

(a) "Act" means the Federal Coal Mine Health and Safety Act of 1969 (Public Law 91-173);

(b) "Average concentration" means a determination which accurately represents the atmospheric conditions with regard to respirable dust to which each miner in the active workings of a mine is exposed as measured over a number of continuous production shifts as determined by the Secretary and the Secretary of Health, Education, and Welfare;

(c) "Concentrations of respirable dust" means the average concentrations of respirable dust as measured with an MRE instrument or equivalent concentrations measured with another device approved by the Secretary and the Secretary of Health, Education, and Welfare;

(d) "Miner" means any individual working in a coal mine;

(e) "MRE instrument" means the gravimetric dust sampler with four channel horizontal elutriator developed by the Mining Research Establishment of the National Coal Board, London, England;

(f) "Qualified person" means an individual deemed qualified by the Secretary and designated by the operator to make tests and examinations required by this part;

(g) "Respirable dust sample" means a sample collected with an approved coal mine dust sampler unit attached to the miner, carried by him, or so positioned as to measure the concentration of respirable dust to which he is exposed, and operated continuously over an entire work shift of such miner;

(h) "Secretary" means the Secretary of the Interior;

(i) "Surface coal mine" means a surface area of land and all structures, facilities, machinery, tools, equipment, excavations, and other property, real or personal, placed upon or above the surface of such land by any person, used in, or to be used in, or resulting from, the work of extracting in such area bituminous coal, lignite, or anthracite from its natural deposits in the earth by any means or method, and the work of preparing the coal so extracted, and includes custom coal preparation facilities;

(j) "Surface installation" means any structure in which miners work in the surface work areas of an underground coal mine or at a surface coal mine;

(k) "Surface work areas of an underground coal mine" means the surface areas of land and all structures, facilities, machinery, tools, equipment, shafts, slopes, excavations, and other property, real or personal, placed upon or above the surface of such land by any person, used in, or to be used in, or resulting from, the work of extracting bituminous coal, lignite, or anthracite from its natural deposits underground by any means or method, and the work of preparing the coal so extracted, and includes custom coal preparation facilities;

(l) "Surface worksite" means any area at which miners work in the surface work areas of an underground coal mine or in any area of a surface coal mine; and

(m) "Work of preparing the coal" means the breaking, crushing, sizing, cleaning, washing, drying, mixing, storing, and loading of bituminous coal, lignite, or anthracite, and such other work of preparing such coal as is usually done by the operator of the coal mine.

Subpart B—Dust Standards

§ 71.100 Dust standards; respirable dust; quartz.

Each operator of an underground coal mine and each operator of a surface coal mine shall continuously maintain the average concentration of respirable dust in the atmosphere of each surface installation and at each surface worksite during each shift to which each miner in the mine is exposed at or below 2 milligrams of respirable dust per cubic meter of air; and whenever the average concentration of respirable dust in samples taken in a surface installation or at a surface worksite under this Subpart B contains more than 5 per centum quartz, the operator shall continuously maintain an average concentration of respirable dust in that installation or at that worksite at or below a level, expressed in milligrams per cubic meter of air, which shall be determined by dividing the per centum of quartz present in such concentration into the number 10.

§ 71.101 Sampling; general requirements.

(a) Each operator of an underground coal mine and each operator of a surface coal mine shall take, as prescribed in this subpart, accurate samples of the

amount of respirable dust in the atmosphere to which each miner employed in a surface installation or at a surface worksite is exposed.

(b) The samples shall be collected with an approved coal mine dust sampler unit attached to the miner, carried by him, or so positioned as to measure the concentration of respirable dust to which he is exposed, and the unit shall be operated continuously over an entire work shift of such miner.

§ 71.102 Sampling; by whom done.

The dust sampling required by this subpart shall be done by, or as directed by, a person—

(a) Who has had practical experience in a coal mine;

(b) Who has a working knowledge of the mining equipment employed in the mine in which samples are taken;

(c) Who has a working knowledge of the operation and care of the sampling devices required by § 71.103 and the filters employed in such devices; and

(d) Who has satisfactorily completed a course approved by the Secretary in the sampling and evaluation of respirable coal mine dust concentrations with the sampling devices required by § 71.103.

§ 71.103 Approved sampling devices.

The samples which this subpart requires to be taken shall be taken only with a coal mine dust sampler unit approved under Part 74 of this chapter or with an MRE instrument.

§ 71.104 Approved sampling devices; operation; rates of flow.

An approved coal mine dust sampler unit shall be operated at the flow rate for which such instrument is approved. An MRE instrument shall be operated at a flow rate of 2.5 liters of air per minute.

§ 71.105 Approved sampling devices; equivalent concentrations.

The concentration of respirable dust expressed in milligrams per cubic meter of air shall be determined by dividing the weight of dust in milligrams collected on the filter by the volume of air in cubic meters passing through the filter. To convert a concentration of respirable dust as measured with an approved coal mine dust sampler unit to an equivalent concentration of respirable dust as measured with an MRE instrument, the concentration of respirable dust measured with an approved coal mine dust sampler

unit shall be multiplied by the constant factor prescribed by the Secretary and the Secretary of Health, Education, and Welfare for the approved instrument used, and the product shall be the equivalent concentration as measured with an MRE instrument.

§ 71.106 Initial sampling cycle; establishment of basic sample; notice of violation.

(a) Prior to July 1, 1972, one respirable dust sample shall be taken with respect to each miner employed in a surface installation and with respect to each miner employed at a surface worksite.

(b) If the data recorded pursuant to § 71.112 for such initial sample establish a concentration of respirable dust in excess of 2 milligrams per cubic meter of air in the work position sampled, the Secretary shall advise the operator that additional samples will be required to determine compliance with the respirable dust standard set forth in this subpart.

(c) Upon receipt of advice pursuant to paragraph (b) of this section, the operator shall take samples of respirable dust in such work position on 10 consecutive shifts, each of which is worked on a separate calendar day beginning with the first shift worked following receipt of such advice, and corresponding to the shift on which the initial sample was taken. This series of 10 samples shall constitute the basic sample with respect to that miner.

(d) If the data recorded for any one or more of the samples constituting the basic sample establish a cumulative sum of respirable dust concentrations, expressed in milligrams per cubic meter of air, in excess of 20 in the work position of the miner initially sampled, the Secretary will issue a notice that the operator is in violation of the respirable dust standard set forth in this subpart. Upon receipt of a notice of violation, the operator shall take samples during each shift with respect to the work position sampled until at least 15 samples have been taken and transmitted in accordance with this subpart.

§ 71.107 Initial sampling cycle; basic sampling cycle; semiannual sampling requirements.

Where the data recorded pursuant to § 71.112 for an initial sample, or a basic sample establish a concentration of respirable dust which falls within a range of more than 1 milligram per cubic me-

ter of air and no more than 2 milligrams per cubic meter of air with respect to the miner sampled, the operator shall, during each succeeding 6-month period, take one sample of the mine atmosphere to which each such miner sampled is exposed.

§ 71.108 Initial sampling cycle; basic sampling cycle; annual sampling requirements.

Where the data recorded pursuant to § 71.112 for an initial sample or basic sample establish a concentration of respirable dust which is 1 milligram or less per cubic meter of air, the operator shall, during each succeeding 12-month period, take one respirable dust sample of the mine atmosphere to which each such miner sampled is exposed.

§ 71.109 Semiannual and annual samples; establishment of basic sample.

(a) Where the data recorded pursuant to § 71.112 for any semiannual sample or for any annual sample establish a concentration of respirable dust in excess of 2 milligrams per cubic meter of air, the Secretary will advise the operator pursuant to paragraph (b) of § 71.106 and the operator shall be required to establish a basic sample with respect to the miner sampled in accordance with the provisions of paragraph (c) of § 71.106.

(b) Where the data recorded pursuant to § 71.112 for any semiannual sample or for any annual sample taken establish a concentration of respirable dust of 1 milligram or less per cubic meter of air, the operator shall, during each succeeding 12-month period, take one sample of the mine atmosphere to which each such miner sampled is exposed.

(c) Where the data recorded pursuant to § 71.112 for any semiannual sample or for any annual sample establish a concentration of respirable dust which falls within a range of more than 1 milligram per cubic meter of air and no more than 2 milligrams per cubic meter of air with respect to the miner sampled, the operator shall, during each succeeding 6-month period, take one sample of the mine atmosphere to which each such miner sampled is exposed.

§ 71.110 Partial sampling; initial samples; basic samples; additional samples required.

(a) If the Secretary fails to receive the number of samples required under

the provisions of § 71.106 or if samples have been rejected by the Secretary as invalid samples, the Secretary will, in accordance with the provisions of § 71.112 analyze the valid samples received to determine whether the concentration of respirable dust is in compliance with the respirable dust limit.

(b) If the Secretary receives less than the required number of samples or rejects samples as invalid samples, and has determined in accordance with the provisions of paragraph (a) of this section that the cumulative concentration of respirable dust does not exceed the limit set forth in this subpart, the Secretary will advise the operator to take a specified number of additional samples. Upon receipt of advice that additional sampling is required, the operator shall commence such sampling on the first day on which the miner is employed in his regular duties following the day upon which the operator receives such advice from the Secretary or on the first work shift in the work position being sampled, as applicable.

(c) Where additional sampling is required under the provisions of paragraph (b) of this section to establish a basic sample and the Secretary receives more than the number of samples required, such additional samples shall be combined with the samples previously received and the most recent valid sample or most recent valid 10 samples shall, where appropriate, constitute the initial sample or the basic sample respectively.

(d) Where additional samples are received by the Secretary in accordance with paragraph (b) of this section and combined with the valid samples already received pursuant to § 71.106(c), a daily determination of compliance or noncompliance shall be made with respect to the miner sampled. If the data recorded pursuant to § 71.112 with respect to the miner sampled establish a cumulative sum of respirable dust concentrations in excess of 20 milligrams, the Secretary will issue a notice to the operator that he is in violation of the respirable dust limit.

§ 71.110-1 Periodic sampling; transferred miners.

At least once every 90 days, one sample of respirable dust shall be taken from the atmosphere to which each miner who has exercised his option to transfer under section 203(b) of the Act is exposed.

[39 FR 17101, May 13, 1974]

§ 71.111 Respirable dust samples; transmission.

(a) At the conclusion of each production shift, the operator shall promptly collect and transmit all samples in a container provided by the manufacturer of the cassette to:

Pittsburgh Health and Safety Technical Support Center, Mining Enforcement and Safety Administration, Department of the Interior, Pittsburgh, Pa. 15213.

(b) Each sample shall be accompanied by a completed 3 x 5 inch white data card provided for this purpose by the cassette manufacturer. The card shall have an identification number identical to that on the cassette used to take the sample and shall contain the following additional information: The mine identification number, sampling time (minutes), date of sample, the social security number and occupation of the miner whose environment was sampled, tons of coal produced during the shift, and method of mining. The data card shall be signed or initialed by the miner whose environment was sampled and the representative of the company responsible for the dust sampling program. If the miner declines to initial or sign the card, the representative of the company shall so note on the card.

§ 71.112 Respirable dust samples; analysis by the Secretary; report to the operator.

Upon receipt by the Secretary of respirable dust samples taken with respect to a miner, each sample is analyzed and the following data is recorded:

- (a) The mine identification number;
- (b) The surface installation or surface work site within the mine where the sample was taken;
- (c) The dust concentration, expressed in milligrams per cubic meter of air, for each sample;
- (d) The cumulative total of respirable dust for all valid samples with respect to the miner sampled, expressed in milligrams per cubic meter of air; and
- (e) The social security number of the individual miner whose atmosphere was sampled.

§ 71.113 Report of data.

The Secretary will provide the operator with a report of the data recorded pursuant to § 71.112 as soon as practicable.

Subpart C—Airborne Contaminants

§ 71.200 Inhalation hazards; threshold limit values for gases, dust, fumes, mists, and vapors.

(a) No operator of an underground coal mine and no operator of a surface coal mine may permit any person working at a surface installation or surface worksite to be exposed to airborne contaminants (other than respirable coal mine dust and respirable dust containing quartz, in excess of, on the basis of a time-weighted average, the threshold limit values adopted by the American Conference of Governmental Industrial Hygienists in "Threshold Limit Values of Airborne Contaminants" (1972) which is hereby incorporated by reference and made a part hereof.¹ Excursions above the listed threshold limit values shall not be of greater magnitude than is characterized as permissible by the conference. This paragraph does not apply to airborne contaminants given a "C" designation by the conference in the document. This document is available for examination at the Mining Enforcement and Safety Administration, 18th and C Streets NW., Washington, D.C.; at every Coal Mine Health and Safety District and Subdistrict Office; at the National Institute for Occupational Safety and Health, 5600 Fishers Lane, Rockville, MD; and at the Public Health Service Information Centers listed in 45 CFR 5.31. Copies of the document may be purchased from the Secretary-Treasurer, American Conference of Governmental Industrial Hygienists, Post Office Box 1937, Cincinnati, OH 45202.

(b) All persons, including employees, shall be withdrawn from any area in which there is a concentration of an airborne contaminant given a "C" designation by the Conference which exceeds the threshold limit value (ceiling "C" limit) listed for that contaminant.

[37 FR 6368, Mar. 28, 1972, as amended at 39 FR 17101, May 13, 1974]

§ 71.201 Sampling; general requirements.

(a) Air samples will be taken by the Secretary and will be analyzed to determine the concentrations of noxious or poisonous gases, dusts, fumes, mists, and

vapors in surface installations and at surface worksites.

(b) Upon written notification by the Secretary to the operator of an underground coal mine or of a surface coal mine, the operator shall conduct any additional air sampling tests and analyses as the Secretary may from time to time require in order to ensure compliance with the standards set forth in § 71.200 in each surface installation and at each surface worksite.

(c) Where concentrations of airborne contaminants in excess of the applicable threshold limit values and permissible excursions are known by the operator to exist in a surface installation or at a surface worksite, he shall immediately provide necessary control measures to assure compliance with § 71.200.

(d) Where the operator has reasonable grounds to believe that concentrations of airborne contaminants in excess of the applicable threshold limit values and permissible excursions exist, or are likely to exist, he shall promptly conduct appropriate air sampling tests to determine the concentration of any airborne contaminant which may be present and immediately provide the necessary control measures to assure compliance with § 71.200.

Subpart D—Noise Standard

§ 71.300 Noise standard; general requirements.

Each operator of an underground coal mine and each operator of a surface coal mine shall, during each shift, maintain the noise level to which each miner in each surface installation and at each surface worksite is exposed at or below the maximum noise exposure level prescribed in Subpart F, Part 70 of this Subchapter O.

§ 71.301 Measurement of noise levels.

Each operator shall measure the noise level to which each miner is exposed in each surface installation and at each surface worksite in the manner prescribed in Subpart F, Part 70, of this Subchapter O.

§ 71.302 Initial noise level survey.

On or before November 13, 1974 each operator shall:

(a) Conduct, in accordance with this subpart, a survey of the noise levels to which each miner in each surface installation and at each surface worksite is

¹ NOTE.—The incorporation by reference provision in this document was approved by the Director of the Federal Register on July 6, 1973.

exposed during his normal work shift; and,

(b) Report and certify to the Mining Enforcement and Safety Administration and the Department of Health, Education, and Welfare, the results of such survey using the Coal Mine Noise Data Report. (See Figure 1, Part 70 of this subchapter.) Reports shall be sent to:

Division of Automatic Data Processing, Post Office Box 25407, Building 41, Denver Federal Center, Denver, CO 80225.

[39 FR 17102, May 13, 1974]

§ 71.303 Periodic noise level survey.

(a) At intervals of at least every 6 months, after November 13, 1974 each operator shall conduct periodic surveys of the noise levels to which each miner in each surface installation and at each surface worksite is exposed and shall report and certify the results of such surveys to the Mining Enforcement and Safety Administration and the Department of Health, Education, and Welfare, using the Coal Mine Noise Data Report Form. The interval between each survey shall not be less than 3 months. Reports shall be sent to:

Division of Automatic Data Processing, Post Office Box 25407, Building 41, Denver Federal Center, Denver, CO 80225.

(b) Where no A-scale reading recorded for any miner during an initial or periodic noise level survey exceeds 90 dBA, the operator shall not be required to survey such miner during any subsequent periodic noise level survey required by this section: *Provided, however*, That the name and job position of each such miner shall be reported in every periodic survey and the operator shall certify that such miner's job duties and noise exposure levels have not changed substantially during the preceding 6-month period.

[39 FR 17102, May 13, 1974]

§ 71.304 Supplemental noise level survey; reports and certification.

(a) Where the certified results of an initial noise level survey conducted in accordance with § 71.302 or a periodic noise level survey conducted in accordance with § 71.303 indicate that any miner may be exposed to a noise level in excess of the permissible noise level, the operator shall conduct a supplemental noise level survey with respect to each miner whose noise exposure exceeds this standard. This survey shall be conducted

within 15 days following notification to the operator by the Mining Enforcement and Safety Administration to conduct such survey.

(b) Supplemental noise level surveys shall be conducted by taking noise level measurements in accordance with § 70.506 of this Subchapter O; however, noise level measurements shall be taken of each individual operation to which the miner under consideration is actually exposed during his normal work shift and the duration of each such exposure shall be recorded.

(c) Each operator shall report and certify the results of each supplemental noise level survey conducted in accordance with this section to the Mining Enforcement and Safety Administration and the Department of Health, Education, and Welfare using the Coal Mine Noise Data Report Form to record noise level readings taken with respect to all operations during which such measurements were taken.

(d) Supplemental noise level surveys shall, upon completion, be mailed to:

Division of Automatic Data Processing, Post Office Box 25407, Building 41, Denver Federal Center, Denver, CO 80225.

[39 FR 17102, May 13, 1974]

§ 71.305 Violation of noise standard; notice of violation; action required by operator.

(a) Where the results of a supplemental noise level survey conducted in accordance with § 71.304 indicate that any miner is exposed to noise levels which exceed the permissible noise levels, the Secretary shall issue a notice to the operator that he is in violation of this subpart.

(b) Upon receipt of a notice of violation issued pursuant to paragraph (a) of this section, the operator shall:

(1) Institute, promptly, administrative and/or engineering controls necessary to assure compliance with the standard. Such controls may include protective devices other than those devices or systems which the Secretary or his authorized representative finds to be hazardous in such mine.

(2) Within 60 days following the issuance of the first notice of violation of this subpart, submit for approval to a joint Mining Enforcement and Safety Administration/Health, Education, and Welfare committee, a plan for the administration of a continuing, effective hearing conservation program to assure

compliance with this subpart, including provision for:

- (i) Reducing environmental noise levels;
- (ii) Personal ear protective devices to be made available to the miners;
- (iii) Preplacement and periodic audiograms.
- (iv) Those administrative and engineering controls that it has instituted to assure compliance with the standard.
- (3) Plans required under subparagraph (2) of this paragraph shall be submitted to:

Division of Automatic Data Processing, Post Office Box 26407, Building 41, Denver Federal Center, Denver, CO 80225.

(c) Within 30 days following the issuance of any subsequent notice of violation of this subpart, the operator shall submit in writing:

- (i) a statement of the manner in which the plan is intended to prevent the violation or
- (ii) a revision to its plan to prevent similar future violations.

[39 FR 17102, May 13, 1974]

Subpart E—Surface Bathing Facilities, Change Rooms, and Sanitary Flush Toilet Facilities at Surface Coal Mines

§ 71.400 Bathing facilities; change rooms; sanitary flush toilet facilities.

Each operator of a surface coal mine shall provide bathing facilities, clothing change rooms, and sanitary flush toilet facilities, as hereinafter prescribed, for the use of miners employed in the surface installations and at the surface worksites of such mine. (NOTE: Sanitary facilities at surface work areas of underground mines are subject to the provisions of § 75.1712 of this chapter et seq.)

§ 71.401 Location of facilities.

Bathhouses, change rooms, and sanitary flush toilet facilities shall be in a location convenient for the use of the miners. Where these facilities are designed to serve more than one mine, they shall be centrally located so as to be convenient for the use of all miners served by the facilities.

§ 71.402 Minimum requirements for bathing facilities, change rooms, and sanitary flush toilet facilities.

(a) All bathing facilities, change rooms, and sanitary flush toilet facilities

shall be provided with adequate light, heat, and ventilation so as to maintain a comfortable air temperature and to minimize the accumulation of moisture and odors, and the facilities shall be maintained in a clean and sanitary condition.

(b) Bathing facilities, change rooms, and sanitary flush toilet facilities shall be constructed and equipped so as to comply with applicable State and local building codes. *However*, Where no State or local building codes apply to these facilities, or where no State or local building codes exist, the facilities shall be constructed and equipped so as to meet the minimum construction requirements in the National Building Code (1967 edition) and the plumbing requirements in the National Plumbing Code (ASA A40.8—1955) which documents are hereby incorporated by reference and made a part hereof. These documents are available for examination at the Mining Enforcement and Safety Administration, 18th and C Streets NW., Washington, D.C.; at every Coal Mine Health and Safety District and Subdistrict Office; at the National Institute for Occupational Safety and Health, 5600 Fishers Lane, Rockville, Md.; and at the Public Health Service Information Centers as listed in 45 CFR 5.31. Copies of the National Building Code (1967 edition) may be purchased from the American Insurance Association, 85 John Street, New York, NY 10038, for \$2.50 per copy and copies of the National Plumbing Code (ASA A40.8—1955) may be purchased from the American National Standards Institute, Inc., 1430 Broadway, New York, N.Y. 10018, for \$6 per copy. An official historic file of the National Building Code (1967 edition) and of the National Plumbing Code (ASA A40.8—1955) will be maintained at the National Institute for Occupational Safety and Health, 5600 Fishers Lane, Rockville, Md.

(c) In addition to the minimum requirements specified in paragraphs (a) and (b) of this § 71.402, facilities maintained in accordance with § 71.400 shall include the following:

(1) *Bathing facilities.* (i) Showers shall be provided with both hot and cold water.

(ii) At least one shower head shall be provided where five or less miners use such showers.

(iii) Where five or more miners use such showers, sufficient showers shall be

furnished to provide approximately one shower head for each five miners.

(iv) A suitable nonirritating cleansing agent shall be provided for use at each shower.

(2) *Sanitary flush toilet facilities.* (1) At least one sanitary flush toilet shall be provided where 10 or less miners use such toilet facilities.

(ii) Where 10 or more miners use such toilet facilities, sufficient flush toilets shall be furnished to provide approximately one sanitary flush toilet for each 10 miners.

(iii) Where 30 or more miners use toilet facilities, one urinal may be substituted for one flush toilet, however, where such substitutions are made they shall not reduce the number of toilets below a ratio of two flush toilets to one urinal.

(iv) An adequate supply of toilet paper shall be provided with each toilet.

(v) Adequate handwashing facilities or hand lavatories shall be provided in or adjacent to each toilet facility.

(3) *Change rooms.* (i) Individual clothes storage containers or lockers shall be provided for storage of miners' clothing and other incidental personal belongings during and between shifts.

(ii) Change rooms shall be provided with ample space to permit the use of such facilities by all miners changing clothes prior to and after each shift.

§ 71.403 Waiver of surface facilities requirements; posting of waiver.

(a) The Coal Mine Health and Safety District Manager for the district in which the mine is located, after consultation with the appropriate Regional Program Director, National Institute for Occupational Safety and Health, may, upon written application by the operator, and after consideration of any comments filed within 30 days after receipt of the application, waive any or all of the requirements for §§ 71.400 through 71.402 for a period not to exceed 1 year if he determines that—

(1) The operator is providing or making available, under arrangements with one or more third parties, facilities which are at least equivalent to those required by the standards, or

(2) It is impractical for the operator to meet the requirement(s) or provide the facility (facilities) for which the waiver is sought.

(b) The waiver shall be in writing and shall set forth the requirement(s) which

the operator will not be required to meet or the facilities which the operator will not be required to provide and the specific reason or reasons for such waiver.

(c) Upon receipt of any waiver, the operator shall post a copy of the waiver for at least 30 days on the mine bulletin board required by section 107(a) of the Act.

(d) An extension of the waiver at the end of 1 year may be sought by the operator by filing an application pursuant to § 71.404 no later than 30 days nor more than 60 days prior to the expiration date of the waiver.

§ 71.404 Application for waiver of surface facilities requirements.

(a) Application for waivers of any requirements of §§ 71.400 through 71.402 shall be in writing, filed with the appropriate Coal Mine Health and Safety District Manager, and shall contain the following information:

(1) The name and address of the mine operator,

(2) The name and location of the mine, and

(3) A detailed statement of the grounds upon which the waiver is requested and the period of time for which it is requested.

(b) At the same time the application is sent to the District Manager, a copy of the application shall be forwarded to the appropriate Regional Program Director, National Institute for Occupational Safety and Health by the operator, and a copy showing the addresses of the appropriate District Manager and Regional Program Director shall be posted by the operator for at least 30 days on the mine bulletin board required by section 107(a) of the Act.

Subpart F—Sanitary Toilet Facilities at Surface Worksites of Surface Coal Mines

§ 71.500 Sanitary toilet facilities at surface worksites; approved sanitary toilets; installation requirements.

(a) Each operator of a surface coal mine shall provide and install at least one approved sanitary toilet, together with an adequate supply of toilet tissue, in a location convenient to each surface work site. A single approved sanitary toilet may serve two or more surface worksites in the same surface mine where the sanitary toilet is convenient to each such worksite. Where 10 or more miners

use such toilet facilities, sufficient toilets shall be furnished to provide approximately one sanitary toilet for each 10 miners. (NOTE: Sanitary toilet facilities for surface work areas of underground mines are subject to the provisions of § 75.1712-3 of this chapter.)

(b) Only sanitary toilets approved by the Health Division, Coal Mine Health and Safety, Mining Enforcement and Safety Administration, jointly with the National Institute for Occupational Safety and Health shall meet the requirements of this section.

(c) Applications for approval of sanitary toilets shall be submitted to: Health Division, Coal Mine Health and Safety, Mining Enforcement and Safety Administration, U.S. Department of the Interior, Washington, D.C. 20240.

§ 71.501 Sanitary toilet facilities; maintenance.

Sanitary toilets provided in accordance with the provisions of § 71.500 shall be regularly maintained in a clean and sanitary condition. Holding tanks shall be serviced and cleaned when full and in no case less than once each week when in use by draining or pumping or by removing them for cleaning and recharging. Transfer tanks and transfer equipment, if used, shall be equipped with suitable fittings to permit complete draining without spillage and allow for the sanitary transportation of wastes. Waste shall be disposed of in accordance with State and local laws and regulations.

Subpart G—Drinking Water

§ 71.600 Drinking water; general.

An adequate supply of potable water shall be provided for drinking purposes in each surface installation and at each surface worksite of the mine.

§ 71.601 Drinking water; quality.

(a) Potable water provided in accordance with the provisions of § 71.600 shall meet the applicable minimum health requirements for drinking water established by the State or community in which the mine is located.

(b) Where no such requirements are applicable, the drinking water provided shall conform to the Public Health Service Drinking Water Standards, 42 CFR Part 72, Subpart J.

§ 71.602 Drinking water; distribution.

(a) Water shall be piped or transported in sanitary containers. Water

systems and appurtenances thereto shall be constructed and maintained in accordance with State and local requirements. Where no such requirements are applicable, water systems and appurtenances shall be constructed and maintained in accordance with the National Plumbing Code (ASA A40.8—1955) which is hereby incorporated by reference and made a part hereof. (For information as to the availability of this code, see § 71.402(b).)

(b) Water transported to the site shall be carried, stored and otherwise protected in sanitary containers constructed of smooth, impervious, heavy gauge, corrosion resistant materials. The containers shall be marked with the words "Drinking Water."

§ 71.603 Drinking water; dispensing requirements.

(a) Water shall be dispensed through a drinking fountain or from a water storage container with an adequate supply of single service cups stored in a clean, sanitary manner. Water shall not be dipped from inside water storage containers. Use of a common drinking cup is prohibited.

(b) Water containers shall remain sealed at all times during use and shall not be refilled with water for reuse without first being cleaned and disinfected with the use of heat or sanitizers.

(c) Drinking fountains from which water is dispensed shall be thoroughly cleaned once each week.

(d) Ice used for cooling drinking water shall not be immersed or in direct contact with the water to be cooled, unless it has been handled in a sanitary manner and unless the ice is made from the same source as the drinking water or from water of a quality equal to the source of the drinking water.

2. An operator may be granted an extension of time not to exceed 90 days from the effective date of Part 71 for compliance with § 71.100 upon a written application to the Coal Mine Health and Safety District Manager which demonstrates to the satisfaction of the Manager that the operator has made a good faith effort to achieve such compliance and that circumstances beyond his control have prevented the application of adequate dust control measures. A copy of the application shall be posted for at least 30 days on the bulletin board required by section 107 of the Act not

later than the date such application is filed.

NOTE: The incorporation by reference provisions in this document were approved by the Director of the Federal Register on November 10, 1971.

PART 74—COAL MINE DUST PERSONAL SAMPLER UNITS

| | |
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| Sec. | |
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AUTHORITY: The provisions of this Part 74 issued under sec. 508, 83 Stat. 808, 30 U.S.C. 957.

SOURCE: The provisions of this Part 74 appear at 35 F.R. 4926, Mar. 11, 1970, unless otherwise noted.

§ 74.1 Purpose.

The regulations in this part set forth the requirements for approval of coal mine dust personal sampler units designed to determine the concentrations of respirable dust in coal mine atmospheres; procedures for applying for such approval; test procedures; and labeling.

§ 74.2 Sampler unit.

A coal mine dust personal sampler unit shall consist of (a) a pump unit, (b) a sampling head assembly, and (c) if rechargeable batteries are used in the pump unit, a battery charger.

§ 74.3 Specifications of sampler unit.

(a) *Pump unit*—(1) *Dimensions*. The overall dimensions of the pump unit, hose connections and valve or switch covers shall not exceed 8 inches in height, 6 inches in width and 4 inches in thickness.

(2) *Weight*. The pump unit shall not weigh more than 4 pounds.

(3) *Construction*. The case and all components of the pump unit shall be of sufficiently durable construction to endure the wear of use in a coal mine and shall be tight fitting, so as to minimize the amount of dust entering the pump case.

(4) *Exhaust*. The pump shall exhaust into the pump case, maintaining a slight

positive pressure which will reduce the entry of dust into the pump case.

(5) *Switch*. The pump unit shall be equipped with an on-off switch or equivalent device on the outside of the pump case. This switch shall be protected against accidental operation during use and protected to keep dust from entering the mechanisms.

(6) *Flow rate adjustment*. Except as provided in the last sentence of this subparagraph, the pump unit shall be equipped with a suitable means of flow rate adjustment accessible from outside the case. To prevent accidental adjustment, the flow rate adjuster shall be recessed in the pump case and shall require the use of an adjusting tool. If the pump is capable of maintaining the flow rate consistency required in this part without adjustment, an external flow rate adjuster is not required.

(7) *Battery*. The power supply for the pump shall be a suitable battery located in the pump case or in a separate case which attaches to the pump case by a permissible electrical connection.

(8) *Pulsation*. (i) The irregularity in flow rate due to pulsation shall have a fundamental frequency of not less than 20 Hz.

(ii) On and after July 1, 1974 the quantity of respirable dust collected with a sampler unit shall be within ± 5 percent of that collected with a sampling head assembly operated with nonpulsating flow.

NOTE: The test procedures for evaluating sampler units with respect to this specification will be provided on request by the National Institute for Occupational Safety and Health, 1014 Broadway, Cincinnati, Ohio 45202.

(iii) Certificates of approval issued for sampler units which fail to comply with the specification set forth in subdivision (ii) of this subparagraph when such specification becomes effective, shall be revoked.

(9) *Belt clips*. The pump unit shall be provided with a belt clip which will hold the pump securely on a coal miner's belt.

(10) *Recharging connection*. A suitable connection shall be provided so that the battery may be recharged without removing the battery from the pump case or from the battery case if a separate battery case is used.

(11) *Flow rate indicator*. A visual indicator of flow rate (e.g., a flowmeter) shall be provided either as an integral

part of the pump unit or of the sampling head assembly. The flowrate indicator shall be calibrated within ± 5 percent at 2, 1.8, and 1.6 liters per minute to indicate the rate of air passing through the accompanying sampling head assembly.

(12) *Flow rate range.* The pump shall be capable of operating in or over a range of from 1.5 to 2.5 liters per minute and shall be adjustable over this range.

(13) *Flow rate consistency.* The flow shall remain within ± 0.1 liters per minute over an 8-hour period when the pump is operated at 2 liters per minute with a standard sampling head assembly. Not more than two readjustments of the flow rate to 2 liters per minute shall be required to maintain this accuracy.

(14) *Duration of operation.* The pump shall be capable of operating for not less than 8 hours at a flow rate of 2 liters per minute against a resistance of 4 inches of water measured at the inlet of the pump.

(b) *Sampling head assembly.* The sampling head assembly shall consist of a cyclone and a filter assembly as follows:

(1) *Cyclone.* The cyclone shall consist of a cyclone body with removable grit cap and a vortex finder and shall be constructed of nylon or a material equivalent in performance. The dimensions of the components, with the exception of the grit cap, shall be identical to those of a Dorr-Oliver 10 mm. cyclone body, part No. 28541/4A or 01B11476-01 and vortex finder, part No. 28541/4B.

(2) *Filter assembly.* The filter assembly shall meet the following requirements:

(1) *Filter.* The filter shall be a membrane filter type with a nominal pore size not over 5 microns. It shall be non-hydroscopic and shall not dissolve or decompose when emersed in ethyl or isopropyl alcohol. The strength and surface characteristics of the filter shall be such that dust deposited on its surface may be removed by ultrasonic methods without tearing the filter. The filter resistance shall not be more than 2 inches of water at an airflow rate of 2 liters per minute.

(ii) *Capsule.* The capsule enclosing the filter shall not permit sample air to leak around the filter. The capsule shall be made of nonhydroscopic material. Its weight, including the enclosed filter, shall not exceed 5 grams and it shall be preweighed by the manufacturer with a precision of ± 0.1 milligrams. Impact to

the capsule shall not dislodge any dust from the capsule, which might then be lost to the weight measurement.

(iii) *Cassette.* The cassette shall enclose the capsule so as to prevent contamination. The cassette must be easily removable without causing a loss or gain of capsule weight. Appropriate covers shall be provided to prevent contaminants from entering, or dust from leaving, the capsule when it is not in use.

(3) *Arrangement of components.* The connections between the cyclone vortex finder and the capsule and between the capsule and the $\frac{1}{4}$ -inch (inside diameter) hose mentioned in subparagraph (5) of this paragraph shall be mechanically firm and shall not leak at a rate of more than 0.1 liters per hour under a vacuum of 4 inches of water.

(4) *Clamping of components.* The clamping and positioning of the cyclone body, vortex finder, and cassette shall be rigid, remain in alignment, be firmly in contact and airtight. The cyclone-cassette assembly shall be attached firmly to a backing plate or other means of holding the sampling head in position. The cyclone shall be held in position so that the inlet opening of the cyclone is pointing perpendicular to, and away from, the backing plate.

(5) *Hose.* A 3-foot long, $\frac{1}{4}$ -inch (inside diameter) hose shall be provided to form an airtight connection between the inlet of the sampler pump and the outlet of the filter assembly. A device, capable of sliding along the hose and attaching to the miner's outer garment shall be provided.

(c) *Battery charger*—(1) *Power supply.* The battery charger shall be operated from a 117 volt, 60 Hz power line.

(2) *Connection.* The battery charger shall be provided with a cord and polarized connector so that it may be connected to the charge socket on the pump or battery case.

(3) *Protection.* The battery charger shall be fused, shall have a grounded power plug, and shall not be susceptible to damage by being operated without a battery on charge.

(4) *Charge rates.* The battery charger shall be capable of operating at either a 16-hour or a 64-hour charge rate. The battery charger shall be capable of fully charging the battery in the pump unit in the stated times and shall not overcharge a discharged battery in 16 hours when operating at the 16-hour charge

rate or in 88 hours when operating at the 64-hour charge rate.

[35 FR 4326, Mar. 11, 1970, as amended at 37 FR 26712, Dec. 15, 1972; 37 FR 28294, Dec. 22, 1972; 39 FR 3677, Jan. 29, 1974]

§ 74.4 Tests of coal mine dust personal sampler units.

(a) The National Institute for Occupational Safety and Health, Department of Health, Education, and Welfare, shall conduct tests to determine whether a coal mine dust personal sampler unit which is submitted for approval under these regulations meets the requirements set forth in § 74.3.

(b) The Bureau of Mines, Department of the Interior, will conduct tests, pursuant to § 18.68 of this chapter, to determine whether the pump unit of a coal mine dust personal sampler unit submitted for approval under these regulations is intrinsically safe.

[35 FR 4326, Mar. 11, 1970, as amended at 37 FR 26712, Dec. 15, 1972]

§ 74.5 Conduct of tests; demonstrations.

Prior to the issuance of a certificate of approval, only personnel of the Bureau of Mines and National Institute for Occupational Safety and Health, representatives of the applicant, and such other persons as may be mutually agreed upon may observe the tests conducted. The Bureau of Mines and the National Institute for Occupational Safety and Health shall hold as confidential, and shall not disclose, principles of patentable features prior to certification, nor shall the Bureau or Institute disclose any details of the applicant's drawings or specifications or other related material. After the issuance of a certificate of approval, the Bureau of Mines or the National Institute for Occupational Safety and Health may conduct such public demonstrations and tests of the approved coal mine dust personal sampler unit as the Bureau or Institute deems appropriate. The conduct of all investigations, tests, and demonstrations shall be under the sole direction of the National Institute for Occupational Safety and Health and the Bureau of Mines and any other persons shall be present only as observers.

[35 FR 4326, Mar. 11, 1970, as amended at 37 FR 26712, Dec. 15, 1972]

§ 74.6 Applications.

(a) Testing of a coal mine dust personal sampler unit will be undertaken

by the National Institute for Occupational Safety and Health, and testing of the pump unit of such a sampler unit will be undertaken by the Bureau of Mines, only pursuant to a written application in duplicate, each copy accompanied by complete scale drawings, specifications and description of materials. An application to the Bureau of Mines must be accompanied by a check, bank draft, or money order in the amount of \$105, payable to the U.S. Bureau of Mines, to cover the fee specified in § 18.7 of this chapter. The applications, together with the drawings and specifications and any other related documents shall be sent to National Institute for Occupational Safety and Health, Department of Health, Education, and Welfare, Box 4256, 944 Chestnut Ridge Road, Morgantown, WV 26505, and the Bureau of Mines, Department of the Interior, 4800 Forbes Avenue, Pittsburgh, Pa. 15213.

(b) Ten complete coal mine dust personal sampler units must be sent to the National Institute for Occupational Safety and Health in connection with an application. One pump unit must be sent to the Bureau of Mines in connection with an application.

(c) Drawings and specifications shall be adequate in number and fully detailed to identify the design of the coal mine dust personal sampler unit or pump unit thereof and to disclose the dimensions and materials of all component parts.

(d) An application shall describe the way in which each lot of components will be sampled and tested to maintain their quality prior to assembly of each sampler unit. In order to ensure that the quality of the coal dust personal sampler unit will be maintained in production through adequate quality control procedures, the National Institute for Occupational Safety and Health and the Bureau of Mines reserve the right to have their qualified personnel inspect each applicant's control-test equipment procedures, and records and to interview the employees who conduct the control tests. Two copies of the results of any tests made by the applicant on the coal mine dust personal sampler unit or the pump unit thereof shall accompany an application.

[35 FR 4326, Mar. 11, 1970, as amended at 37 FR 26712, Dec. 15, 1972]

§ 74.7 Certificate of approval.

(a) Upon completion of the testing of a coal mine dust personal sampler

unit or the pump unit thereof, the National Institute for Occupational Safety and Health or the Bureau of Mines, as appropriate, shall issue to the applicant either a certificate of approval or a written notice of disapproval, as the case may require. The National Institute for Occupational Safety and Health shall not issue a certificate of approval for a coal mine dust personal sampler unit unless the Bureau of Mines has issued a certificate of approval for the pump unit thereof. No informal notification of approval will be issued. If a certificate of approval is issued, no test data or detailed results of tests will accompany such approval. If a notice of disapproval is issued, it will be accompanied by details of the defects, resulting in disapproval, with a view to possible correction.

(b) A certificate of approval will be accompanied by a list of the drawings and specifications, covering the details of design and construction of the coal mine dust personal sampler unit or the pump unit thereof upon which the certificate of approval is based. The applicant shall keep exact duplicates of the drawings and specifications submitted to the National Institute for Occupational Safety and Health and to the Bureau of Mines relating to the sampler unit or pump unit thereof which has received a certificate of approval. The approved drawings and specifications shall be adhered to exactly in the production of the certified sampler unit, including the pump unit thereof, for commercial purposes. In addition, the applicant shall observe such procedures for, and keep such records of, the control of component parts as either the Bureau or Institute may in writing require as a condition of certification.

[35 FR 4326, Mar. 11, 1970, as amended at 37 FR 26712, Dec. 15, 1972]

§ 74.8 Approval labels.

(a) Certificates of approval will be accompanied by photographs of designs for the approval labels to be affixed to each coal mine dust personal sampler unit.

(b) The labels showing approval by the National Institute for Occupational Safety and Health and by the Bureau of Mines shall contain such information as the Bureau or Institute may require and shall be reproduced legibly on the outside of a sampler unit as directed by the appropriate bureau.

(c) The applicant shall submit full-scale designs or reproductions of approval labels and a sketch or description of the position of the labels on each unit.

(d) Use of the approval labels obligates the applicant to whom the certificates of approval were issued to maintain the quality of the complete coal mine dust personal sampler unit and to guarantee that the complete sampler unit is manufactured or assembled according to the drawings and specifications upon which the certificates of approval were based. Use of the approval labels is authorized only on sampler units which conform strictly with the drawings and specifications upon which the certificates of approval were based. [35 FR 4326, Mar. 11, 1970, as amended at 37 FR 26712, Dec. 15, 1972]

§ 74.9 Material required for record.

(a) As part of the permanent record of the investigation, the National Institute for Occupational Safety and Health will retain a complete coal mine dust personal sampler unit, and the Bureau of Mines will retain a pump unit, that has been tested and certified. Material not required for record purposes will be returned to the applicant at his request and at his expense on written shipping instructions to the Bureau or Institute.

(b) As soon as a coal mine dust personal sampler unit is commercially available, the applicant shall deliver a complete unit free of charge to the National Institute for Occupational Safety and Health, Department of Health, Education, and Welfare, Box 4256, 944 Chestnut Ridge Road, Morgantown, WV 26505. [35 FR 4326, Mar. 11, 1970, as amended at 37 FR 26712, Dec. 15, 1972]

§ 74.10 Changes after certification.

(a) If the applicant desires to change any feature of a certified coal mine dust personal sampler unit, he shall first obtain the approval of the National Institute for Occupational Safety and Health pursuant to the following procedures:

(1) Application shall be made as for an original certificate of approval, requesting that the existing certification be extended to encompass the proposed change. The application shall be accompanied by drawings, specifications and related material, as in the case of an original application.

(2) The application and accompanying material will be examined by the

National Institute for Occupational Safety and Health to determine whether testing of the modified sampler unit or components will be required. Testing will be necessary if there is a possibility that the modification may affect the performance of the sampler unit adversely. The National Institute for Occupational Safety and Health will inform the applicant whether such testing is required.

(3) If the proposed modification meets the pertinent requirements of these regulations, a formal extension of certification will be issued, accompanied by a list of new and revised drawings and specifications to be added to those already on file as the basis for the extension of certification.

(b) If a change is proposed in a pump unit of a certified coal dust personal sampler unit, the approval of the Bureau of Mines with respect to intrinsic safety shall be obtained in accordance with the procedures set forth in paragraph (a) of this section.

[35 FR 4326, Mar. 11, 1970, as amended at 37 FR 26712, Dec. 15, 1972]

§ 74.11 Withdrawal of certification.

Any certificate of approval issued under the regulations in this part may be revoked for cause by the Institute or the Bureau which issued the certificate.

[37 FR 26712, Dec. 15, 1972]

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- Sec.
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- 75.1801 Examination of emergency escapeways and facilities, smokers' articles and fire doors; recording requirements; approved books.
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- 75.1806 Monthly examination of surface high voltage circuit breakers; recording requirements; approved books.
- 75.1807 Daily inspection of hoisting equipment; recording requirements; approved books.
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AUTHORITY: The provisions of this Part 75 issued under secs. 301(d), 508, 83 Stat. 747; 30 U.S.C. 812. Sections 17.1722-17.1730 issued under sec. 101, Federal Coal Mine Health and Safety Act of 1969; 83 Stat. 745; 30 U.S.C. 811.

SOURCE: The provisions of this Part 75 appear at 35 F.R. 17890, Nov. 20, 1970, unless otherwise noted.

NOTE: The provisions of this part marked [Statutory Provision] appear in Title III of the Federal Coal Mine Health and Safety Act of 1969.

NOTE: Nomenclature changes to this part appear at 38 FR 18667, July 13, 1973.

Subpart A—General

§ 75.1 Scope.

This Part 75 sets forth safety standards compliance with which is mandatory in each underground coal mine subject to the Federal Coal Mine Health and Safety Act of 1969. Some standards also are applicable to surface operations. Regulations and criteria supplementary to these standards also are set forth in this part.

§ 75.2 Definitions.

[STATUTORY PROVISIONS]

For the purpose of this Part 75, the term—

(a) "Certified" or "registered" as applied to any person means a person certified or registered by the State in which the coal mine is located to perform duties prescribed by this Part 75, except that in a State where no program of certification or registration is provided or where the program does not meet at least minimum Federal standards established by the Secretary, such certification or registration shall be by the Secretary;

(b) "Qualified person" means, as the context requires,

(1) An individual deemed qualified by the Secretary and designated by the operator to make tests and examinations required by this Part 75; and

(2) An individual deemed, in accordance with minimum requirements to be established by the Secretary, qualified by training, education, and experience, to perform electrical work, to maintain electrical equipment, and to conduct examinations and tests of all electrical equipment;

(c) "Permissible" as applied to—

(1) Equipment used in the operation of a coal mine, means equipment, other than permissible electric face equipment, to which an approval plate, label, or other device is attached as authorized by the Secretary and which meets specifications which are prescribed by the Secretary for the construction and maintenance of such equipment and are designed to assure that such equipment will not cause a mine explosion or a mine fire.

(2) Explosives, shot-firing units, or blasting devices used in such mine, means explosives, shot-firing units, or blasting devices which meet specifications which are prescribed by the Secretary, and

(3) The manner of use of equipment or explosives, shot-firing units, and blasting devices, means the manner of use prescribed by the Secretary;

(d) "Rock dust" means pulverized limestone, dolomite, gypsum, anhydrite, shale, adobe, or other inert material preferably light colored, 100 per centum of which will pass through a sieve having 20 meshes per linear inch and 70 per centum or more of which will pass through a sieve having 200 meshes per linear inch; the particles of which when wetted and dried will not cohere to form a cake which will not be dispersed into separate particles by a light blast of air; and which does not contain more than 5 per centum of combustible matter or more than a total of 4 per centum of free and combined silica (SiO_2), or, where the Secretary finds that such silica concentrations are not available, which does not contain more than 5 per centum of free and combined silica;

(e) "Anthracite" means coals with a volatile ratio equal to 0.12 or less;

(f) "Volatile ratio" means volatile matter content divided by the volatile matter plus the fixed carbon;

(g) (1) "Working face" means any place in a coal mine in which work of extracting coal from its natural deposit in the earth is performed during the mining cycle,

(2) "Working place" means the area of a coal mine inby the last open crosscut,

(3) "Working section" means all areas of the coal mine from the loading point of the section to and including the working faces,

(4) "Active workings" means any place in a coal mine where miners are normally required to work or travel;

(h) "Abandoned areas" means sections, panels, and other areas that are not ventilated and examined in the manner required for working places under Subpart D of this Part 75;

(i) "Permissible" as applied to electric face equipment means all electrically operated equipment taken into or used inby the last open crosscut of an entry or a room of any coal mine the electrical parts of which, including, but not limited to, associated electrical equipment, components, and accessories, are designed, constructed, and installed, in accordance with the specifications of the Secretary, to assure that such equipment will not cause a mine explosion or mine fire, and the other features of which are designed

and constructed, in accordance with the specifications of the Secretary, to prevent, to the greatest extent possible, other accidents in the use of such equipment; and the regulations of the Secretary or the Director of the Bureau of Mines in effect on March 30, 1970, relating to the requirements for investigation, testing, approval, certification, and acceptance of such equipment as permissible shall continue in effect until modified or superseded by the Secretary, except that the Secretary shall provide procedures, including, where feasible, testing, approval, certification, and acceptance in the field by an authorized representative of the Secretary, to facilitate compliance by an operator with the requirements of § 75.500 within the periods prescribed therein;

(j) "Low voltage" means up to and including 660 volts; "medium voltage" means voltages from 661 to 1,000 volts; and "higher voltage" means more than 1,000 volts;

(k) "Respirable dust" means only dust particulates 5 microns or less in size;

(l) "Coal mine" includes areas of adjoining mines connected underground;

(m) "Secretary" means the Secretary of the Interior or his delegate; and

(n) "Act" means the Federal Coal Mine Health and Safety Act of 1969.

Subpart B—Qualified and Certified Persons

§ 75.100 Certified person.

(a) The provisions of Subpart D—Ventilation of this Part 75 require that certain examinations and tests be made by a certified person. A certified person within the meaning of those provisions is a person who has been certified as a mine foreman (mine manager), an assistant mine foreman (section foreman), or a preshift examiner (mine examiner). A person who has been so certified is also a qualified person within the meaning of those provisions of Subpart D of this part which require that certain tests be made by a qualified person and within the meaning of § 75.1106.

(b) A person who is certified as a mine foreman, an assistant mine foreman, or a preshift examiner by the State in which the coal mine is located is, to the extent of the State's certification, a certified person within the meaning of the provisions of Subpart D of this part and § 75.1106 referred to in paragraph (a) of this section.

(c) (1) The Secretary may temporarily certify for periods of time not to exceed 6 months for each such temporary certification, persons in the categories of mine foreman, assistant mine foreman, and preshift examiner whenever the State in which such persons are presently employed in such categories does not provide for such certification with respect to the coal mines in which such persons are employed, if the operator of such a coal mine in which such persons are employed makes an application and satisfactory showing that each such person has had at least 2 years experience underground in a coal mine and has held the position of mine foreman, assistant mine foreman, or preshift examiner for a period of 6 months immediately preceding the filing of the application and is qualified to test for methane and for oxygen deficiency. Applications for temporary Secretarial certification should be submitted in writing to the Health and Safety Activity, Mining Enforcement and Safety Administration, Department of the Interior, 4800 Forbes Avenue, Pittsburgh, Pa. 15213.

(2) A person certified by the Secretary under this paragraph (c) will be a certified person, within the meaning of the provisions of Subpart D of this part and § 75.1106 referred to in paragraph (a) of this section, only with respect to the coal mine in which he is employed at the time the application for certification is filed.

§ 75.150 Tests for methane and for oxygen deficiency; qualified person.

(a) The provisions of Subpart D—Ventilation of this part and § 75.1106 require that tests for methane and for oxygen deficiency be made by a qualified person. A person is a qualified person for this purpose if he is a certified person under § 75.100.

(b) Pending issuance of Federal standards, a person will be considered a qualified person for testing for methane and for oxygen deficiency:

(1) If he has been qualified for this purpose by the State in which the coal mine is located; or

(2) The Secretary may qualify persons for this purpose in a coal mine in which persons are not qualified for this purpose by the State upon an application and a satisfactory showing by the operator of the coal mine that each such person has been trained and designated by the operator to test for methane and oxygen deficiency and has made such tests

for a period of 6 months immediately preceding the application. Applications for Secretarial qualification should be submitted to the Health and Safety Activity, Mining Enforcement and Safety Administration, Department of the Interior, 4800 Forbes Avenue, Pittsburgh, Pa. 15213.

§ 75.151 Tests for methane; qualified person; additional requirement.

Notwithstanding the provisions of § 75.150, on and after January 1, 1971, no person shall be a qualified person for testing for methane unless he demonstrates to the satisfaction of an authorized representative of the Secretary that he is qualified to test for methane with a portable methane detector approved by the Bureau of Mines or the Mining Enforcement and Safety Administration under Part 22 of this chapter (Bureau of Mines Schedule 8C).

§ 75.152 Tests of air flow; qualified person.

A person is a qualified person within the meaning of the provisions of Subpart D—Ventilation of this part requiring that tests of air flow be made by a qualified person only if he is a certified person under § 75.100 or a person trained and designated by a certified person to perform such tests.

§ 75.153 Electrical work; qualified person.

(a) Except as provided in paragraph (f) of this section, an individual is a qualified person within the meaning of §§ 75.511 and 75.512 to perform electrical work (other than work on energized surface high-voltage lines) if:

(1) He has been qualified as a coal mine electrician by a State that has a coal mine electrical qualification program approved by the Secretary; or,

(2) He has at least 1 year of experience in performing electrical work underground in a coal mine, in the surface work areas of an underground coal mine, in a surface coal mine, in a noncoal mine, in the mine equipment manufacturing industry, or in any other industry using or manufacturing similar equipment, and has satisfactorily completed a coal mine electrical training program approved by the Secretary; or,

(3) He has at least 1 year of experience, prior to the date of the application required by paragraph (c) of this section, in performing electrical work

underground in a coal mine, in the surface work areas of an underground coal mine, in a surface coal mine, in a non-coal mine, in the mine equipment manufacturing industry, or in any other industry using or manufacturing similar equipment, and he attains a satisfactory grade on each of the series of five written tests approved by the Secretary and prescribed in paragraph (b) of this section.

(b) The series of five written tests approved by the Secretary shall include the following categories:

- (1) Direct current theory and application;
- (2) Alternating current theory and application;
- (3) Electric equipment and circuits;
- (4) Permissibility of electric equipment; and,
- (5) Requirements of Subparts F through K of this Part 75.

(c) In order to take the series of five written tests approved by the Secretary, an individual shall apply to the District Manager of any Coal Mine Health and Safety District and shall certify that he meets the requirements of paragraph (a) (3) of this section. The tests will be administered in the Coal Mine Health and Safety Districts at regular intervals, or as demand requires.

(d) A score of at least 80 percent of each of the five written tests will be deemed to be a satisfactory grade. Recognition shall be given to practical experience in that 1 percentage point shall be added to an individual's score in each test for each additional year of experience beyond the 1 year minimum requirement specified in paragraph (a) (3) of this section; however, in no case shall an individual be given more than 5 percentage points for such practical experience.

(e) An individual may, within 30 days from the date on which he received notification from the Administration of his test scores, repeat those on which he received an unsatisfactory score. If further retesting is necessary after this initial repetition, a minimum of 30 days from the date of receipt of notification of the initial retest scores shall elapse prior to such further retesting.

(f) An individual who has, prior to November 1, 1972, been qualified to perform electrical work specified in §§ 75.511 and 75.512 (other than work on energized surface high-voltage lines) shall continue to be qualified until June 30, 1973. To re-

main qualified after June 30, 1973, such individual shall meet the requirements of either subparagraph (1), (2), or (3) of paragraph (a) of this section.

(g) An individual qualified in accordance with this section shall, in order to retain qualification, certify annually to the District Manager of the Coal Mine Health and Safety District wherein he is employed, that he has satisfactorily completed a coal mine electrical retraining program approved by the Secretary. [37 FR 22876, Oct. 19, 1972]

§ 75.154 Repair of energized surface high voltage lines; qualified person.

An individual is a qualified person within the meaning of § 75.705 for the purpose of repairing energized surface high voltage lines only if he has had at least 2 years experience in electrical maintenance, and at least 2 years experience in the repair of energized high voltage surface lines located on poles or structures.

§ 75.155 Qualified hoisting engineer; qualifications.

(a) (1) A person is a qualified hoisting engineer within the provisions of Subpart O of this part, for the purpose of operating a steam-driven hoist in a coal mine, if he has at least 1 year experience as an engineer in a steam-driven hoisting plant and is qualified by the State in which the mine is located as a steam-hoisting engineer; or

(2) If a State has no program for qualifying persons as steam-hoisting engineers, the Secretary may temporarily qualify persons for this purpose for periods of time not to exceed 6 months for each temporary certification if the operator of the coal mine in which such persons are employed makes an application and a satisfactory showing that each such person has had 1 year experience in operating steam-driven hoists and has held the position of hoisting engineer for a period of 6 months immediately preceding the application.

(b) (1) A person is a qualified hoisting engineer within the provisions of Subpart O of this part, for the purpose of operating an electrically driven hoist in a coal mine, if he has at least 1 year experience operating a hoist plant in a mine or maintaining electric-hoist equipment in a mine and is qualified by the State in which the mine is located as an electric-hoisting engineer; or

(2) If a State has no program for qualifying persons as electric-hoisting engineers, the Secretary may temporarily qualify persons for this purpose for periods of time not to exceed 6 months for each temporary certification if the operator of the coal mine in which such persons are employed makes an application and a satisfactory showing that each such person has had 1 year experience in operating electric-driven hoists and has held the position of hoisting engineer for a period of 6 months immediately preceding the application.

(c) Applications for Secretarial qualification should be submitted to the Health and Safety Activity, Mining Enforcement and Safety Administration, Department of the Interior, 4800 Forbes Avenue, Pittsburgh, Pa. 15213.

§ 75.159 Records of certified and qualified persons.

The operator of each coal mine shall maintain a list of all certified and qualified persons designated to perform duties under this Part 75.

§ 75.160 Training programs.

[STATUTORY PROVISION]

Every operator of a coal mine shall provide a program, approved by the Secretary, of training and retraining of both qualified and certified persons needed to carry out functions prescribed in the Act.

§ 75.160-1 Plans for training programs.

On or before December 31, 1970, each operator shall submit to the District Manager a program or plan setting forth what, when, how, and where he will train and retrain persons whose work assignments require that they be certified or qualified. Such program shall provide: (a) For certified persons, annual training courses in methane measurement and oxygen deficiency testing, roof and rib control, ventilation, first aid, principles of mine rescue, and the provisions of this Part 75, and (b) for qualified persons, annual courses in performance of the tasks which they perform as qualified persons.

Subpart C—Roof Support

§ 75.200 Roof control programs and plans.

[STATUTORY PROVISIONS]

Each operator shall undertake to carry out on a continuing basis a program to

improve the roof control system of each coal mine and the means and measures to accomplish such system. The roof and ribs of all active underground roadways, travelways, and working places shall be supported or otherwise controlled adequately to protect persons from falls of the roof or ribs. A roof control plan and revisions thereof suitable to the roof conditions and mining system of each coal mine and approved by the Secretary shall be adopted and set out in printed form on or before May 29, 1970. The plan shall show the type of support and spacing approved by the Secretary. Such plan shall be reviewed periodically, at least every 6 months by the Secretary, taking into consideration any falls of roof or ribs or inadequacy of support of roof or ribs. No person shall proceed beyond the last permanent support unless adequate temporary support is provided or unless such temporary support is not required under the approved roof control plan and the absence of such support will not pose a hazard to the miners. A copy of the plan shall be furnished to the Secretary or his authorized representative and shall be available to the miners and their representatives.

§ 75.200-1 Roof control program requirements.

Each operator shall adopt an adequate program for improving roof control systems. This program shall include a roof control plan, provision for the training of miners, a history of all unintentional roof falls, and systematic evaluation of the effectiveness of the roof control system in use.

§ 75.200-2 Roof control plans.

Each operator shall adopt a roof control plan suitable to the roof conditions and the mining system for all underground roadways, travelways including escapeways, and working places of each mine.

§ 75.200-3 Filing of roof control plans.

Roof control plans shall be filed with the District Manager of the Coal Mine Health and Safety District in which the mine is located.

§ 75.200-4 Actions on roof control plans.

The appropriate District Manager shall notify the operator in writing of the approval of a proposed roof control plan. If revisions are required for approval, the

changes required will be specified and the operator will be afforded an opportunity to discuss the revisions with the District Manager.

§ 75.200-5 General information required in roof control plans.

A roof control plan shall include the following information:

- (a) Name and address of the company.
- (b) Name and address of the mine.
- (c) Names and addresses of the responsible officials.
- (d) Area of the mine covered by the roof control plan.
- (e) A columnar section of the mine strata which shall:
 - (1) Show the name and thickness of the coalbed mined and any persistent partings.

(2) Identify by type and show the thickness of each stratum (rock layer) up to and including the main roof over and for 10 feet under the coalbed.

(3) Show the maximum cover over the mining area covered included in the roof control plan.

(f) A description of the sequence of mining and installation of supports including temporary supports. The description shall include:

(1) Drawings on 8½-inch by 11-inch paper or on paper folded to this size, showing the location of all roof, face, and rib supports for each method of mining employed at the mines. The scale shall be specified and not less than 5 feet to the inch nor more than 20 feet to the inch. A legend explaining all the symbols used shall also be included on the drawings.

(2) A list of all roof support materials employed in the roof control system including, where applicable, the name of the manufacturer and its designation for the item. Prior approval shall be obtained before making any changes in the materials listed.

§ 75.200-6 Criteria for approval of roof control plans.

Sections 75.200-7 through 75.200-14 set out the criteria by which District Managers will be guided in approving roof control plans on a mine-by-mine basis. Additional measures may be required. Roof control plans which do not conform to these criteria may be approved providing the operator can satisfy the District Manager that the resultant roof conditions will provide no less than the same measure of protection to the miners.

§ 75.200-7 Criteria—Full roof bolting plan.

A full roof bolting plan is one in which roof bolts constitute the sole means of roof support at a face as part of the normal mining cycle.

(a) Roof bolt assemblies should meet the following specifications:

(1) All components of the roof bolt assembly should comply with the American National Standards Institute, "Specifications for Roof Bolting Materials in Coal Mines".

(2) Roof bolts that provide support by creating a beam of laminated strata should be of a length that assures adequate anchorage, but in no case should the length of the bolt be less than 30 inches.

(3) Roof bolts that provide support by suspending the immediate roof from a stronger overlying strata should be of a length that permits anchoring at least 12 inches in the stronger strata.

(4) Bearing plates used directly against the mine roof should be not less than 6 inches square or of equivalent area. In exceptional cases where the mine roof is firm and not susceptible to sloughing, bearing plates 5 inches square or of equivalent area may be used.

(5) When wooden material such as planks, header blocks, and crossbars are used between the bearing plate and the roof for additional bearing, the use should be limited to short life openings (not to exceed 3 years) unless treated. Bearing plates used in conjunction with wooden materials should be not less than 4 inches square or of equivalent area.

(6) When washers are used, the shape of such washers should conform to the shape of roof bolt head and the shape of the bearing plate and such washers should be of sufficient strength to withstand loads up to the yield point of the roof bolt.

(b) Installation practices:

(1) Finishing bits should be easily identifiable by sight or feel and the diameter should be within a tolerance of plus 0.030-inch minus zero of the manufacturers recommended hole diameter for the anchor used.

(2) Torque ranges specified in the roof control plan should be capable of providing roof bolt loads to within plus or minus 1,000 pounds of 50 percent of either the yield point of the roof bolt being used or the anchorage capacity of the strata, whichever is less. In no case,

however, should installed torques provide loads that exceed the yield point of the roof bolt being used or the anchorage capacity. Relationship for determining roof bolt load for torque applied are as follows:

CONE NECK OR SELF-CENTERING ROOF BOLT

- ½-inch expansion type roof bolt—30 lbs. of load per ft.-lb. of torque.
- ¾-inch expansion type roof bolt—30 lbs. of load per ft.-lb. of torque.

STANDARD ROOF BOLT WITHOUT HARD WASHER OR LUBRICANT

- ½-inch expansion type roof bolt—50 lbs. of load per ft.-lb. of torque.
- ¾-inch expansion type roof bolt—40 lbs. of load per ft.-lb. of torque.

STANDARD ROOF BOLT WITH HARD WASHER OR LUBRICANT

- ½-inch expansion type roof bolt—60 lbs. of load per ft.-lb. of torque.
- ¾-inch expansion type roof bolt—60 lbs. of load per ft.-lb. of torque.

(3) Each operator should outline and describe bolt testing procedures to be followed in the roof control plan. The procedures to be followed should include:

(i) Providing and maintaining an approved, calibrated torque wrench on each roof bolting machine. An approved wrench should be one that will indicate the actual torque on the roof bolt.

(ii) Designating a qualified person to spot-check torques on at least 25 percent of the roof bolts immediately after the working place has been fully bolted. If the majority of the installed torques fall outside the recommended range, the remaining roof bolts in the working place should be tested. If the majority of the torques still fall outside the recommended range, necessary adjustments in the equipment used for tightening the roof bolts should be made immediately. If, after adjustments are made and required torques are not achieved, supplementary support such as additional roof bolts, longer roof bolts with adequate anchorage, posts, cribs, or crossbars should be installed.

(iii) On a daily basis, spot-check torques on at least 10 percent of the roof bolts from the outby corner of the last open crosscut to the face and record the results. This record should show the number of roof bolts tested, number of roof bolts below the recommended range, and the number of roof bolts above the recommended range. If results show that a majority of the roof bolts are not main-

taining at least 70 percent of the minimum torque required (50 percent if plates bear against wood), or have exceeded the maximum required torque by 50 percent, supplementary support such as additional roof bolts, longer roof bolts with adequate anchorage, posts, cribs, or crossbars should be installed until a review of the adequacy of the roof control plan is made by an authorized representative of the Secretary.

(4) Devices should be used to compensate for the angle when roof bolts are installed at angles greater than 5° from the perpendicular to the roof line.

(c) Roof bolting pattern:

(1) Roof bolt spacing either lengthwise or crosswise should not exceed 5 feet.

(2) Roof bolts should be installed as close as possible to, but not more than 5 feet from the rib before a sidecut is started.

(3) Roof bolts should be installed as close as possible to, but not more than 5 feet from, the face before starting conventional cutting or a continuous miner run.

(d) Openings should not exceed 20 feet in width where roof bolting is the sole means of roof support.

§ 75.200-8 Criteria—Conventional roof control plan.

A conventional roof control plan is one in which installation of materials other than roof bolts such as metal or wood posts, jacks, or cribs in conjunction with wooden cap blocks (half headers), footers (sills), planks and beams are installed as the sole means of roof support at a face as part of the normal mining cycle.

(a) Support materials should meet the following specifications:

(1) Posts should be of solid, straight grain wood with the ends sawed square and free from defects which would affect their strength.

(2) The diameter of round posts should not be less than one inch for each 15 inches of length, but in no case should the diameter be less than 4 inches; split posts should have a cross-sectional area equal to that required for round posts to equivalent length.

(3) Wooden cap blocks and footers should have flat paralleled sides and be not less than 2 inches thick, 4 inches wide and 12 inches long.

(4) Wooden crossbars and planks should be straight and of solid wood. Crossbars should have a minimum cross-

sectional area of 24 square inches and the minimum thickness should be 3 inches. Planks should have a minimum cross-sectional area of 8 square inches and a minimum thickness of 1 inch.

(5) Cribbing material should be of wood having parallel flat sides. In no case should the crib be less than 30 inches square.

(b) Installation practices:

(1) No more than two wooden wedges should be used to install a post.

(2) Posts should not be installed under roof susceptible to sloughing or under disturbed roof without a wooden cap block, plank, or crossbar between the post and the roof.

(3) Posts should be installed tight and on solid footing.

(4) Blocks used for lagging between the roof and wooden crossbars, planks, or metal bars should be spaced so that the load on the supports will be equally distributed.

(5) Cap blocks should be used between jacks and the roof.

(c) Conventional support pattern:

(1) Spacing of roadway roof supports should not exceed 5 feet.

(2) Width of roadways should not exceed 14 feet on the straight and 16 feet on the curves.

(3) Roof supports should be installed to within 5 feet of the uncut face; however, the supports nearest the face may be removed to facilitate the operation of face equipment if equivalent temporary support is installed prior to removal.

(4) When an opening is no longer needed for storing supplies or for travel of equipment the roof at the entrance of all such openings along travelways should be supported by extending the post line across the opening.

(d) Openings should not exceed 20 feet in width where the roof is supported solely by conventional means.

§ 75.200-9 Criteria—Combination roof control plan.

For a plan where both roof bolts and conventional supports are used for roof control at the face, the criteria for a Full Roof Bolting Plan and a Conventional Roof Control Plan should apply with the following modifications:

(a) Any place being driven over 20 feet in width should be supported by a Combination Roof Control Plan.

(b) The roadway should be limited to 16 feet in width on both the straight and

the curves to within 10 feet of the uncut face.

(c) A row of posts should be set for each 5 feet of space between the roadway posts and the ribs.

(d) Openings should not exceed 30 feet in width.

§ 75.200-10 Criteria—Spot roof bolting plan.

Spot roof bolting may be used only as a supplement to the approved roof control plan at random locations where adverse roof conditions are encountered. Where spot roof bolting is used, the criteria in § 75.200-7, (a) and (b) of the Full Roof Bolting Plan should apply. In addition, roof bolts should be installed in accordance with roof conditions, but in no case should spacing exceed 4 feet lengthwise and crosswise. Roof bolting should begin under safe roof and continue for the length of the adverse roof condition until safe roof is again encountered.

§ 75.200-11 Criteria—Pillar recovery plan.

Any reduction in pillar size during second mining shall be considered pillar recovery. Second mining is construed to be intentional retreat mining. The following criteria are applicable to pillar recovery roof control plans:

(a) Sections 75.200-7, 75.200-8, and 75.200-9 should apply depending on whether the pillar recovery plan calls for conventional support or a combination of conventional support and roof bolting.

(b) During development, the size and shape of the pillars should be dictated by the depth of cover, height of coal and other conditions associated with the coalbed. The smallest dimension of the pillar should be no less than 20 feet.

(c) Pillar splits and lifts should not exceed 20 feet in width.

(d) A minimum of two rows of breaker posts or the equivalent should be installed on not more than 4-foot centers across each opening leading into pillared areas and such posts should be installed before production is started. Such posts should be installed near the breakline between the lift being started and the gob.

(e) A row of roadside-radius (turn) posts or the equivalent should be installed on not more than 4-foot centers leading into pillar splits, including secondary splits in slabs, wings, or fenders.

(f) The width of the roadway leading from the solid pillars to a final stump

(pushout) should not exceed 14 feet. At least two rows of posts or their equivalent should be set on each side of the roadway on not more than 4-foot centers. Only one open roadway leading to a final stump (pushout) should be permitted.

(g) Before full pillar recovery is begun in areas where roof bolts were used as the sole means of roof support and openings are more than 16 feet wide, supplementary support should be installed. Supplementary supports should consist of at least one row of posts installed on either side on not more than 4-foot centers lengthwise and limit the width of all roadways to 16 feet. These supports should be extended from the entrance to the split for at least one full pillar outby the pillar in which the split is being made.

(h) The following criteria should apply to open end pillaring:

(1) At least two rows of breaker posts or their equivalent should be installed between the lift being started and the gob on not more than 4-foot centers before the initial cut is made and should be extended to within 7 feet of the face. The width of the roadway should not exceed 14 feet.

(2) If the roof in open end pillaring has a tendency to hang, falls should be made, or cribs installed in addition to the breakline posts between the active lift and the hanging area. The cribs should be set not more than 8 feet apart. Heavy duty hydraulic jacks set at centers close enough to give equivalent support may be substituted for cribs, if such jacks are removed remotely.

§ 75.200-12 Criteria—special roof control plan.

A special roof control plan should be adopted and followed when support is installed on an intermittent basis but only at predetermined locations such as at intersections, or when equipment is especially designed to provide either natural or artificial support as the coal is mined. Special roof control plans also cover experimental installations using new devices, materials, and methods for roof support.

(a) The following criteria should apply to mining systems employing continuous mining machines designed to give natural roof support by means of an arched roof:

(1) Where coal roof other than that included in the arch is necessary for roof support, positive means should be

used to assure that at least 6 inches of coal roof is maintained at all times. In the event that less than 6 inches of coal roof is encountered, all work in such places should be stopped, the continuous miner withdrawn, and artificial roof support installed. A roof control plan for the support to be installed in such cases must be submitted for approval.

(2) During the development of four-way intersections, the roof between the tangents of the arches in the entry or room should be supported with artificial roof supports prior to the development of the fourth entrance to such intersection.

(3) All areas where the width of openings is to exceed the normal cutting width of the continuous mining machine should be supported with additional support as specified in the roof control plan before any other work is performed in the place.

(4) All areas where the arch is broken, except planned areas such as those covered in subparagraphs (2) and (3) of this paragraph should be considered as having unsupported roof and such roof should have artificial roof supports installed prior to any other work being performed in the area.

(b) The following criteria should apply to mining methods using continuous miners with integral roof bolting equipment where roof bolts are the sole means of roof support:

(1) The distance between roof bolts should not exceed 8 feet crosswise, unless additional material such as wooden planks, wooden beams, or metal straps are installed in conjunction with the roof bolts. Roof bolts installed more than 8 feet but less than 9 feet apart should be supplemented with a wooden plank at least 2 inches thick by 8 inches wide or its equivalent. Roof bolts installed more than 9 feet but less than 10 feet apart should be supplemented with a wooden plank at least 3 inches thick by 8 inches wide or its equivalent. Roof bolts should not be installed more than 10 feet apart.

(2) Work in intersections, pillar splits, or other such places should not be started until additional support has been installed where the roof is supported with only two roof bolts crosswise. Such support should reduce bolt spacing to maximum of 5 feet.

(3) The maximum opening width where the roof is supported by only two roof bolts crosswise should be 16 feet.

(4) The distance between the last row of bolts and the face should not exceed

the distance from the head of the machine to the integral roof bolting equipment before starting a continuous miner run.

(c) Before any new support materials, devices or systems are used as a sole means of roof support, their effectiveness should be demonstrated by experimental installations in areas approved by an authorized representative of the Secretary.

§ 75.200-13 Criteria—temporary support.

(a) The following criteria should apply to the installation of temporary supports in faces:

(1) In areas where permanent artificial support is required temporary support should be used until such permanent support is installed.

(2) Only those persons engaged in installing temporary support should be allowed to proceed beyond the last permanent support until such temporary supports are installed.

(3) A minimum of two temporary supports should be installed on not more than 5-foot centers and within 5 feet of the rib or face when work is being done between such support and the nearest rib or face. At least four temporary supports should be installed on not more than 5-foot centers when work is being done in other areas of the face inby the last permanent support. No person should be permitted to proceed beyond temporary support in any direction unless such support is within 5 feet of the rib, face, or permanent support.

(b) During rehabilitation work such as rebolting, installing crossbars, or other permanent roof support, taking down loose roof and cleaning up falls of roof, temporary roof supports should be installed and the following criteria should apply:

(1) Where rebolting work is being done or crossbars are being installed, at least two rows of temporary supports on not more than 5-foot centers should be installed across the place so that the work in progress is done between the installed temporary supports and permanent roof supports installed in sound roof. The distance between the permanent supports and the nearest temporary supports should not exceed 5 feet.

(2) Tools used to take down loose material should be of a design that will enable workmen to perform their duties from a safe position without exposure

to falling material. Where loose material is being taken down, a minimum of two temporary supports on centers of not more than 5 feet should be set between the workmen and the material if such work cannot be done from an area supported by permanent roof supports.

(3) Where roof falls have occurred a minimum of four temporary supports shall be set before starting any work in and around the affected area. These supports should be located so as to provide the maximum protection for persons working in the area.

§ 75.200-14 Criteria—roof support recovery.

Any operator who intends to recover roof supports should include a detailed plan for such recovery in the roof control plan. The following criteria should apply to recovery procedures:

(a) Recovery should be done only under the direct supervision of a mine foreman, assistant mine foreman, or section foreman.

(b) Only experienced miners should be assigned to such work.

(c) The person supervising recovery should make a careful examination and evaluation of the roof and designate each support to be recovered.

(d) Supports should not be recovered in the following areas:

(1) Where roof fractures are present or there are other indications of the roof being structurally weak.

(2) Where any second mining has been done.

(3) Where torque readings on roof bolts or visual observations of conventional support indicate excessive loading.

(e) Two rows of temporary supports on not more than 4-foot centers, lengthwise and crosswise, should be set across the place, beginning not more than 4 feet inby the support being recovered. In addition, at least one temporary support should be provided as close as practicable to the support being recovered.

(f) Temporary supports used should not be recovered unless recovery is done remotely from under roof where the permanent supports have not been disturbed and two rows of temporary support, set across the place on 4-foot centers, are maintained at all times between the workmen and the unsupported area.

(g) No one should be permitted to enter any area from which supports have been recovered.

(h) Entrances to the areas from which supports are being recovered should be marked with danger signs placed at conspicuous locations. The danger signs will suffice as long as further support recovery work is being done in the area. If the recovery work is completed or suspended for 3 or more days, the areas should be barricaded.

§ 75.201 Mining methods.

[STATUTORY PROVISIONS]

The method of mining followed in any coal mine shall not expose the miner to unusual dangers from roof falls caused by excessive widths of rooms and entries or faulty pillar recovery methods.

§ 75.201-1 Widths of openings.

(a) The method of mining shall provide widths of openings and pillar dimensions compatible with effective roof control. These widths and dimensions shall be incorporated into the roof control plan submitted for approval.

(b) Where excessive widths result from poor mining practices, additional roof support shall be installed before any travel or other work is done in such area. If excessive widths of openings are a result of coal sloughing, additional support shall be installed and the mining system reevaluated to determine changes that are necessary to minimize such occurrences.

§ 75.201-2 Pillar recovery methods.

In addition to those criteria set forth in § 75.200-11 which may be required in the roof control plan, the following shall apply to pillar recovery:

(a) The overall pillar recovery system shall be designed to minimize the possibility of outbursts or squeezes. The manner and sequence of recovery shall be included in the roof control plan submitted for approval.

(b) Where full pillar recovery is being done, extraction shall be such as to allow total caving of the main roof in the pillared area.

(c) During partial pillar recovery sufficient coal shall be left in place to support the main roof to the extent that the possibility of undue forces overriding the working places will be minimized.

(d) A combination of full and partial pillar recovery shall not be conducted on the same pillar line.

(e) If full extraction of pillars is being done and physical conditions such as standing water, adverse roof conditions,

and falls of roof, or law requirements concerning oil and gas wells or surface subsidence dictate that some pillars of coal are to be left in place, a sufficient amount of coal shall be left to support the main roof so as to minimize the possibility of undue forces overriding the working places.

(f) Where full recovery of pillars is planned, the design of the pillars shall be compatible with the planned method of extraction.

(g) Pillaring methods shall eliminate pillar points and pillars that project inby the breakline.

(h) When recovering adjacent pillars left and right from the same opening, mining shall be completed in one such pillar lift and the openings posted off with at least two rows of breaker posts on not more than 4-foot centers before operations are started in the second pillar.

§ 75.201-3 Longwall mining.

Longwall mining shall be considered as a modification of the open-end method of pillar extraction and the support system for the longwall shall be approved on an individual basis.

§ 75.202 Roof support materials.

[STATUTORY PROVISIONS]

The operator, in accordance with the approved plan, shall provide at or near each working face and at such other locations in the coal mines as the Secretary may prescribe an ample supply of suitable materials of proper size with which to secure the roof of all working places in a safe manner. Safety posts, jacks, or other approved devices shall be used to protect the workmen when roof material is being taken down, crossbars are being installed, roof bolt holes are being drilled, roof bolts are being installed, and in such other circumstances as may be appropriate. Loose roof and overhanging or loose faces and ribs shall be taken down or supported. Except in the case of recovery work, supports knocked out shall be replaced promptly.

§ 75.202-1 Adequate supply and location of roof support materials.

The operator shall have an adequate supply of roof support material (including temporary supports) as specified in the approved roof control plan for the type of mining being conducted as close as practical to the working face, but no farther away than the first open cross-

cut out by the working face unless storing of such supplies in this area poses a hazard to the miner. In such cases supplies shall be stored at an alternate location approved by an authorized representative of the Secretary. Where mining equipment such as roof drilling machines or timbering machines are required to install the supports, such support material may be transported from place to place on the equipment. An adequate supply shall be defined as sufficient material including temporary supports, to support roof exposed by one complete cycle of mining. An additional supply of supplementary roof support materials, such as posts, jacks, crossbars, or different length roof bolts, shall be available in each working section in the event adverse roof conditions, such as water coming from the roof, slips, washouts, wants, roof cracks, are encountered.

§ 75.203 Roof bolt tests.

[STATUTORY PROVISIONS]

When installation of roof bolts is permitted, such roof bolts shall be tested in accordance with the approved roof control plan.

§ 75.203-1 Testing requirements.

The criteria which may be required in the roof control plan for testing installed roof bolts are set forth in § 75.200-7 (b) (3), (ii), and (iii).

§ 75.204 Roof bolt recovery.

[STATUTORY PROVISIONS]

Roof bolts shall not be recovered where complete extractions of pillars are attempted, where adjacent to clay veins, or at the locations of other irregularities, whether natural or otherwise, that induce abnormal hazards. Where roof bolt recovery is permitted, it shall be conducted only in accordance with methods prescribed in the approved roof control plan, and shall be conducted by experienced miners and only where adequate temporary support is provided.

§ 75.204-1 Requirements for roof bolt recovery.

To assure that miners are protected during roof bolt recovery work, the operator shall conform with criteria set forth in § 75.200-14.

§ 75.205 Roof testing.

[STATUTORY PROVISIONS]

Where miners are exposed to danger from falls of roof, face, and ribs the

operator shall examine and test the roof, face, and ribs before any work or machine is started, and as frequently thereafter as may be necessary to insure safety. When dangerous conditions are found, they shall be corrected immediately.

Subpart D—Ventilation

§ 75.300 Mechanical ventilation—main fans.

[STATUTORY PROVISIONS]

All coal mines shall be ventilated by mechanical ventilation equipment installed and operated in a manner approved by an authorized representative of the Secretary and such equipment shall be examined daily and a record shall be kept of such examination.

§ 75.300-1 Criteria—For approval of main fan installation and operation.

Sections 75.300-2 through 75.300-3, inclusive, set out the criteria by which Coal Mine Safety District Managers will be guided in approving main fan installation and operation on a mine-by-mine basis. Additional measures may be required. Installation and operating practices not conforming to these criteria may be approved, providing the operator can satisfy the District Manager that the results of such practices will provide no less than the same measure of protection to the miners.

§ 75.300-2 Criteria—Installation of main fans.

(a) Main fans should be:

(1) Installed on the surface.

(2) Installed in fireproof housings and connected to the mine opening with fireproof air ducts.

(3) Equipped with a pressure-recording gage and an automatic signal device designed to give alarm should the fan slow or stop. The signal from this device should be placed so that it will be seen or heard by a responsible person who is always on duty and can hear or will observe such alarm when men are underground and who should take appropriate action immediately as prescribed in § 75.321 or § 75.300-3 (b).

(b) To protect main fans from forces coming out of the mine should an explosion occur:

(1) Main fans should be offset not less than 15 feet from the nearest side of the mine opening, and explosion doors or a weak wall having a cross-sectional area equal to or greater than the con-

nection entry should be provided in direct line with possible explosion forces, or

(2) Main fans may be installed in line with a diversion entry, slope, or shaft (fan entry) driven from the mine air courses to the surface. The surface opening of the fan entry should be no less than 15 feet nor more than 100 feet from the surface opening of the connected mine air course (pressure relief entry). The pressure relief entry opening should be provided with a weak wall or explosion doors in direct line with forces of an explosion originating underground and such weak wall or explosion doors should have a cross-sectional area equal to or greater than the pressure relief entry and cross-sectional area of the pressure relief entry should not be less than that of the fan entry. The underground intersection of the fan entry and pressure relief entry should be no less than 15 feet nor more than 100 feet from the surface opening of the pressure relief entry. The pillar of coal between the pressure relief entry and the fan entry should, regardless of coal bed height, contain not less than 2,500 square feet.

(c) Main fans may be driven either by electric motors or internal combustion engines.

(1) When electric motors are used, they should be provided with a separate power circuit independent of any other mine circuit.

(2) When an internal combustion engine is used the engine should be installed in a fireproof housing, located so as to be protected from possible fuel supply fire or explosions and the engine and exhaust should be located out of direct line with the airstream produced by the fan and be vented to the atmosphere in such a manner that the exhaust gases cannot contaminate the mine intake airstream or any enclosure.

(d) In mines ventilated by multiple force or multiple exhaust main fans, each main fan installation should be equipped with fireproof doors so designed and positioned that in event of the failure of a main fan the doors at the fan will automatically close and prevent air reversal through the fan.

(e) In mines ventilated by a combination of force and exhaust main fans, fireproof automatic closing doors should be installed so that in event of fan failure or stoppage, the doors will automatically close to prevent air reversal that would affect the safety of the miners.

(f) The area surrounding all main fans should be kept free of flammable material for at least 100 feet in all directions.

§ 75.300-3 Criteria—Operation of main fans.

(a) All main fans should be kept in continuous operation except in the event of:

(1) Scheduled maintenance or adjustments on idle days when all men other than those performing evaluation or adjustments are withdrawn from the mine and the mine power is cut off.

(2) Uncontrolled stoppage or fan failure.

(3) Other stoppages, when written permission is obtained from an authorized representative of the Secretary.

(b) If an unusual variance in the mine ventilation pressure is observed, or if an electrical or mechanical deficiency of a main fan is detected, the mine superintendent or assistant mine superintendent or mine foreman should be notified immediately and appropriate action or repairs should be instituted promptly.

(c) Airflow should be maintained in all intake and return air courses of a mine. Where multiple fans are used, neutral areas (areas without perceptible air movement) created by pressure equalization between main fans should not be permitted.

§ 75.300-4 Inspection, examinations, and records.

(a) All main fans shall be inspected daily by a person trained and designated by the operator to make such inspections to insure the electrical and mechanical reliability of such fans.

(b) The fan pressure recording gages shall be examined daily and the charts for such gages shall be changed after completing one revolution.

(c) Automatic closing doors as required in multiple fan systems shall be inspected at least once a month (intervals of not more than 31 days), to insure proper operation.

(d) Results of the inspections shall be recorded in a daily fan inspection book approved by the Secretary.

(e) Records of the daily fan inspections and the fan pressure recording gage charts shall be maintained for a minimum of 1 year and such records and charts shall be made available for inspection by interested persons.

(f) The provisions of paragraphs (b) and (e) of this section with respect to fan pressure recording gages will not be applied when a fan pressure recording gage is not required by the District Manager.

§ 75.301 Air quality, quantity, and velocity.

[STATUTORY PROVISIONS]

All active workings shall be ventilated by a current of air containing not less than 19.5 volume per centum of oxygen, not more than 0.5 volume per centum of carbon dioxide, and no harmful quantities of other noxious or poisonous gases; and the volume and velocity of the current of air shall be sufficient to dilute, render harmless, and to carry away, flammable, explosive, noxious, and harmful gases, and dust, and smoke and explosive fumes. The minimum quantity of air reaching the last open crosscut in any pair or set of developing entries and the last open crosscut in any pair or set of rooms shall be 9,000 cubic feet a minute, and the minimum quantity of air reaching the intake end of a pillar line shall be 9,000 cubic feet a minute. The minimum quantity of air in any coal mine reaching each working face shall be 3,000 cubic feet a minute. The authorized representative of the Secretary may require in any coal mine a greater quantity and velocity of air when he finds it necessary to protect the health or safety of miners. In robbing areas of anthracite mines, where the air currents cannot be controlled and measurements of the air cannot be obtained, the air shall have perceptible movement.

§ 75.301-1 Quantity of air reaching working face.

A minimum quantity of 3,000 cubic feet a minute of air shall reach each working face from which coal is being cut, mined or loaded and any other working face so designated by the District Manager, in the approved ventilation plan.

§ 75.301-2 Harmful quantities of noxious gases.

Concentrations of noxious or poisonous gases, other than carbon dioxide, shall not exceed the current threshold limit values (TLV) as specified and applied by the American Conference of Governmental Industrial Hygienists. Detectors or laboratory analysis of mine air samples shall be used to determine

the concentrations of harmful, noxious or poisonous gases.

§ 75.301-3 Locations of air measurements.

The locations at which the quantity of air shall be measured are as follows:

(a) When a single split of air is used the volume of air shall be measured at the last open crosscut in a pair or set of developing entries or the last open crosscut in any pair or set of rooms which shall be the last crosscut through the line of pillars that separates the intake and return air courses. When the split system of ventilation is used, the volume of air shall be measured in the last open crosscut through the line of pillars that separates the intake and return air courses of each split.

(b) The volume of air at the intake end of a pillar line ventilated by a single split of air, shall be measured in the intake entry furthest from the return air courses and immediately outby the first open crosscut outby the line of pillars being mined. When a split system of ventilation is used, the volume of air shall be measured inby the last intake air split point.

(c) When longwall mining is practiced the volume of air shall be measured in the intake entry or entries at the intake end of the longwall face and the longwall shall be constructed as a pillar line.

(d) The volume of air reaching each working face shall be measured at the inby end of the line brattice or other approved device.

§ 75.301-4 Velocity of air; minimum requirements.

(a) On and after March 30, 1971, except in working places using a blowing system as the primary means of face ventilation or in working places where a lower mean entry air velocity has been determined to be adequate to render harmless and carry away methane and to reduce the level of respirable dust to the lowest attainable level by the Coal Mine Safety District Manager, the minimum mean entry air velocity shall be 60 feet a minute in (1) all working places where coal is being cut, mined, or loaded from the working face with mechanical mining equipment, and (2) in any other working place designated by the Coal Mine Safety District Manager for the district in which the mine is located in which excessive amounts of respirable

dust are being generated by any type of mechanical mining equipment.

(b) (1) Except as provided in subparagraph (2) of this paragraph, and except in working places where combination face ventilation systems are employed, the mean entry air velocity of air passing through any room, entry, crosscut, pillar cut, or other working place shall be established as follows:

(i) The quantity of air, when measured at the inby end of the line brattice or other approved device, shall be determined;

(ii) The cross sectional area of the room, entry, crosscut, pillar cut, or other working place, when measured at or near the inby end of the line brattice system or other approved device, less the cross sectional area of the line brattice system or other approved device, shall be determined;

(iii) The air quantity measured in subdivision (i) of this subparagraph shall then be divided by the remaining cross sectional area as determined in subdivision (ii) of this subparagraph and the resulting quotient shall constitute the mean entry air velocity; thus:

$$\frac{1}{11} = V.$$

(2) When longwall mining is used the mean entry air velocity at the longwall face shall be determined by establishing the total intake air quantity delivered to the longwall face and dividing this quantity by the cross sectional area of the longwall place at the entrance to the longwall face.

(c) The determination of mean entry air velocity may be made either immediately before mining equipment enters a working place or during its presence in such working place and the person making such determination shall use an anemometer or other device approved by the Secretary.

§ 75.301-5 Explosive gases other than methane; maximum allowable concentrations.

Notwithstanding the provisions of § 75.301-2, for the purpose of preventing explosions from gases other than methane, the following gases shall not be allowed to accumulate in excess of the concentrations listed below:

(a) Carbon monoxide (CO)—2.5 volume per centum.

(b) Hydrogen (H₂)—80 volume per centum.

(c) Hydrogen sulfide (H₂S)—80 volume per centum.

(d) Acetylene (C₂H₂)—40 volume per centum.

(e) Propane (C₃H₈)—40 volume per centum.

(f) MAPP (methyl acetylene-propylene-propodiene)—30 volume per centum. [36 F.R. 17336, Aug. 28, 1971]

§ 75.301-6 Explosive gases other than methane; air sampling by the Secretary; general.

Air samples shall be taken periodically by an authorized representative of the Secretary in each underground coal mine, and such samples shall be analyzed to determine the concentration of explosive gases other than methane which may be present.

[36 F.R. 17336, Aug. 28, 1971]

§ 75.301-7 Explosive gases other than methane; analysis of air samples; notice of violation; control measures and additional samplings requirements.

(a) Where the analysis of air samples taken pursuant to § 75.301-6 shows that the accumulation of any explosive gas is in excess of the limit prescribed for such gas, the Secretary shall issue a written notice to the operator that he is in violation of § 75.301-5, and each such notice of violation shall specify the accumulation of explosive gas which exceeds the maximum allowable concentrations prescribed.

(b) Upon receipt of a notice of violation issued pursuant to paragraph (a) of this section, the operator shall immediately institute ventilation or other control measures in the mine so that the air shall contain less than the maximum allowable concentration of explosive gas prescribed in § 75.301-5.

(c) (1) During the first calendar month following receipt of a notice of violation, and during each calendar month thereafter, until otherwise advised in writing by the Coal Mine Health and Safety District Manager for the district in which the mine is located, the operator shall take one air sample in each area of the mine in which excessive concentrations of explosive gas were shown to be present after analyses conducted in accordance with this section.

(2) Air samples taken in accordance with subparagraph (1) of this paragraph

shall be promptly transmitted for analysis to:

Gas Analysis Services, Health and Safety Technical Support Center, Mining Enforcement and Safety Administration, 4800 Forbes Avenue, Pittsburgh, PA 15213.

(3) Air samples transmitted in accordance with the provisions of this section shall be clearly marked for identification and include a specific description of the location in the mine from which they were taken.

[36 F.R. 17336, Aug. 28, 1971]

§ 75.301-8 Potential explosion hazards; control measures; air sampling by the operator; requirements.

(a) Where explosive gases other than methane have been (1) accidentally or inadvertently released in excessive amounts, or (2) where other potential explosion hazards are known by the operator to exist in the mine due to the liberation or presence of an excessive amount of explosive gas other than methane, the operator shall immediately notify the Coal Mine Health and Safety District Manager for the district in which the mine is located of the potential explosion hazard which is present in the mine, and promptly institute ventilation or other control measures to reduce the accumulation of such gases.

(b) Where potential explosion hazards exist due to the presence of excessive amounts of explosive gas other than methane, the operator shall promptly institute an air sampling program which includes frequent periodic samples to determine the concentration of explosive gas in any area of the mine where such gases are known to be present, and he shall continue to take such samples for the entire period during which such potential explosion hazard exists.

(c) (1) Air samples taken in accordance with the provisions of paragraph (b) of this section shall be promptly transmitted for analysis to:

Gas Analysis Services, Health and Safety Technical Support Center, Mining Enforcement and Safety Administration, 4800 Forbes Avenue, Pittsburgh, PA 15213.

(2) Air samples transmitted in accordance with the provisions of this section shall be clearly marked for identification and include a specific description of the location in the mine from which they were taken.

[36 F.R. 17336, Aug. 28, 1971]

§ 75.302 Ventilation of the working face.

[STATUTORY PROVISIONS]

(a) Properly installed and adequately maintained line brattice or other approved devices shall be continuously used from the last open crosscut of an entry or room of each working section to provide adequate ventilation to the working faces for the miners and to remove flammable, explosive, and noxious gases, dust, and explosive fumes, unless the Secretary or his authorized representative permits an exception to this requirement, where such exception will not pose a hazard to the miners. When damaged by falls or otherwise, such line brattice or other devices shall be repaired immediately.

(b) The space between the line brattice or other approved device and the rib shall be large enough to permit the flow of a sufficient volume and velocity of air to keep the working face clear of flammable, explosive, and noxious gases, dust and explosive fumes.

(c) Brattice cloth used underground shall be of flame-resistant material.

§ 75.302-1 Installation of line brattice and other devices.

(a) Line brattice or any other approved device used to provide ventilation to the working face from which coal is being cut, mined or loaded and other working faces so designated by the Coal Mine Safety Manager, in the approved ventilation plan, shall be installed at a distance no greater than 10 feet from the area of deepest penetration to which any portion of the face has been advanced unless a greater distance is approved by the Coal Mine Safety District Manager of the area in which the mine is located.

(b) When line brattice is used:

(1) The space between the line brattice and the nearest rib shall be sufficiently free of any obstructions such as supplies, equipment or debris to provide for the adequate coursing of air and permit necessary passage through such space; however, this does not exclude the use of auxiliary tubing or ventilation control devices in such space.

(2) Check curtains required in conjunction with the line brattice shall be so installed to minimize air leakage and permit traffic to pass through without adversely affecting face ventilation.

§ 75.302-2 Repair of line brattice.

When the line brattice or other ventilating device is damaged to an extent that ventilation of the working face is inadequate, production activities in the working place shall cease until necessary repairs are made and adequate ventilation restored.

§ 75.302-3 Flame resistant brattice cloth and ventilation tubing.

Brattice cloth (jute or any substitute) and ventilation tubing used underground, shall be flame resistant to the extent that the flame spread index shall be 25 or less except that brattice cloth or ventilation tubing with a flame spread index of 50 or less may be used up until December 30, 1970. The flame spread index shall be determined by ASTM methods of test E-84 or E-162.

§ 75.302-4 Auxiliary fans and tubing.

In the event that auxiliary fans and tubing are used in lieu of or in conjunction with a line brattice system to provide ventilation of the working face:

(a) The fan shall be of a permissible type, maintained in permissible condition, so located and operated to avoid any recirculation of air at any time, and inspected frequently by a certified person when in use.

(1) Fans approved and maintained under Bureau of Mines Schedule 2G or 2F (Part 18 of this chapter) will meet the requirements of this section.

(2) Persons certified under Subpart B of this part will meet the requirements for this section.

(b) In places where auxiliary fans are used, accumulations of methane resulting from unscheduled stoppage of the main fan shall be removed after restoration of normal mine ventilation, by conducting the air current into the place with line brattice or the equivalent. Auxiliary fans shall not be operated in such place during stoppage of normal mine ventilation, and until methane accumulations have been removed.

(c) If the auxiliary fan is stopped or fails, the electrical equipment in the place shall be stopped and the power disconnected at the power source until ventilation in the working place is restored. During such stoppage, the ventilation shall be by means of the primary air current conducted into the place in a

manner to prevent accumulation of methane.

(d) In places where auxiliary fans are used, the ventilation during scheduled idle periods such as weekends and idle shifts, shall be by means of the primary air current conducted into the place in a manner to prevent accumulation of methane.

(e) If the air passing through the auxiliary fan or tubing contains 1.0 volume per centum or more of methane, the provisions of § 75.308 shall be applied. Should the requirements of § 75.308 necessitate deenergizing the auxiliary fan, the auxiliary fan shall not be restarted until the methane content in the affected area is less than 1.0 volume per centum and such changes or adjustments have been made to the auxiliary ventilation system as required to insure that the volume of air delivered by the auxiliary system is adequate to maintain the methane content in the auxiliary fan and tubing at less than 1.0 volume per centum.

(f) To insure that an adequate volume and velocity of air is supplied continuously to the working face where auxiliary fan and tubing are used for face ventilation, a line brattice or other approved device shall be installed in accordance with § 75.302-1 before the auxiliary fan is stopped.

(g) All face ventilation systems using auxiliary fans and tubing or machine mounted diffusers shall be approved under the provisions of § 75.316.

§ 75.303 Preshift examination.

[STATUTORY PROVISIONS]

(a) Within 3 hours immediately preceding the beginning of any shift, and before any miner in such shift enters the active workings of a coal mine, certified persons designated by the operator of the mine shall examine such workings and any other underground area of the mine designated by the Secretary or his authorized representative. Each such examiner shall examine every working section in such workings and shall make tests in each such working section for accumulations of methane with means approved by the Secretary for detecting methane, and shall make tests for oxygen deficiency with a permissible flame safety lamp or other means approved by the Secretary; examine seals and doors to determine whether they are function-

ing properly; examine and test the roof, face, and rib conditions in such working section; examine active roadways, travelways, and belt conveyors on which men are carried, approaches to abandoned areas, and accessible falls in such section for hazards; test by means of an anemometer or other device approved by the Secretary to determine whether the air in each split is traveling in its proper course and in normal volume and velocity; and examine for such other hazards and violations of the mandatory health or safety standards, as an authorized representative of the Secretary may from time to time require. Belt conveyors on which coal is carried shall be examined after each coal-producing shift has begun. Such mine examiner shall place his initials and the date and time at all places he examines. If such mine examiner finds a condition which constitutes a violation of a mandatory health or safety standard or any condition which is hazardous to persons who may enter or be in such area, he shall indicate such hazardous place by posting a "danger" sign conspicuously at all points which persons entering such hazardous place would be required to pass, and shall notify the operator of the mine. No person, other than an authorized representative of the Secretary or a State mine inspector or persons authorized by the operator to enter such place for the purpose of eliminating the hazardous condition therein, shall enter such place while such sign is so posted. Upon completing his examination, such mine examiner shall report the results of his examination to a person, designated by the operator to receive such reports at a designated station on the surface of the mine, before other persons enter the underground areas of such mine work in such shift. Each such mine examiner shall also record the results of his examination with ink or indelible pencil in a book approved by the Secretary kept for such purpose in an area on the surface of the mine chosen by the operator to minimize the danger of destruction by fire or other hazard, and the record shall be open for inspection by interested persons.

(b) No person (other than certified persons designated under this § 75.303) shall enter any underground area, except during any shift, unless an examination of such area as prescribed in this § 75.303

has been made within 8 hours immediately preceding his entrance into such area.

§ 75.303—1 Determination of course, volume, velocity of air.

To determine whether the air in each split is traveling in its proper course and in normal volume and velocity, the mine examiner shall use an anemometer or other device approved by the Secretary to measure the velocity and determine the volume of air at the following locations:

- (a) The last open crosscut of each pair or set of developing entries;
- (b) The last open crosscut of each pair or set of rooms;
- (c) The intake end of each pillar line.

§ 75.303—2 Air measurement devices; approval; applications for approval.

(a) All devices, other than anemometers, designed and constructed to test air volume or air velocity shall be approved by the Secretary only if such devices are designed and constructed so as not to cause accidents in the use of such equipment.

(b) All devices for testing air volume or air velocity which contain electrical components shall be approved for permissibility under Bureau of Mines Schedule 2G (Part 18 of this chapter).

(c) Applications for approval of air measurement devices other than anemometers may be submitted to the Mining Enforcement and Safety Administration, Approval and Testing, 4800 Forbes Avenue, Pittsburgh, Pa. 15213.

§ 75.304 On-shift examinations for hazardous conditions.

[STATUTORY PROVISIONS]

At least once during each coal-producing shift, or more often if necessary for safety, each working section shall be examined for hazardous conditions by certified persons designated by the operator to do so. Any such conditions shall be corrected immediately. If such condition creates an imminent danger, the operator shall withdraw all persons from the area affected by such conditions to a safe area, except those persons referred to in section 104(d) of the Act, until the danger is abated. Such examination shall include tests for methane with a means approved by the Secretary for detecting methane and for oxygen deficiency with a permissible flame safety

lamp or other means approved by the Secretary.

§ 75.304-1 Coal-producing shift.

The term "coal-producing shift" means any shift during which one or more of the following operations are performed: Cutting, blasting, or loading of coal, or the hauling of coal from the face areas, regardless of whether the coal is dumped at a tippie.

§ 75.304-2 Examination of working sections.

Working sections to be examined for hazardous conditions by a certified person under § 75.304 are those working sections in which work is performed in a coal producing shift.

§ 75.304-3 Tests for methane.

Additional tests to determine the methane content in the air in all working sections may be required by the Coal Mine Safety District Manager if necessary for safety and a record shall be kept of all tests. Until December 31, 1970, a permissible flame safety lamp may be used to make tests for methane required by the regulations in this part. On and after December 31, 1970, a methane detector approved by the Secretary shall be used for such tests and a permissible flame safety lamp may be used as a supplementary testing device.

§ 75.305 Weekly examinations for hazardous conditions.

[STATUTORY PROVISIONS]

In addition to the preshift and daily examinations required by this Subpart D, examinations for hazardous conditions, including tests for methane, and for compliance with the mandatory health or safety standards, shall be made at least once each week by a certified person designated by the operator in the return of each split of air where it enters the main return, on pillar falls, at seals, in the main return, at least one entry of each intake and return aircourse in its entirety, idle workings, and, insofar as safety considerations permit, abandoned areas. Such weekly examinations need not be made during any week in which the mine is idle for the entire week, except that such examination shall be made before any other miner returns to the mine. The person making such examinations and tests shall place his initials and the date and time at the places examined, and if any hazardous

condition is found, such condition shall be reported to the operator promptly. Any hazardous condition shall be corrected immediately. If such condition creates an imminent danger, the operator shall withdraw all persons from the area affected by such condition to a safe area, except those persons referred to in section 104(d) of the Act, until such danger is abated. A record of these examinations, tests, and actions taken shall be recorded in ink or indelible pencil in a book approved by the Secretary kept for such purpose in an area on the surface of the mine chosen by the mine operator to minimize the danger of destruction by fire or other hazard, and the record shall be open for inspection by interested persons.

§ 75.305-1 Intervals of examination.

Examinations as required by § 75.305 shall be made at least once each week and the phrase "once each week" shall mean at intervals not exceeding 7 days rather than at any time during each calendar week.

§ 75.305-2 Tests for methane.

Until December 31, 1970, a permissible flame safety lamp may be used to make tests for methane required by the regulations in this part. On and after December 31, 1970, a methane detector approved by the Secretary shall be used for such tests and a permissible flame safety lamp may be used as a supplementary testing device.

§ 75.306 Weekly ventilation examinations.

[STATUTORY PROVISIONS]

At least once each week, a qualified person shall measure the volume of air entering the main intakes and leaving the main returns, the volume passing through the last open crosscut in any pair or set of developing entries and the last open crosscut in any pair or set of rooms, the volume and, when the Secretary so prescribes, the velocity reaching each working face, the volume being delivered to the intake end of each pillar line, and the volume at the intake and return of each split of air. A record of such measurements shall be recorded in ink or indelible pencil in a book approved by the Secretary kept for such purpose in an area on the surface of the coal mine chosen by the operator to minimize the danger of destruction by fire or other

hazard, and the record shall be open for inspection by interested persons.

§ 75.306-1 Qualified person.

The air measurements required by § 75.306 shall be made by a qualified person as defined in § 75.152, using an anemometer or other device approved by the Secretary.

§ 75.306-2 Intervals of examinations.

The phrase "once each week" shall mean at intervals not exceeding 7 days rather than at any time during each calendar week.

§ 75.307 Methane examinations.

[STATUTORY PROVISIONS]

At the start of each shift, tests for methane shall be made at each working place immediately before electrically operated equipment is energized. Such tests shall be made by qualified persons. If 1.0 volume per centum or more of methane is detected, electrical equipment shall not be energized, taken into, or operated in, such working place until the air therein contains less than 1.0 volume per centum of methane. Examinations for methane shall be made during the operation of such equipment at intervals of not more than 20 minutes during each shift, unless more frequent examinations are required by an authorized representative of the Secretary. In conducting such tests, such person shall use means approved by the Secretary for detecting methane.

§ 75.307-1 Methane examinations at face.

An examination for methane shall be made at the face of each working place during each shift and immediately prior to the entry of such electrical equipment into any working place. Until December 31, 1970, a permissible flame safety lamp may be used to make tests for methane required by the regulations in this part. On and after December 31, 1970, a methane detector approved by the Secretary shall be used for such tests and a permissible flame safety lamp may be used as a supplementary testing device.

§ 75.308 Methane accumulations in face areas.

[STATUTORY PROVISIONS]

If at any time the air at any working place, when tested at a point not less than 12 inches from the roof, face, or rib, contains 1.0 volume per centum or

more of methane, changes or adjustments shall be made at once in the ventilation in such mine so that such air shall contain less than 1.0 volume per centum of methane. While such changes or adjustments are underway and until they have been achieved, power to electric face equipment located in such place shall be cut off, no other work shall be permitted in such place, and due precautions shall be carried out under the direction of the operator or his agent so as not to endanger other areas of the mine. If at any time such air contains 1.5 volume per centum or more of methane, all persons, except those referred to in section 104(d) of the Act, shall be withdrawn from the area of the mine endangered thereby to a safe area, and all electric power shall be cut off from the endangered area of the mine, until the air in such working place shall contain less than 1.0 volume per centum of methane.

§ 75.308-1 Changes or adjustments in ventilation.

The "changes or adjustments" which shall be made in the ventilation means increasing the quantity or improving the distribution of air in the affected working place to the extent sufficient to reduce and maintain the methane content less than 1.0 volume per centum when operations are resumed.

§ 75.308-2 Tests for methane.

Until December 31, 1970, a permissible flame safety lamp may be used to make tests for methane required by the regulations in this part. On and after December 31, 1970, a methane detector approved by the Secretary shall be used for such tests and a permissible flame safety lamp may be used as a supplementary testing device.

§ 75.309 Return air; tests and adjustments.

[STATUTORY PROVISIONS]

(a) If, when tested, a split of air returning from any working section contains 1.0 volume per centum or more of methane, changes or adjustments shall be made at once in the ventilation in the mine so that such returning air shall contain less than 1.0 volume per centum of methane. Tests under this § 75.309 shall be made at 4-hour intervals during each shift by a qualified person designated by the operator of the mine. In making such tests, such

person shall use means approved by the Secretary for detecting methane.

(b) If, when tested, a split of air returning from any working section contains 1.5 volume per centum or more of methane, all persons except those persons referred to in section 104(d) of the Act, shall be withdrawn from the area of the mine endangered thereby to a safe area and all electric power shall be cut off from the endangered area of the mine, until the air in such split shall contain less than 1.0 volume per centum of methane.

§ 75.309-1 Tests for methane.

Until December 31, 1970, a permissible flame safety lamp may be used to make tests for methane as required by the regulations in this part. On and after December 31, 1970, a methane detector approved by the Secretary shall be used for such tests and a permissible flame safety lamp may be used as a supplementary testing device.

§ 75.309-2 Location of methane test.

The methane content in a split of air returning from any working section shall be measured at such point or points where methane may be present in the air current in such split between the last working place of the working section ventilated by the split and the junction of such split with another airsplit or the location at which such split is used to ventilate seals or abandoned areas. Tests to determine the methane content of such split shall be made at a point not less than 12 inches from the roof or ribs.

§ 75.309-3 Changes or adjustments in ventilation.

The "changes or adjustments" which shall be made in the ventilation means increasing the quantity of air in the affected split or improving the distribution of air in the working section to the extent that the methane content in the affected split is reduced and maintained less than 1.0 volume per centum.

§ 75.309-4 Record of tests.

The results of such tests shall be recorded in the daily record book located on the surface.

§ 75.310 Methane in virgin territory.

[STATUTORY PROVISIONS]

In virgin territory, if the quantity of air in a split ventilating the active work-

ings in such territory equals or exceeds twice the minimum volume of air prescribed in § 75.301 for the last open cross-cut, if the air in the split returning from such workings does not pass over trolley wires or trolley feeder wires, and if a certified person designated by the operator is continually testing the methane content of the air in such split during mining operations in such workings, it shall be necessary to withdraw all persons, except those referred to in section 104(d) of the Act, from the area of the mine endangered thereby to a safe area and all electric power shall be cut off from the endangered area only when the air returning from such workings contains 2.0 volume per centum or more of methane.

§ 75.310-1 Virgin territory.

The term "virgin territory" means that area of a mine that is being penetrated for the first time, is not surrounded on all sides by previous mining, and is of such extent that there has not been sufficient mining to reduce the amount of methane liberated during the extraction process.

§ 75.310-2 Tests for methane.

Until December 31, 1970, a permissible flame safety lamp may be used to make tests for methane required by the regulations in this part. On and after December 31, 1970, a methane detector approved by the Secretary shall be used for such tests and a permissible flame safety lamp may be used as a supplementary testing device.

§ 75.310-3 Location of methane tests.

The methane content in a split of air returning from any active workings of a mine shall be measured at such point or points where methane may be present in the air current in such split between the last working place ventilated by the split and the junction of such split with another air split or at a point where such split is used to ventilate seals or abandoned areas. Tests to determine the methane content of such split shall be made at a point not less than 12 inches from the roof or ribs.

§ 75.311 Air passing opening of abandoned areas.

[STATUTORY PROVISIONS]

Air which has passed by an opening of any abandoned area shall not be used to ventilate any working place in the coal

mine if such air contains 0.25 volume per centum or more of methane. Examinations of such air shall be made during the preshift examination required by § 75.303. In making such tests, a certified person designated by the operator shall use means approved by the Secretary for detecting methane. For the purposes of this § 75.311, an area within a panel shall not be deemed to be abandoned until such panel is abandoned.

§ 75.311—1 Approved means for detecting methane.

Tests to determine whether the air contains 0.25 volume per centum or more methane, shall be made with a methane detector approved by the Secretary.

§ 75.312 Air passing through abandoned, inaccessible, or robbed area.

[STATUTORY PROVISIONS]

Air that has passed through an abandoned area or an area which is inaccessible or unsafe for inspection shall not be used to ventilate any working place in any mine. No air which has been used to ventilate an area from which the pillars have been removed shall be used to ventilate any working place in a mine, except that such air, if it does not contain 0.25 volume per centum or more of methane, may be used to ventilate enough advancing working places immediately adjacent to the line of retreat to maintain an orderly sequence of pillar recovery on a set of entries.

§ 75.312—1 Pillared areas.

The phrase "an area from which the pillars have been removed" includes the area where second mining has been done regardless of the amount of recovery obtained. Second mining is construed to be intentional retreat mining.

§ 75.312—2 Tests for methane.

Tests to determine whether the air contains 0.25 volume per centum or more methane shall be made with a methane detector approved by the Secretary, and such test shall be made in the intake air current at a point between the area from which pillars have been removed and the adjacent working places.

§ 75.313 Methane monitor.

[STATUTORY PROVISIONS]

The Secretary or his authorized representative shall require, as an additional device for detecting concentra-

tions of methane, that a methane monitor, approved as reliable by the Secretary after March 30, 1970, be installed, when available, on any electric face cutting equipment, continuous miner, longwall face equipment, and loading machine, except that no monitor shall be required to be installed on any such equipment prior to the date on which such equipment is required to be permissible under §§ 75.500, 75.501, and 75.504. When installed on any such equipment, such monitor shall be kept operative and properly maintained and frequently tested as prescribed by the Secretary. The sensing device of such monitor shall be installed as close to the working face as practicable. Such monitor shall be set to deenergize automatically such equipment when such monitor is not operating properly and to give a warning automatically when the concentration of methane reaches a maximum percentage determined by an authorized representative of the Secretary which shall not be more than 1.0 volume per centum of methane. An authorized representative of the Secretary shall require such monitor to deenergize automatically equipment on which it is installed when the concentration of methane reaches a maximum percentage determined by such representative which shall not be more than 2.0 volume per centum of methane.

§ 75.313—1 Methane monitors, maintenance.

The operator of any mine in which methane monitors are installed on any equipment shall establish and adopt a definite maintenance program designed to keep such monitors operative and a written description of such program shall be available for inspection. At least once each month the methane monitors shall be checked for operating accuracy with a known methane-air mixture and shall be calibrated as necessary. A record of calibration tests shall be kept in a book approved by the Secretary.

§ 75.314 Inspection of idle and abandoned areas.

[STATUTORY PROVISIONS]

Idle and abandoned areas shall be inspected for methane and for oxygen deficiency and other dangerous conditions by a certified person with means approved by the Secretary as soon as possible but not more than 3 hours before other persons are permitted to enter or

work in such areas. Persons, such as pumpmen, who are required regularly to enter such areas in the performance of their duties, and who are trained and qualified in the use of means approved by the Secretary for detecting methane and in the use of a permissible flame safety lamp or other means approved by the Secretary for detecting oxygen deficiency are authorized to make such examinations for themselves, and each such person shall be properly equipped and shall make such examinations upon entering any such area.

§ 75.314-1 Test for methane.

Until December 31, 1970, a permissible flame safety lamp may be used to make tests for methane required by the regulations in this part. On and after December 31, 1970, a methane detector approved by the Secretary shall be used for such tests and a permissible flame safety lamp may be used as a supplemental testing device.

§ 75.315 Examinations before intentional roof fall.

[STATUTORY PROVISIONS]

Immediately before an intentional roof fall is made, pillar workings shall be examined by a qualified person designated by the operator to ascertain whether methane is present. Such person shall use means approved by the Secretary for detecting methane. If in such examination, methane is found in amounts of 1.0 volume per centum or more, such roof fall shall not be made until changes or adjustments are made in the ventilation so that the air shall contain less than 1.0 volume per centum of methane.

§ 75.315-1 Test for methane.

Until December 31, 1970, a permissible flame safety lamp may be used to make tests for methane required by the regulations in this part. On and after December 31, 1970, a methane detector approved by the Secretary shall be used for such tests and a permissible flame safety lamp may be used as a supplemental testing device.

§ 75.316 Ventilation system and methane and dust control plan.

[STATUTORY PROVISIONS]

A ventilation system and methane and dust control plan and revisions thereof suitable to the conditions and the mining

system of the coal mine and approved by the Secretary shall be adopted by the operator and set out in printed form on or before June 28, 1970. The plan shall show the type and location of mechanical ventilation equipment installed and operated in the mine, such additional or improved equipment as the Secretary may require, the quantity and velocity of air reaching each working face, and such other information as the Secretary may require. Such plan shall be reviewed by the operator and the Secretary at least every 6 months.

§ 75.316-1 Information to be submitted by operator.

The operator shall submit to the Coal Mine Safety District Manager in whose district such mine is located, the following:

(a) An accurate up-to-date map of the coal mine at a scale of not more than 500 feet to the inch and supporting data which shall include:

(1) The limits of the mine property including all known underground workings bordering the mine above and below and on adjacent properties.

(2) The location of all oil and gas wells.

(3) The location of all surface installed fans, type of fan, manufacturer's name, size of fan, and complete current operating specifications.

(4) Location of all surface mine openings.

(5) Any abnormal conditions or reservations, such as faults which may affect mine ventilation system design.

(6) Projections of anticipated mine development for at least 1 year.

(7) Direction and volume of air at each surface mine opening.

(8) All underground workings with the active working sections delineated.

(9) Location of all stoppings, overcasts, undercasts, regulators, seals, and ventilating and man doors.

(10) The volume of air entering and leaving each split, passing through the last open crosscut in each set of entries and rooms, at the intake end of each pillar line, and at each working face.

(11) The velocity of the air current, when such velocity is required at each working face, in all conveyor belt haulage entries, where trolley haulage systems are maintained, and where trolley wires and trolley feeder wires are installed.

(12) Average entry height in conveyor belt and trolley haulage systems.

(13) Areas which have been abandoned and areas from which pillars have been wholly or partially removed.

(b) A ventilation system and methane and dust control plan which shall show in detail:

(1) The methane and dust control practices along all haulageways and travelways, at all transfer points, at underground crushers and dumps, in all active working places and in such other areas as may be required by such District Manager.

(2) All face ventilation systems used and drawings illustrating system use, anticipated air quantities and velocities in the working place and the use and application of the system under all anticipated mining conditions.

(3) When auxiliary face ventilation systems are used, a detailed plan of such system including equipment specifications, fan capacity, method of application, and methods to be used for maintaining continuous airflow to the working face in event of auxiliary equipment failure.

(4) The bleeder entry system, when such system is used including:

(i) Methods for maintaining the bleeder entries free of obstructions such as roof falls and standing water.

(ii) Ventilating devices such as regulators, stoppings and bleeder connectors used to control air movement through the gob bleeder entries.

§ 75.316-2 Criteria for approval of ventilation system and methane and dust control plan.

This section sets out the criteria by which District Managers will be guided in approving a ventilation system and dust control plan on a mine-by-mine basis. Additional measures may be required. A ventilation system and dust control plan not conforming to these criteria may be approved, providing the operator can satisfy the District Manager that the results of such ventilation system and dust control plan will provide no less than the same measure of protection to the miners.

(a) In mines using multiple main fans, the ventilation system should be so arranged that no adverse air reversal will occur, should failure or stoppage of any main fan or fans occur.

(b) Permanent stoppings, overcasts, undercasts, and shaft partitions should be constructed of substantial, incombustible material, such as concrete, con-

crete blocks, cinder block, brick or tile, or some other incombustible material having sufficient strength to serve the purpose for which the stopping or partition is intended. In heavy or caving areas, timbers laid longitudinally "skin to skin" may be used. Such permanent stoppings should be erected between the intake and return aircourses in entries and should be maintained to and including the third connecting crosscut outby the faces of the entries. Permanent stoppings should be used to separate belt haulage entries from entries used as intake and return aircourses.

(c) A crosscut should be provided at or near the face of each entry or room before the place is abandoned.

(d) The methane content in any return aircourse other than an aircourse returning the split of air from a working section (as provided in §§ 75.309 and 75.310) should not exceed 2.0 volume per centum. The methane content in the air in active workings shall be less than 1.0 volume per centum. If, at any time, the air in any active working contains 1.0 volume per centum or more of methane, changes or adjustments shall be made at once in the ventilation in the mine so that air shall contain less than 1.0 volume per centum of methane.

(e) Bleeder entries, bleeder systems, or equivalent means should be used in all active pillaring areas to ventilate the mined areas from which the pillars have been wholly or partially extracted, so as to control the methane content in such areas. Bleeder entries or bleeder systems established after June 28, 1970, should conform with the requirements of this § 75.316-2.

(1) Bleeder entries shall be defined as special aircourses developed and maintained as part of the mine ventilation system and designed to continuously move air-methane mixtures from the gob, away from active workings and deliver such mixtures to the mine return aircourses. Bleeder entries should be connected to those areas from which pillars have been wholly or partially extracted at strategic locations in such a way to control airflow through such gob area, to induce drainage of gob gas from all portions of such gob areas and to minimize the hazard from expansion of gob gases due to atmospheric pressure change.

(2) Bleeder systems shall include any combination of bleeder entries, bleeder entry connections to any area from

which pillars are wholly or partially extracted and all associated ventilation control devices. Such systems should extend from active pillar line of such gob to the intersection of that bleeder split with any other split of air, and shall not include active workings.

(f) (1) Bleeder entries developed after June 28, 1970, should be adequately maintained and free of water to permit safe travel or, if such bleeder entries cannot be traveled without exposing the mine examiner to undue hazard, such bleeder system should be designed and maintained so that bleeder entry performance can be evaluated for adequacy and continuity by a means approved by the Coal Mine Safety District Manager.

(2) When the mine operator deems that safe examination can be made such examination should be made at least once each week by a certified person designated by the operator to do so and the results of such examinations shall be recorded in a book as prescribed in § 75.305. The certified person shall place his initials, the time and the date at as many locations in the bleeder entries as are necessary to indicate that the entire length has been examined.

(3) When bleeder entry travel is considered unsafe the evaluation of bleeder entry performance should be adequate to indicate that the bleeder system is functioning as specified in § 75.318-3

(e) (1) and shall be made at least once each week by a certified person or persons and the results shall be recorded in a book as prescribed in § 75.305. To protect the safety of the miners when bleeder entry performance evaluation requires altering the normal airflow through the affected area, such evaluation should be made during idle shifts with power cut off from the affected area. Due precaution should be taken so as not to endanger any other area of the mine and suitable examinations for methane should be made at the edges of the pillar and such other places as may be required.

(g) The ventilation pressure differential between the active pillar line and the junction of any bleeder connection to the bleeder entries of such system should at all times be adequate to insure gob gas drainage to the bleeder entries. The pressure differential shall be considered adequate when perceptible air-flow exists in all open or regulated bleeder connections, as determined with chemical smoke or other approved means.

(h) The methane content of the air current in the bleeder split at the point where such split enters any other air split should not exceed 2.0 volume per centum.

(i) When the return aircourses from all or part of the bleeder entries of a gob area and air other than that used to ventilate the gob area is passing through the return aircourses, the bleeder connectors between the return air courses and the gob shall be considered as bleeder entries and the concentration of methane should not exceed 2.0 volume per centum at the intersection of the bleeder connectors and the return aircourses.

§ 75.317 Maintenance of detecting devices.

[STATUTORY PROVISIONS]

Each operator shall provide for the proper maintenance and care of the permissible flame safety lamp or any other approved device for detecting methane and oxygen deficiency by a person trained in such maintenance, and, before each shift, care shall be taken to insure that such lamp or other device is in a permissible condition.

§ 75.318 Pillar recovery without bleeder system.

[STATUTORY PROVISIONS]

Where areas are being pillared on March 30, 1970, without bleeder entries, or without bleeder systems or any equivalent means, pillar recovery may be completed in the area, to the extent approved by an authorized representative of the Secretary, if the edges of pillar lines adjacent to active workings are ventilated with sufficient air to keep the air in open areas along the pillar lines below 1.0 volume per centum of methane.

§ 75.319 Ventilation of mechanized mining sections.

[STATUTORY PROVISIONS]

Each mechanized mining section shall be ventilated with a separate split of intake air directed by overcasts, undercasts, or the equivalent, except an extension of time, not in excess of 9 months, may be permitted by the Secretary, under such conditions as he may prescribe, whenever he determines that this subsection cannot be complied with on March 30, 1970.

§ 75.319-1 Mechanized mining section.

The term "mechanized mining section" means an area of a mine in which coal is mined with one set of production equipment, characterized in a conventional mining section by a single loading machine, or in a continuous mining section by a single continuous mining machine, and which is comprised of a number of contiguous working places. Specialized mining sections, such as longwall mining sections, which utilize equipment other than specified in this section, may, if approved by the Coal Mine Safety District Manager, be ventilated by a single split of air.

§ 75.320 Examination for methane before blasting.**[STATUTORY PROVISIONS]**

In all underground areas of a coal mine, immediately before firing each shot or group of multiple shots and after blasting is completed, examinations for methane shall be made by a qualified person with means approved by the Secretary for detecting methane. If methane is found in amounts of 1.0 volume per centum or more, changes or adjustments shall be made at once in the ventilation so that the air shall contain less than 1.0 volume per centum of methane. No shots shall be fired until the air contains less than 1.0 volume per centum of methane.

§ 75.321 Stoppage of fans, plans.**[STATUTORY PROVISIONS]**

Each operator shall adopt a plan on or before May 29, 1970, which shall provide that when any mine fan stops, immediate action shall be taken by the operator or his agent (a) to withdraw all persons from the working sections, (b) to cut off the power in the mine in a timely manner, (c) to provide for restoration of power and resumption of work if ventilation is restored within a reasonable period as set forth in the plan after the working places and other active workings where methane is likely to accumulate are reexamined by a certified person to determine if methane in amounts of 1.0 volume per centum or more exists therein, and (d) to provide for withdrawal of all persons from the mine if ventilation cannot be restored within such reasonable time. The plan and revisions thereof approved by the Secretary shall be set out in printed form and a copy shall be furnished

to the Secretary or his authorized representative.

§ 75.321-1 Reasonable period.

Unless a different period of time is approved by the Coal Mine Safety District Manager, "reasonable period" referred to in § 75.321 means a time lapse of not more than 15 minutes.

§ 75.322 Change in ventilation.**[STATUTORY PROVISIONS]**

Changes in ventilation which materially affect the main air current or any split thereof and which may affect the safety of persons in the coal mine shall be made only when the mine is idle. Only those persons engaged in making such changes shall be permitted in the mine during the change. Power shall be removed from the areas affected by the change before work starts to make the change and shall not be restored until the effect of the change has been ascertained and the affected areas determined to be safe by a certified person.

§ 75.323 Countersigning of reports.**[STATUTORY PROVISIONS]**

The mine foreman shall read and countersign promptly the daily reports of the preshift examiner and assistant mine foreman, and he shall read and countersign promptly the weekly report covering the examinations for hazardous conditions. Where such reports disclose hazardous conditions, they shall be corrected promptly. If such conditions create an imminent danger, the operator shall withdraw all persons from, or prevent any person from entering, as the case may be, the area affected by such conditions, except those persons referred to in section 104(d) of the Act, until such danger is abated. The mine superintendent or assistant superintendent of the mine shall also read and countersign the daily and weekly reports of such persons.

§ 75.324 Reports by mine foremen.**[STATUTORY PROVISIONS]**

Each day, the mine foreman and each of his assistants shall enter plainly and sign with ink or indelible pencil in a book approved by the Secretary provided for that purpose a report of the condition of the mine or portion thereof under his supervision, which report shall state clearly the location and nature of any hazardous condition observed by him or

reported to him during the day and what action was taken to remedy such condition. Such book shall be kept in an area on the surface of the mine chosen by the operator to minimize the danger of destruction by fire or other hazard, and shall be open for inspection by interested persons.

§ 75.325 Reopening mines.

[STATUTORY PROVISIONS]

Before a coal mine is reopened after having been abandoned or declared inactive by the operator, the Secretary shall be notified, and an inspection shall be made of the entire mine by an authorized representative of the Secretary before mining operations commence.

§ 75.326 Aircourses and belt haulage entries.

[STATUTORY PROVISIONS]

In any coal mine opened after March 30, 1970, the entries used as intake and return air courses shall be separated from belt haulage entries, and each operator of such mine shall limit the velocity of the air coursed through belt haulage entries to the amount necessary to provide an adequate supply of oxygen in such entries, and to insure that the air therein shall contain less than 1.0 volume per centum of methane, and such air shall not be used to ventilate active working places. Whenever an authorized representative of the Secretary finds, in the case of any coal mine opened on or prior to March 30, 1970, which has been developed with more than two entries, that the conditions in the entries, other than belt haulage entries, are such as to permit adequately the coursing of intake or return air through such entries, (a) the belt haulage entries shall not be used to ventilate, unless such entries are necessary to ventilate, active working places, and (b) when the belt haulage entries are not necessary to ventilate the active working places, the operator of such mine shall limit the velocity of the air coursed through the belt haulage entries to the amount necessary to provide an adequate supply of oxygen in such entries, and to insure that the air therein shall contain less than 1.0 volume per centum of methane.

§ 75.327 Aircourses and trolley haulage systems.

[STATUTORY PROVISIONS]

In any coal mine opened on or after March 30, 1970, or, in the case of a coal

mine opened prior to such date, in any new working section of such mine, where trolley haulage systems are maintained and where trolley wires or trolley feeder wires are installed, an authorized representative of the Secretary shall require a sufficient number of entries or rooms as intake aircourses in order to limit, as prescribed by the Secretary, the velocity of air currents on such haulageways for the purpose of minimizing the hazards associated with fires and dust explosions in such haulageways.

§ 75.327-1 Velocity of air.

Unless a higher velocity is approved by the Coal Mine Safety District Manager, the velocity of the air current in the trolley haulage entries shall be limited to not more than 250 feet a minute. A higher air velocity may be required to limit the methane content in such haulage entries or elsewhere in the mines to less than 1.0 per centum and provide an adequate supply of oxygen.

§ 75.328 Ventilation during pillar extraction.

[STATUTORY PROVISION]

While pillars are being extracted in any area of a coal mine, such area shall be ventilated in the manner prescribed by this Subpart D "Ventilation."

§ 75.329 Bleeder systems.

[STATUTORY PROVISION]

On or before December 30, 1970, all areas from which pillars have been wholly or partially extracted and abandoned areas, as determined by the Secretary or his authorized representative, shall be ventilated by bleeder entries or by bleeder systems or equivalent means, or be sealed, as determined by the Secretary or his authorized representative. When ventilation of such areas is required, such ventilation shall be maintained so as continuously to dilute, render harmless, and carry away methane and other explosive gases within such areas and to protect the active workings of the mine from the hazards of such methane and other explosive gases. Air coursed through underground areas from which pillars have been wholly or partially extracted which enters another split of air shall not contain more than 2.0 volume per centum of methane, when tested at the point it enters such other split. When sealing is required, such seals shall be made in an approved man-

ner so as to isolate with explosion-proof bulkheads such areas from the active workings of the mine.

§ 75.329-1 Sealing or ventilation of pilared or abandoned area.

(a) All areas of a coal mine from which the pillars have been wholly or partially extracted and abandoned areas shall be ventilated or sealed by December 30, 1970. For those coal mines in which ventilation can be maintained so as to continuously dilute, render harmless and carry away methane and other explosive gases within such areas and to protect the active workings of the mine from hazards of such methane and other explosive gases, the operator shall request permission from the Coal Mine Safety District Manager in whose district the mine is located to ventilate such areas.

(b) The request for permission to ventilate such areas must be submitted in time to allow consideration of the request, to obtain approval, and to permit the operator to install the ventilation system, or to install seals in the event the request to ventilate is denied, on or before December 30, 1970.

(c) The determination of whether ventilation will be permitted will be made after taking into consideration the history of methane and other explosive gases in the mine, the size of the gob or abandoned areas, and if the areas can be ventilated adequately.

(d) To be considered for approval the request shall contain the following information provided by the mine operator.

- (1) Name of mine and company.
- (2) Location of mine (town, county, State).
- (3) Operator's name and address.
- (4) Date of application.
- (5) A detailed history of the methane content determined throughout the mine and when available, the volume of air in which such methane determinations were made, to support the operator's application to ventilate.

(e) A description of the method by which the areas from which the pillars have been wholly or partially extracted and abandoned areas shall be ventilated and such maps and drawings as may be required to illustrate such method and to indicate existing or proposed air volumes used to ventilate such areas.

(f) The signature and title of the person who submits the application for the operator.

§ 75.329-2 Construction of seals or bulkheads.

Pending the development and publication of definitive specifications for explosion-proof seals or bulkheads, such seals or bulkheads may be constructed of solid, substantial, and incombustible materials such as concrete, brick, cinder block, or tile, or the equivalent, sufficient to prevent an explosion which may occur in the atmosphere on one side of the seal or bulkhead from propagating to the atmosphere on the other side; provided, however, that upon publication of definitive specifications, all such seals or bulkheads, including those in place at the time of such publication, shall be required to meet or exceed those specifications.

§ 75.330 Sealing abandoned sections.

[STATUTORY PROVISIONS]

In the case of mines opened on or after March 30, 1970, or in the case of working sections opened on or after such date in mines open prior to such date, the mining system shall be designed in accordance with a plan and revisions thereof approved by the Secretary and adopted by such operator so that, as each working section of the mine is abandoned, it can be isolated from the active workings of the mine with explosion-proof seals or bulkheads.

§ 75.330-1 Plan for sealing abandoned sections.

For approval the plan for isolating each set of cross entries, room entries, or panel entries shall include the following:

(a) A mine map at a scale not more than 500 feet to the inch which is sufficiently detailed to illustrate the mining system employed, depth of cover and dimensions of barrier pillars left in place bordering such areas, the proximity of all active workings, and the proposed location and sequence of construction of all necessary mine seals required, when mining is completed in a mining area. Such map shall illustrate the location of such mine seals as may be required should mining conditions necessitate abandonment of a mining area prior to the scheduled completion date.

(b) A detailed drawing or drawings of proposed explosion-proof seal construction which shall meet the requirements of § 75.329-2. Such drawings shall show

the pillars in which the seals will be erected and such pillars shall be of sufficient size and number to protect the seals.

Subpart E—Combustible Materials and Rock Dusting

§ 75.400 Accumulation of combustible materials.

[STATUTORY PROVISION]

Coal dust, including float coal dust deposited on rock-dusted surfaces, loose coal, and other combustible materials, shall be cleaned up and not be permitted to accumulate in active workings, or on electric equipment therein.

§ 75.400-1 Definitions.

(a) The term "coal dust" means particles of coal that can pass a No. 20 sieve.

(b) The term "float coal dust" means the coal dust consisting of particles of coal that can pass a No. 200 sieve.

(c) The term "loose coal" means coal fragments larger in size than coal dust.

§ 75.400-2 Cleanup program.

A program for regular cleanup and removal of accumulations of coal and float coal dusts, loose coal, and other combustibles shall be established and maintained. Such program shall be available to the Secretary or authorized representative.

§ 75.401 Abatement of dust; water or water with a wetting agent.

[STATUTORY PROVISION]

Where underground mining operations in active workings create or raise excessive amounts of dust, water or water with a wetting agent added to it, or other no less effective methods approved by the Secretary or his authorized representative, shall be used to abate such dust. In working places, particularly in distances less than 40 feet from the face, water, with or without a wetting agent, or other no less effective methods approved by the Secretary or his authorized representative, shall be applied to coal dust on the ribs, roof, and floor to reduce dispersibility and to minimize the explosion hazard.

§ 75.401-1 Excessive amounts of dust.

The term "excessive amounts of dust" means coal and float coal dust in the air in such amounts as to create the potential of an explosion hazard.

§ 75.402 Rock dusting.

[STATUTORY PROVISION]

All underground areas of a coal mine, except those areas in which the dust is too wet or too high in incombustible content to propagate an explosion, shall be rock dusted to within 40 feet of all working faces, unless such areas are inaccessible or unsafe to enter or unless the Secretary or his authorized representative permits an exception upon his finding that such exception will not pose a hazard to the miners. All crosscuts that are less than 40 feet from a working face shall also be rock dusted.

§ 75.402-1 Definition.

The term "too wet" means that sufficient natural moisture is retained by the dust that when a ball of finely divided material is squeezed in the hands water is exuded.

§ 75.402-2 Exceptions.

Exceptions granted under § 75.402 by the Secretary or his authorized representative shall be reviewed periodically.

§ 75.403 Maintenance of incombustible content of rock dust.

[STATUTORY PROVISION]

Where rock dust is required to be applied, it shall be distributed upon the top, floor, and sides of all underground areas of a coal mine and maintained in such quantities that the incombustible content of the combined coal dust, rock dust, and other dust shall be not less than 65 per centum, but the incombustible content in the return aircourses shall be no less than 80 per centum. Where methane is present in any ventilating current, the per centum of incombustible content of such combined dusts shall be increased 1.0 and 0.4 per centum for each 0.1 per centum of methane where 65 and 80 per centum, respectively, of incombustibles are required.

§ 75.403-1 Incombustible content.

Moisture contained in the combined coal dust, rock dust and other dusts shall be considered as a part of the incombustible content of such mixture.

§ 75.404 Exemption of anthracite mines.

[STATUTORY PROVISION]

Sections 75.401, 75.402, and 75.403 shall not apply to underground anthracite mines.

**Subpart F—Electrical Equipment—
General**

§ 75.500 Permissible electric equipment.

[STATUTORY PROVISION]

On and after March 30, 1971:

(a) All junction or distribution boxes used for making multiple power connections inby the last open crosscut shall be permissible;

(b) All handheld electric drills, blower and exhaust fans, electric pumps, and such other low horsepower electric face equipment as the Secretary may designate on or before May 30, 1970, which are taken into or used inby the last open crosscut of any coal mine shall be permissible;

(c) All electric face equipment which is taken into or used inby the last open crosscut of any coal mine classified under any provision of law as gassy prior to March 30, 1970, shall be permissible; and

(d) All other electric face equipment which is taken into or used inby the last crosscut of any coal mine, except a coal mine referred to in § 75.501, which has not been classified under any provision of law as a gassy mine prior to March 30, 1970, shall be permissible.

§ 75.500-1 Other low horsepower electric face equipment.

Other low horsepower electric face equipment designated pursuant to the provisions of § 75.500(b) is all other electric-driven mine equipment, except low horsepower rock dusting equipment, and employs an electric current supplied by either a power conductor or battery and consumes not more than 2,250 watts of electricity and which is taken into or used inby the last open crosscut.

§ 75.501 Permissible electric face equipment; coal seams above water table.

[STATUTORY PROVISION]

On and after March 30, 1974, all electric face equipment, other than equipment referred to in paragraph (b) of § 75.500, which is taken into and used inby the last open crosscut of any coal mine which is operated entirely in coal seams located above the water table and which has not been classified under any provision of law as a gassy mine prior to March 30, 1970, and in which one or more openings were made prior to December 30, 1969, shall be permissible.

§ 75.501-1 Coal seams above the water table.

As used in § 75.501, the phrase "coal seams above the water table" means coal seams in a mine which are located at an elevation above a river or the tributary of a river into which a local surface water system naturally drains.

§ 75.501-2 Permissible electric face equipment.

(a) On and after March 30, 1971, in mines operated entirely in coal seams which are located at elevations above the water table:

(1) All junction or distribution boxes used for making multiple power connections inby the last open crosscut shall be permissible; and

(2) All handheld electric drills, blower and exhaust fans, electric pumps, and all other electric-driven mine equipment, except low horsepower rock dusting equipment, that employs an electric current supplied by either a power conductor or battery and consumes not more than 2,250 watts of electricity, which is taken into or used inby the last open crosscut shall be permissible.

(b) On and after March 30, 1974, in mines operated entirely in coal seams which are located at elevations above the water table, all electric face equipment which is taken into or used inby the last crosscut shall be permissible.

§ 75.501-3 New openings; mines above watertable and never classed gassy.

(a) Where a new opening(s) is proposed to be developed by shaft, slope, or drift from the surface to, or in, any coalbed and the operator considers such proposed new opening(s) to be a part of a mine coming under section 305(a)(2) of the Act and § 75.501 the operator shall so notify the District Manager for the District in which the mine is located in writing prior to the date any actual development (in coal) through such opening(s) is undertaken. Such notification shall include the following information:

(1) Name, address, and identification number of the existing mine.

(2) A current map of the existing mine clearly setting out the proposed new opening(s), mining plan and planned interconnection, if any, with existing workings.

(3) A statement as to when the operator obtained the right to mine the coal which the proposed new opening(s) will traverse.

(4) The name of the coalbeds currently being mined and those which the new opening(s) will traverse.

(5) The expected life of the mine.

(6) The reason(s) for the proposed new opening(s) (for example, haulage, ventilation, drainage, to avoid bad roof, escapeway).

The District Manager shall require submission of any additional information he considers pertinent.

(b) The District Manager shall make a determination based on all of the information submitted by the operator as to whether the proposed new opening(s) will be considered as a part of the existing mine or as a new mine. The following guidelines and criteria shall be used by the District Manager in making his determination:

(1) The effect that the proposed new opening(s) will have on the safety of the men working in the existing mine shall be considered of primary importance.

(2) Whether the operator had a right to mine the coal which the proposed new openings will traverse prior to the date of enactment of the Act (December 30, 1969) and whether the original mining plan included mining such coal.

(3) Whether, in accordance with the usual mining practices common to the particular district, the proposed new openings would have been considered a new mine or part of the existing mine. A number of factors will be considered including, but not limited to:

(i) The relationship between the coalbeds currently being mined, and those proposed to be mined;

(ii) the distance between existing openings and the proposed new opening(s);

(iii) The projected time elapsing between the start of the new opening(s) and planned interconnection, if any, with the existing mine; and

(iv) The projected tonnage of coal which is expected to be mined prior to interconnection where interconnection is planned.

The District Manager shall notify the operator in writing within 30 days of receiving all of the information, required and requested, of his determination. No informal notification shall be given.

(c) All new opening(s) shall be operated as a new mine prior to receiving a written notification from the District Manager that such new opening(s) will be considered part of an existing mine

coming under section 305(a)(2) of the Act and § 75.501.

(d) Nothing in this § 75.501-3 shall be construed to relieve the operator from compliance with any of the mandatory standards contained in this Part 75.

[37 FR 8949, May 3, 1972]

§ 75.502 Permits for noncompliance.

An operator need not comply with paragraph (d) of § 75.500 or with § 75.501 during the period of time specified in a permit issued by the Interim Compliance Panel established by the Act.

§ 75.503 Permissible electric face equipment; maintenance.

[STATUTORY PROVISIONS]

The operator of each coal mine shall maintain in permissible condition all electric face equipment required by §§ 75.500, 75.501, 75.504 to be permissible which is taken into or used in the last open crosscut of any such mine.

§ 75.503-1 Statement listing all electric face equipment.

Each operator of a coal mine shall complete and file Mining Enforcement and Safety Administration Form No. 6-1496 entitled "Coal Operator's Electrical Survey" and Form 6-1496 Supplemental entitled "Operator's Survey of Electrical Face Equipment." Forms may be obtained from any Coal Mine Safety District Office or Subdistrict Office of the Mining Enforcement and Safety Administration. Separate forms shall be filed for each mine. Copies one and two of the completed form shall be filed with the Coal Mine District or Subdistrict Manager for the district in which each mine is located on or before May 30, 1970. An operator must list all electric face equipment being used at each mine as of the time of filing, all such equipment being repaired, and all standby electric equipment stored at or in the mine which the operator intends to use as face equipment.

§ 75.504 Permissibility of new, replacement, used, reconditioned, additional, and rebuilt electric face equipment.

On and after March 30, 1971, all new, replacement, used, reconditioned, and additional electric face equipment used in any mine referred to in §§ 75.500, 75.501, and 75.503 shall be permissible and shall be maintained in a permissible condition, and in the event of any major over-

haul of any item of electric face equipment in use on or after March 30, 1971, such equipment shall be put in, and thereafter maintained in, a permissible condition, unless in the opinion of the Secretary, such equipment or necessary replacement parts are not available.

[38 FR 4975, Feb. 23, 1973]

§ 75.505 Mines classed gassy; use and maintenance of permissible electric face equipment.

[STATUTORY PROVISION]

Any coal mine which, prior to March 30, 1970, was classed gassy under any provision of law and was required to use permissible electric face equipment and to maintain such equipment in a permissible condition shall continue to use such equipment and to maintain such equipment in such condition.

§ 75.506 Electric face equipment; requirements for permissibility.

(a) Electric-driven mine equipment and accessories manufactured on or after March 30, 1973, will be permissible electric face equipment only (1) if they are fabricated, assembled, or built under an approval, or any extension thereof, issued by the Bureau of Mines or the Mining Enforcement and Safety Administration in accordance with schedule 2G, or any subsequent Bureau of Mines schedule promulgated by the Secretary after March 30, 1970, which amends, modifies, or supersedes the permissibility requirements of schedule 2G, and (2) if they are maintained in a permissible condition.

(b) Except as provided in paragraph (c) of this § 75.506 electric-driven mine equipment and accessories manufactured prior to March 30, 1973, will be permissible electric face equipment (1) if they were fabricated, assembled, or built under an approval, or any extension thereof, issued by the Bureau of Mines in accordance with the schedules set forth below, and (2) if they are maintained in a permissible condition.

Bureau of Mines Schedule 2D, May 23, 1936;

Bureau of Mines Schedule 2E, February 15, 1945;

Bureau of Mines Schedule 2F, August 3, 1955; and

Bureau of Mines Schedule 2G, March 19, 1968.

Copies of these schedules are available at all Coal Mine Safety District and Sub-district Offices of the Bureau of Mines.

(c) Electric driven mine equipment and accessories bearing the Bureau of

Mines approval numbers listed in appendix A to this subpart are permissible electric face equipment only if they are maintained in a permissible condition.

(d) Electric cap lamps, electric mine lamps other than standard cap lamps, flame safety lamps, portable methane detectors, telephones and signaling devices, single- and multiple-shot blasting units, lighting equipment for illuminating underground mines, and methane-monitoring systems will be permissible electric face equipment only (1) if they are approved under the appropriate Bureau of Mines schedule applicable to such equipment and (2) if they are in permissible condition. The Bureau of Mines schedules referred to, dates issued, and the appropriate parts of this chapter are:

Electric Cap Lamps, Bureau of Mines Schedule 6D, August 26, 1939 (Part 19);

Electric Mine Lamps Other than Standard Cap Lamps, Bureau of Mines Schedule 10C, May 17, 1938 (Part 20);

Flame Safety Lamps, Bureau of Mines Schedule 7C, August 30, 1935 (Part 21);

Portable Methane Detectors, Bureau of Mines Schedule 8C, October 31, 1935 (Part 22);

Telephone and Signaling Devices, Bureau of Mines Schedule 9B, October 25, 1938 (Part 23);

Single Shot Blasting Units, Bureau of Mines Schedule 12D, November 27, 1945 (Part 24);

Multiple Shot Blasting Units, Bureau of Mines Schedule 16E, May 19, 1960 (Part 25);

Lighting Equipment for Illuminating Underground Workings, Bureau of Mines Schedule 29A, December 2, 1958 (Part 26); and Methane-Monitoring Systems, Bureau of Mines Schedule 32A, July 27, 1966 (Part 27).

§ 75.506-1 Electric face equipment; permissible condition; maintenance requirements.

(a) Except as provided in paragraph (b) of this section, electric face equipment which meets the requirements for permissibility set forth in § 75.506 will be considered to be in permissible condition only if it is maintained so as to meet the requirements for permissibility set forth in the Bureau of Mines schedule under which such electric face equipment was initially approved, or, if the equipment has been modified, it is maintained so as to meet the requirements of the schedule under which such modification was approved.

(b) Electric face equipment bearing the Bureau of Mines approval number

listed in Appendix A of this subpart will be considered to be in permissible condition only if it is maintained so as to meet the requirements for permissibility set forth in Bureau of Mines Schedule 2D or, if such equipment has been modified, it is maintained so as to meet the requirements of the schedule under which the modification was approved.

(c) Notwithstanding the provisions of paragraphs (a) and (b) of this section, where the minimum requirements for permissibility set forth in the appropriate Bureau of Mines schedule under which such equipment or modifications were approved have been superseded by the requirements of this Part 75, the latter requirements shall be applicable.

§ 75.507 Power connection points.

[STATUTORY PROVISIONS]

Except where permissible power connection units are used, all power-connection points outby the last open crosscut shall be in intake air.

§ 75.507-1 Electric equipment other than power-connection points; outby the last open crosscut; return air; permissibility requirements.

(a) All electric equipment, other than power-connection points, used in return air outby the last open crosscut in any coal mine shall be permissible except as provided in paragraphs (b) and (c) of this section.

(b) Notwithstanding the provisions of paragraph (a) of this section, in any coal mine where nonpermissible electric face equipment may be taken into or used inby the last open crosscut until March 30, 1974, such nonpermissible electric face equipment may be used in return air outby the last open crosscut.

(c) Notwithstanding the provisions of paragraph (a) of this section, in any coal mine where a permit for noncompliance is in effect, nonpermissible electric face equipment specified in such permit for noncompliance may be used in return air outby the last open crosscut for the duration of such permit.

[38 FR 4975, Feb. 23, 1973]

§ 75.508 Map of electrical system.

[STATUTORY PROVISIONS]

The location and the electrical rating of all stationary electric apparatus in

connection with the mine electric system, including permanent cables, switchgear, rectifying substations, transformers, permanent pumps, and trolley wires and trolley feeder wires, and settings of all direct-current circuit breakers protecting underground trolley circuits, shall be shown on a mine map. Any changes made in a location, electric rating, or setting shall be promptly shown on the map when the change is made. Such map shall be available to an authorized representative of the Secretary and to the miners in such mine.

§ 75.508-1 Mine tracks.

When mine track is used as a conductor of a trolley system, the location of such track shall be shown on the map required by § 75.508, with a notation of the number of rails and the size of such track expressed in pounds per yard.

§ 75.508-2 Changes in electric system map; recording.

Changes made in the location, electrical rating or setting within the mine electrical system shall be recorded on the map of such system no later than the end of the next workday following completion of such changes.

§ 75.509 Electric power circuit and electric equipment; deenergization.

[STATUTORY PROVISIONS]

All power circuits and electric equipment shall be deenergized before work is done on such circuits and equipment, except when necessary for trouble shooting or testing.

§ 75.510 Energized trolley wires; repair.

[STATUTORY PROVISIONS]

Energized trolley wires may be repaired only by a person trained to perform electrical work and to maintain electrical equipment and the operator of a mine shall require that such person wear approved and tested insulated shoes and wireman's gloves.

§ 75.510-1 Repair of energized trolley wires; training.

The training referred to in § 75.510 must include training in the repair and maintenance of live trolley wires, and in the hazards involved in making such repairs, and in the limitations of protective clothing used to protect against such hazards.

§ 75.511 Low-, medium-, or high-voltage distribution circuits and equipment; repair.

[STATUTORY PROVISION]

No electrical work shall be performed on low-, medium-, or high-voltage distribution circuits or equipment, except by a qualified person or by a person trained to perform electrical work and to maintain electrical equipment under the direct supervision of a qualified person. Disconnecting devices shall be locked out and suitably tagged by the persons who perform such work, except that in cases where locking out is not possible, such devices shall be opened and suitably tagged by such persons. Locks or tags shall be removed only by the persons who installed them or, if such persons are unavailable, by persons authorized by the operator or his agent.

§ 75.511-1 Qualified person.

To be a qualified person within the meaning of § 75.511, an individual must meet the requirements of § 75.153.

§ 75.512 Electric equipment; examination, testing and maintenance.

[STATUTORY PROVISION]

All electric equipment shall be frequently examined, tested, and properly maintained by a qualified person to assure safe operating conditions. When a potentially dangerous condition is found on electric equipment, such equipment shall be removed from service until such condition is corrected. A record of such examinations shall be kept and made available to an authorized representative of the Secretary and to the miners in such mine.

§ 75.512-1 Qualified person.

To be a qualified person within the meaning of § 75.512, an individual must meet the requirements of § 75.153.

§ 75.512-2 Frequency of examinations.

The examinations and tests required by § 75.512 shall be made at least weekly. Permissible equipment shall be examined to see that it is in permissible condition.

§ 75.513 Electric conductor; capacity and insulation.

[STATUTORY PROVISION]

All electric conductors shall be sufficient in size and have adequate current

carrying capacity and be of such construction that a rise in temperature resulting from normal operation will not damage the insulating materials.

§ 75.513-1 Electric conductor; size.

An electric conductor is not of sufficient size to have adequate carrying capacity if it is smaller than is provided for in the National Electric Code, 1968. In addition, equipment and trailing cables that are required to be permissible must meet the requirements of the appropriate schedules of the Bureau of Mines.

§ 75.514 Electrical connections or splices; suitability.

[STATUTORY PROVISION]

All electrical connections or splices in conductors shall be mechanically and electrically efficient, and suitable connectors shall be used. All electrical connections or splices in insulated wire shall be reinsulated at least to the same degree of protection as the remainder of the wire.

§ 75.515 Cable fittings; suitability.

[STATUTORY PROVISION]

Cables shall enter metal frames of motors, splice boxes, and electric compartments only through proper fittings. When insulated wires other than cables pass through metal frames, the holes shall be substantially bushed with insulated bushings.

§ 75.516 Power wires; support.

[STATUTORY PROVISION]

All power wires (except trailing cables on mobile equipment, specially designed cables conducting high-voltage power to underground rectifying equipment or transformers, or bare or insulated ground and return wires) shall be supported on well-insulated insulators and shall not contact combustible material, roof, or ribs.

§ 75.516-1 Installed insulators.

Well-insulated insulators is interpreted to mean well-installed insulators. Insulated J-hooks may be used to suspend insulated power cables for temporary installation not exceeding 6 months and for permanent installation of control cables such as may be used along belt conveyors.

§ 75.516-2 Communication wires and cables; installation; insulation; support.

(a) All communication wires shall be supported on insulated hangers or insulated J-hooks.

(b) All communication cables shall be insulated as required by § 75.517-1, and shall either be supported on insulated or uninsulated hangers or J-hooks, or securely attached to messenger wires, or buried, or otherwise protected against mechanical damage in a manner approved by the Secretary or his authorized representative.

(c) All communication wires and cables installed in track entries shall, except when a communication cable is buried in accordance with paragraph (b) of this section, be installed on the side of the entry opposite to trolley wires and trolley feeder wires. Additional insulation shall be provided for communication circuits at points where they pass over or under any power conductor.

(d) For purposes of this section, communication cable means two or more insulated conductors covered by an additional abrasion-resistant covering.

[38 FR 4975, Feb. 23, 1973]

§ 75.517 Power wires and cables; insulation and protection.

[STATUTORY PROVISIONS]

Power wires and cables, except trolley wires, trolley feeder wires, and bare signal wires, shall be insulated adequately and fully protected.

§ 75.517-1 Power wires and cables; insulation and protection.

Power wires and cables installed on or after March 30, 1970, shall have insulation with a dielectric strength at least equal to the voltage of the circuit.

§ 75.517-2 Plans for insulation of existing bare power wires and cables.

(a) On or before December 31, 1970, plans for the insulation of existing bare power wires and cables installed prior to March 30, 1970, shall be filed with the District Manager of the Coal Mine Safety District in which the mine is located to permit approval and prompt implementation of such plans.

(b) The appropriate District Manager shall notify the operator in writing of the approval of a proposed insulation

plan. If revisions are required for approval, the changes required will be specified.

(c) An insulation plan shall include the following information:

(1) Name and address of the company, the mine and the responsible officials;

(2) Map or diagram indicating location of power wires and cables required to be insulated;

(3) Total length of bare power wires and cables required to be insulated;

(4) Schedule for the replacement or insulation of bare power wires and cables;

(5) Type of insulation to be used and the voltage rating as indicated by the manufacturer.

(d) The District Manager shall be guided by the following criteria in approving insulation plans on a mine-by-mine basis. Insulation not conforming to these criteria may be approved provided the operator can satisfy the Mining Enforcement and Safety Administration that the insulation will provide no less than the same measure of protection.

(1) Insulation shall be adequate for the applied voltage of the circuit.

(2) When tubing is used to insulate existing power wires and cables, it shall have a dielectric strength at least equal to the voltage of the circuit. When the tubing is split for purposes of installation, the joints shall be effectively sealed. The butt ends may be sealed with a moisture resistant insulating tape.

(3) When tape is used to insulate existing power wires and cables, it shall be applied half-lapped and one thickness of the tape shall have a dielectric strength at least equal to the voltage of the circuit. The tape shall be self-adhesive and moisture resistant.

§ 75.518 Electric equipment and circuits; overload and short circuit protection.

[STATUTORY PROVISION]

Automatic circuit-breaking devices or fuses of the correct type and capacity shall be installed so as to protect all electric equipment and circuits against short circuit and overloads. Three-phase motors on all electric equipment shall be provided with overload protection that will deenergize all three phases in the event that any phase is overloaded.

§ 75.518-1 Electric equipment and circuits; overload and short circuit protection; minimum requirements.

A device to provide either short circuit protection or protection against overload which does not conform to the provisions of the National Electric Code, 1968, does not meet the requirement of § 75.518. In addition, such devices on electric face equipment and trailing cables that are required to be permissible must meet the requirements of the applicable schedules of the Bureau of Mines.

§ 75.518-2 Incandescent lamps, overload and short circuit protection.

Incandescent lamps installed along haulageways and at other locations, not contacting combustible material, and powered from trolley or direct current feeder circuits, need not be provided with separate short circuit or overload protection, if the lamp is not more than 8 feet in distance from such circuits.

§ 75.519 Main power circuits; disconnecting switches.

[STATUTORY PROVISION]

In all main power circuits, disconnecting switches shall be installed underground within 500 feet of the bottoms of shafts and boreholes through which main power circuits enter the underground area of the mine and within 500 feet of all other places where main power circuits enter the underground area of the mine.

§ 75.519-1 Main power circuits; disconnecting switches; locations.

Section 75.519 requires (a) that a disconnecting switch be installed on the surface at a point within 500 feet of the place where the main power circuit enters the underground area of a mine, and (b) that, in an instance on which a main power circuit enters the underground area through a shaft or borehole, a disconnecting switch be installed underground within 500 feet of the bottom of the shaft or borehole.

§ 75.520 Electric equipment; switches.

[STATUTORY PROVISION]

All electric equipment shall be provided with switches or other controls that are safely designed, constructed, and installed.

§ 75.521 Lightning arresters; ungrounded and exposed power conductors and telephone wires.

Each ungrounded, exposed power conductor and each ungrounded, exposed telephone wire that leads underground shall be equipped with suitable lightning arresters of approved type within 100 feet of the point where the circuit enters the mine. Lightning arresters shall be connected to a low resistance grounding medium on the surface which shall be separated from neutral grounds by a distance of not less than 25 feet.

[38 FR 4975, Feb. 23, 1973]

§ 75.522 Lighting devices.

[STATUTORY PROVISION]

No device for the purpose of lighting any coal mine which has not been approved by the Secretary or his authorized representative shall be permitted in such mine.

§ 75.522-1 Incandescent and fluorescent lamps.

(a) Except for areas of a coal mine in by the last open crosscut, incandescent lamps may be used to illuminate underground areas. When incandescent lamps are used in a track entry or belt entry or near track entries to illuminate special areas other than structures, the lamps shall be installed in weather-proof sockets located in positions such that the lamps will not come in contact with any combustible material. Lamps used in all other places must be of substantial construction and be fitted with a glass enclosure.

(b) Incandescent lamps within glass enclosures or fluorescent lamps may be used inside underground structures (except magazines used for the storage of explosives and detonators). In underground structures lighting circuits shall consist of cables installed on insulators or insulated wires installed in metallic conduit or metallic armor.

§ 75.523 Electric face equipment; deenergization.

[STATUTORY PROVISION]

An authorized representative of the Secretary may require in any mine that electric face equipment be provided with devices that will permit the equipment to be deenergized quickly in the event of an emergency.

APPENDIX A

List of permissible electric face equipment approved by the Bureau of Mines prior to May 23, 1936.

MOTOR-DRIVEN MINE EQUIPMENT

(Approved Under Schedules 2, 2A, 2B, and 2C)
AIR COMPRESSORS

| Approval No. | Date |
|--------------|-----------------|
| 128 | March 21, 1927. |
| 128A | July 16, 1926. |

COAL DRILLS AND DRILLING MACHINES

Hand Drills

| | |
|-----|---------------------|
| 109 | September 19, 1922. |
| 154 | August 1, 1928. |
| 184 | February 7, 1930. |
| 227 | July 29, 1931. |
| 254 | July 15, 1933. |

Post Drills

| | |
|------|--------------------|
| 119 | April 15, 1925. |
| 119A | Do. |
| 225 | July 10, 1931. |
| 225A | Do. |
| 228 | August 12, 1931. |
| 228A | February 17, 1932. |
| 230 | August 20, 1931. |
| 230A | Do. |
| 237 | December 1, 1931. |
| 237A | Do. |

Drilling Machines

| | |
|------|--------------------|
| 147 | February 8, 1928. |
| 147A | Do. |
| 176 | September 9, 1929. |
| 176A | Do. |

LOADING AND CONVEYING EQUIPMENT

LOADING MACHINES

Unmounted Type

| | |
|------|------------------|
| 122 | January 8, 1926. |
| 122A | Do. |

Caterpillar-Mounted Type

| | |
|------|---------------------|
| 150 | May 11, 1928. |
| 186 | March 15, 1930. |
| 222 | May 8, 1931. |
| 222A | July 28, 1931. |
| 229 | August 17, 1931. |
| 229A | Do. |
| 235 | November 27, 1931. |
| 235A | October 29, 1931. |
| 278 | January 17, 1935. |
| 278A | Do. |
| 283A | March 12, 1935. |
| 284A | Do. |
| 235A | Do. |
| 294 | September 18, 1935. |
| 300A | May 6, 1936. |
| 127 | July 16, 1926. |
| 127A | September 23, 1927. |

Track-Mounted Type

| | |
|------|---------------|
| 194 | June 6, 1930. |
| 194A | Do. |

LOADING AND CONVEYING EQUIPMENT—CON.

LOADING MACHINES—continued

Track-Mounted Type—Continued

| Approval No. | Date |
|--------------|--------------------|
| 217 | February 27, 1931. |
| 217A | Do. |
| 276 | January 11, 1935. |
| 277 | January 17, 1935. |
| 282A | March 12, 1935. |
| 291A | July 3, 1935. |

Pit-Car Loaders

| | |
|------|--------------------|
| 167 | March 27, 1929. |
| 167A | Do. |
| 175 | July 26, 1929. |
| 175A | June 24, 1929. |
| 250 | December 10, 1932. |
| 250A | Do. |
| 252A | February 20, 1933. |

CONVEYORS

Belt Type

| | |
|------|--------------------|
| 236 | November 19, 1931. |
| 287A | March 12, 1935. |
| 296A | January 6, 1936. |

Chain Type

| | |
|------|-------------------|
| 151 | May 19, 1928. |
| 209 | December 2, 1930. |
| 240 | March 12, 1932. |
| 240A | Do. |
| 298A | March 3, 1936. |

Power Units for Conveyors

| | |
|------|--------------------|
| 265 | February 12, 1934. |
| 265A | March 19, 1934. |
| 390A | March 23, 1934. |

Shaker Type

| | |
|------|---------------------|
| 247 | October 21, 1932. |
| 257A | August 11, 1933. |
| 262A | December 8, 1933. |
| 271 | May 20, 1935. |
| 271A | October 17, 1934. |
| 274A | December 13, 1934. |
| 286A | March 12, 1935. |
| 295 | September 20, 1935. |
| 299A | April 9, 1936. |

Scraper-type Loaders

| | |
|------|---------------------|
| 138 | August 5, 1927. |
| 138A | Do. |
| 196 | September 29, 1930. |
| 196A | July 26, 1930. |
| 226 | July 27, 1931. |
| 255 | July 31, 1933. |
| 256 | Do. |

MINING MACHINES, MACHINERY—MOVING EQUIPMENT, MISCELLANEOUS TRUCKS, AND WATER SPRAY SUPPLY UNITS

MINING MACHINES

Shortwall Machines

| | |
|------|-------------------|
| 103 | November 2, 1917. |
| 103A | Do. |
| 105 | February 9, 1922. |
| 105A | Do. |
| 106 | Do. |

MINING MACHINES, MACHINERY—MOVING EQUIPMENT, MISCELLANEOUS TRUCKS, AND WATER SPRAY SUPPLY UNITS—Continued

MINING MACHINES—continued

Shortwall Machines—Continued

| <i>Approval No.</i> | <i>Date</i> |
|---------------------|---------------------|
| 106A | February 9, 1922. |
| 107 | Do. |
| 107A | Do. |
| 108 | Do. |
| 108A | Do. |
| 111 | October 16, 1922. |
| 111A | Do. |
| 113 | November 4, 1924. |
| 113A | Do. |
| 114 | February 7, 1925. |
| 114A | Do. |
| 115 | Do. |
| 115A | Do. |
| 153 | July 31, 1928. |
| 153A | Do. |
| 193 | June 3, 1930. |
| 193A | Do. |
| 197 | July 31, 1930. |
| 197A | Do. |
| 198 | August 1, 1930. |
| 198A | Do. |
| 201 | September 8, 1930. |
| 201A | Do. |
| 204 | October 13, 1930. |
| 204A | December 13, 1930. |
| 223 | May 13, 1931. |
| 223A | Do. |
| 241 | March 18, 1932. |
| 241A | Do. |
| 258 | August 15, 1933. |
| 259A | August 16, 1933. |
| 260A | August 17, 1933. |
| 273 | November 30, 1934. |
| 288 | March 27, 1935. |
| 288A | Do. |
| 292 | September 11, 1935. |
| 292A | Do. |
| 293A | Do. |

Longwall Machines

| | |
|------|---------------------|
| 185 | February 24, 1930. |
| 185A | Do. |
| 218 | March 10, 1931. |
| 218A | Do. |
| 246 | August 19, 1932. |
| 246A | Do. |
| 261 | September 12, 1933. |

Track or caterpillar mounted

| | |
|------|--------------------|
| 112 | March 13, 1924. |
| 112A | Do. |
| 118 | March 12, 1925. |
| 118A | Do. |
| 125 | April 26, 1926. |
| 125A | Do. |
| 172 | April 30, 1929. |
| 172A | Do. |
| 188 | April 15, 1930. |
| 188A | Do. |
| 207 | November 14, 1930. |
| 207A | Do. |
| 216 | February 12, 1931. |
| 216A | Do. |

MINING MACHINES, MACHINERY—MOVING EQUIPMENT, MISCELLANEOUS TRUCKS, AND WATER SPRAY SUPPLY UNITS—Continued

MINING MACHINES—continued

Track or caterpillar mounted—Continued

| <i>Approval No.</i> | <i>Date</i> |
|---------------------|---------------------|
| 231 | August 31, 1931. |
| 231A | Do. |
| 242 | April 7, 1932. |
| 244 | June 18, 1932. |
| 244A | September 20, 1932. |
| 253A | February 25, 1933. |
| 267 | June 27, 1934. |
| 268A | July 25, 1934. |
| 269A | September 24, 1934. |
| 280A | March 4, 1935. |
| 297 | January 27, 1936. |
| 297A | Do. |

Mine Pumps

| | |
|------|--------------------|
| 140 | November 1, 1927. |
| 140A | Do. |
| 143 | Do. |
| 143A | Do. |
| 144 | Do. |
| 144A | Do. |
| 199 | August 18, 1930. |
| 199A | Do. |
| 208 | November 29, 1930. |
| 210 | December 15, 1930. |
| 210A | Do. |
| 211 | December 17, 1930. |
| 211A | Do. |
| 213 | December 29, 1930. |
| 213A | Do. |
| 214 | January 2, 1931. |
| 214A | Do. |
| 215 | Do. |
| 215A | Do. |
| 248 | October 31, 1932. |
| 248A | November 23, 1932. |
| 264 | January 31, 1934. |
| 264A | Do. |
| 272 | October 23, 1934. |
| 272A | Do. |

Rock-Dusting Machines

| | |
|------|--------------------|
| 130 | November 5, 1926. |
| 137 | July 2, 1927. |
| 146 | January 20, 1928. |
| 146A | April 3, 1928. |
| 180 | October 30, 1929. |
| 180A | January 17, 1930. |
| 206 | November 12, 1930. |
| 279 | February 14, 1935. |

Room and Car-Spotting Hoists

| | |
|------|--------------------|
| 116 | February 13, 1925. |
| 116A | Do. |
| 164 | January 21, 1931. |
| 164A | Do. |
| 165 | Do. |
| 165A | Do. |
| 169 | April 5, 1929. |
| 169A | February 26, 1934. |
| 190 | April 20, 1930. |
| 251A | January 16, 1933. |
| 263 | January 11, 1934. |
| 266A | February 27, 1934. |

STORAGE-BATTERY LOCOMOTIVES AND POWER TRUCKS

(Approved under Schedules 15, 2C, 2D, and 2E)

Gathering Locomotives

| <i>Approval No.</i> | <i>Date</i> |
|---------------------|---------------------|
| 1501 | October 11, 1921. |
| 1502 | November 13, 1922. |
| 1503 | March 24, 1923. |
| 1505 | April 5, 1924. |
| 1507 | August 20, 1925. |
| 1508 | March 21, 1925. |
| 1509 | September 25, 1925. |
| 1511 | November 10, 1925. |
| 1512 | November 11, 1925. |
| 1513 | February 25, 1926. |
| 1516 | December 28, 1926. |
| 1517 | February 10, 1927. |
| 1520 | May 27, 1929. |
| 1521 | June 13, 1930. |
| 1522 | September 12, 1930. |
| 1523 | December 19, 1930. |
| 1525 | July 25, 1934. |
| 1526 | December 20, 1935. |

Tandem Locomotive

| | |
|------|--------------------|
| 1518 | November 21, 1927. |
|------|--------------------|

Power Trucks

| | |
|-------|---------------------|
| 1506 | May 5, 1924. |
| 1505A | June 21, 1926. |
| 1510C | December 31, 1926. |
| 1514 | December 18, 1926. |
| 1515 | December 23, 1926. |
| 1512C | September 13, 1928. |
| 1519C | April 6, 1929. |
| 1524C | June 25, 1934. |

JUNCTION, DISTRIBUTION, AND SPLICE BOXES

(Approved under Schedules 2D and 2E)

Junction Boxes

| | |
|------|-------------------|
| 400 | June 16, 1928. |
| 400A | August 5, 1925. |
| 401 | May 11, 1927. |
| 401A | Do. |
| 402 | Do. |
| 402A | Do. |
| 403 | April 14, 1931. |
| 403A | Do. |
| 405A | December 4, 1933. |

§ 75.523-1 Deenergization of self-propelled electric face equipment installation requirements.

(a) Except as provided in paragraphs (b) and (c) of this section, all self-propelled electric face equipment which is used in the active workings of each underground coal mine on and after March 1, 1973, shall, in accordance with the schedule of time specified in paragraph (a) (1) and (2) of this section, be provided with a device that will quickly deenergize the tramming motors of the

equipment in the event of an emergency. The requirements of this paragraph (a) shall be met as follows:

(1) On and after December 31, 1973, for self-propelled cutting machines, shuttle cars, battery-powered machines, and roof drills and bolters;

(2) On and after March 31, 1974, for all other types of self-propelled electric face equipment.

(b) Self-propelled electric face equipment that is equipped with a substantially constructed cab which meets the requirements of this part, shall not be required to be provided with a device that will quickly deenergize the tramming motors of the equipment in the event of an emergency.

(c) An operator may apply to the Assistant Administrator—Technical Support, Mining Enforcement and Safety Administration, Department of the Interior, Washington, D.C. 20240 for approval of the installation of devices to be used in lieu of devices that will quickly deenergize the tramming motors of self-propelled electric face equipment in the event of an emergency. The Assistant Administrator—Technical Support may approve such devices if he determines that the performance thereof will be no less effective than the performance requirements specified in § 75.523-2.

[38 FR 3407, Feb. 6, 1973]

NOTE: The dates specified in paragraphs (a) (1) and (2) of this section were indefinitely suspended at 38 FR 34810, Dec. 19, 1973.

§ 75.523-2 Deenergization of self-propelled electric face equipment; performance requirements.

(a) Deenergization of the tramming motors of self-propelled electric face equipment, required by paragraph (a) of § 75.523-1, shall be provided by:

(1) Mechanical actuation of an existing pushbutton emergency stopswitch,

(2) Mechanical actuation of an existing lever emergency stopswitch, or

(3) The addition of a separate electro-mechanical switch assembly.

(b) The existing emergency stopswitch or additional switch assembly shall be actuated by a bar or lever which shall extend a sufficient distance in each direction to permit quick deenergization of the tramming motors of self-propelled electric face equipment from all locations from which the equipment can be operated.

(c) Movement of not more than 2 inches of the actuating bar or lever resulting from the application of not more than 15 pounds of force upon contact with any portion of the equipment operator's body at any point along the length of the actuating bar or lever shall cause deenergization of the trammig motors of the self-propelled electric face equipment.

[38 FR 3406, Feb. 6, 1972; 38 FR 4394, Feb. 14, 1973]

§ 75.523-3 Rubber-tired, self-propelled electric face equipment; automatic emergency brake; installation and performance requirements.

(a) Except as provided in paragraph (c) of this section, all rubber-tired, self-propelled electric face equipment which is used in the active workings of each underground coal mine on and after March 1, 1973, shall, in accordance with the schedule of time specified in paragraph (a) (1) and (2) of this section be provided with an automatic emergency brake. The requirements of this paragraph (a) shall be met as follows:

(1) On and after December 31, 1973, for rubber-tired, self-propelled cutting machines, shuttle cars, battery-powered machines, and roof drills and bolters;

(2) On and after March 31, 1974, for all other types of rubber-tired, self-propelled electric face equipment.

(b) The emergency brake required by paragraph (a) of this section shall automatically engage when either:

(1) The device to deenergize the equipment, required by § 75.523-1, is activated; or

(2) The equipment is otherwise deenergized. The automatic emergency brake shall engage immediately; bring the equipment to a complete stop within at least the same distance as the service brakes; and, prevent movement of the equipment while engaged.

(c) Rubber-tired, self-propelled electric face equipment with a driving mechanism, in accordance with § 18.20(f) of this chapter, that precludes movement of the equipment when parked, shall not be required to be provided with an automatic emergency brake as is described in paragraph (a) of this section.

[38 FR 3407, Feb. 6, 1973]

NOTE: The dates specified in paragraphs (a) (1) and (2) of this section were indefinitely suspended at 38 FR 34810, Dec. 19, 1973.

§ 75.524 Electric face equipment; electric equipment used in return air outby the last open crosscut; maximum level of alternating or direct electric current between frames of equipment.

The maximum level of alternating or direct electric current that exists between the frames of any two units of electric face equipment that come in contact with each other in the working places of a coal mine, or between the frames of any two units of electric equipment that come in contact with each other in return air outby the last open crosscut, shall not exceed one ampere as determined from the voltage measured across a 0.1 ohm resistor connected between the frames of such equipment.

[38 FR 29998, Oct. 31, 1973]

Subpart G—Trailing Cables

§ 75.600 Trailing cables; flame resistance.

[STATUTORY PROVISIONS]

Trailing cables used in coal mines shall meet the requirements established by the Secretary for flame-resistant cables.

§ 75.600-1 Approved cables; flame resistance.

The requirements for flame resistant cables are set forth in § 18.64 of this chapter (Bureau of Mines Schedule 2G).

§ 75.601 Short circuit protection of trailing cables.

[STATUTORY PROVISIONS]

Short circuit protection for trailing cables shall be provided by an automatic circuit breaker or other no less effective device approved by the Secretary of adequate current-interrupting capacity in each ungrounded conductor. Disconnecting devices used to disconnect power from trailing cables shall be plainly marked and identified and such devices shall be equipped or designed in such a manner that it can be determined by visual observation that the power is disconnected.

§ 75.601-1 Short circuit protection; ratings and settings of circuit breakers.

Circuit breakers providing short circuit protection for trailing cables shall be set so as not to exceed the maximum allowable instantaneous settings specified in this section; however, higher settings may be permitted by an authorized

representative of the Secretary when he has determined that special applications are justified:

| Conductor size AWG or MGM | Maximum allowable circuit breaker instantaneous setting (amperes) | |
|------------------------------|--|-------|
| | | |
| 14 | ----- | 50 |
| 12 | ----- | 75 |
| 10 | ----- | 150 |
| 8 | ----- | 200 |
| 6 | ----- | 300 |
| 4 | ----- | 500 |
| 3 | ----- | 600 |
| 2 | ----- | 800 |
| 1 | ----- | 1,000 |
| 1/0 | ----- | 1,250 |
| 2/0 | ----- | 1,500 |
| 3/0 | ----- | 2,000 |
| 4/0 | ----- | 2,500 |
| 250 | ----- | 2,500 |
| 300 | ----- | 2,500 |
| 350 | ----- | 2,500 |
| 400 | ----- | 2,500 |
| 450 | ----- | 2,500 |
| 500 | ----- | 2,500 |

§ 75.601-2 Short circuit protection; use of fuses; approval by the Secretary.

Fuses shall not be employed to provide short circuit protection for trailing cables unless specifically approved by the Secretary.

§ 75.601-3 Short circuit protection; dual element fuses; current ratings; maximum values.

Dual element fuses having adequate current-interrupting capacity shall meet the requirements for short circuit protection of trailing cables as provided in § 75.601, however, the current ratings of such devices shall not exceed the maximum values specified in this section:

| Conductor size (AWG or MGM) | Single conductor cable | | Two conductor cable | |
|-----------------------------|------------------------|---------------------|---------------------|---------------------|
| | Ampacity | Maximum fuse rating | Ampacity | Maximum fuse rating |
| 14 | ----- | ----- | 15 | 15 |
| 12 | ----- | ----- | 20 | 20 |
| 10 | ----- | ----- | 25 | 25 |
| 8 | ----- | 60 | 50 | 50 |
| 6 | ----- | 85 | 65 | 70 |
| 4 | ----- | 110 | 90 | 90 |
| 3 | ----- | 130 | 105 | 110 |
| 2 | ----- | 150 | 120 | 125 |
| 1 | ----- | 170 | 140 | 150 |
| 1/0 | ----- | 200 | 170 | 175 |
| 2/0 | ----- | 235 | 195 | 200 |
| 3/0 | ----- | 275 | 225 | 225 |
| 4/0 | ----- | 315 | 260 | 300 |
| 250 | ----- | 350 | 285 | 300 |
| 300 | ----- | 395 | 310 | 350 |
| 350 | ----- | 445 | 335 | 350 |
| 400 | ----- | 490 | 360 | 400 |
| 450 | ----- | 515 | 385 | 400 |
| 500 | ----- | 545 | 415 | 450 |

§ 75.602 Trailing cable junctions.

[STATUTORY PROVISION]

When two or more trailing cable junction to the same distribution center, means shall be provided to assure against connecting a trailing cable to the wrong size circuit breaker.

§ 75.603 Temporary splice of trailing cable.

[STATUTORY PROVISION]

One temporary splice may be made in any trailing cable. Such trailing cable may only be used for the next 24-hour period. No temporary splice shall be made in a trailing cable within 25 feet of the machine, except cable reel equipment. Temporary splices in trailing cables shall be made in a workmanlike manner and shall be mechanically strong and well insulated. Trailing cables or hand cables which have exposed wires or which have splices that heat or spark under load shall not be used. As used in this section, the term "splice" means the mechanical joining of one or more conductors that have been severed.

§ 75.604 Permanent splicing of trailing cables.

[STATUTORY PROVISIONS]

When permanent splices in trailing cables are made, they shall be:

- (a) Mechanically strong with adequate electrical conductivity and flexibility;
- (b) Effectively insulated and sealed so as to exclude moisture; and
- (c) Vulcanized or otherwise treated with suitable materials to provide flame-resistant qualities and good bonding to the outer jacket.

§ 75.605 Clamping of trailing cables to equipment.

[STATUTORY PROVISIONS]

Trailing cables shall be clamped to machines in a manner to protect the cables from damage and to prevent strain on the electrical connections.

§ 75.606 Protection of trailing cables.

[STATUTORY PROVISIONS]

Trailing cables shall be adequately protected to prevent damage by mobile equipment.

§ 75.607 Breaking trailing cable and power cable connections.**[STATUTORY PROVISIONS]**

Trailing cable and power cable connections to junction boxes shall not be made or broken under load.

Subpart H—Grounding**§ 75.700 Grounding metallic sheaths, armors, and conduits enclosing power conductors.****[STATUTORY PROVISIONS]**

All metallic sheaths, armors, and conduits enclosing power conductors shall be electrically continuous throughout and shall be grounded by methods approved by an authorized representative of the Secretary.

§ 75.700-1 Approved methods of grounding.

Metallic sheaths, armors and conduits in resistance grounded systems where the enclosed conductors are a part of the system will be approved if a solid connection is made to the neutral conductor; in all other systems, the following methods of grounding will be approved:

(a) A solid connection to a borehole casing having low resistance to earth;

(b) A solid connection to metal water-lines having low resistance to earth;

(c) A solid connection to a grounding conductor, other than the neutral conductor of a resistance grounded system, extending to a low resistance ground field located on the surface;

(d) Any other method of grounding, approved by an authorized representative of the Secretary, which ensures that there is no difference in potential between such metallic enclosures and the earth.

§ 75.701 Grounding metallic frames, casings, and other enclosures of electric equipment.**[STATUTORY PROVISIONS]**

Metallic frames, casings, and other enclosures of electric equipment that can become "alive" through failure of insulation or by contact with energized parts shall be grounded by methods approved by an authorized representative of the Secretary.

§ 75.701-1 Approved methods of grounding of equipment receiving power from ungrounded alternating current power systems.

For purposes of grounding metallic frames, casings and other enclosures of

equipment receiving power from ungrounded alternating current power systems, the following methods of grounding will be approved:

(a) A solid connection between the metallic frame, casing, or other metal enclosure and the grounded metallic sheath, armor, or conduit enclosing the power conductor feeding the electrical equipment enclosed;

(b) A solid connection to a borehole casing having low resistance to earth;

(c) A solid connection to metal water-lines having low resistance to earth;

(d) A solid connection to a grounding conductor extending to a low resistance ground field located on the surface;

(e) Any other method of grounding, approved by an authorized representative of the Secretary, which ensures that there is no difference in potential between such metal enclosures and the earth.

§ 75.701-2 Approved method of grounding metallic frames, casings and other enclosures receiving power from single-phase 110-220-volt circuit.

In instances where single-phase 110-220-volt circuits are used to feed electrical equipment, the only method of grounding that will be approved is the connection of all metallic frames, casings and other enclosures of such equipment to a separate grounding conductor which establishes a continuous connection to a grounded center tap of the transformer.

§ 75.701-3 Approved methods of grounding metallic frames, casings and other enclosures of electric equipment receiving power from direct current power systems with one polarity grounded.

For the purpose of grounding metallic frames, casings and enclosures of any electric equipment or device-receiving power from a direct-current power system with one polarity grounded, the following methods of grounding will be approved:

(a) A solid connection to the mine track;

(b) A solid connection to the grounded power conductor of the system;

(c) Silicon diode grounding; however, this method shall be employed only when such devices are installed in accordance with the requirements set forth in paragraph (d) of § 75.703-3; and

(d) Any other method, approved by an authorized representative of the Secretary, which insures that there is no difference in potential between such metal enclosures and the earth.

§ 75.701-4 Grounding wires; capacity of wires.

Where grounding wires are used to ground metallic sheaths, armors, conduits, frames, casings, and other metallic enclosures, such grounding wires will be approved if:

(a) The cross-sectional area (size) of the grounding wire is at least one-half the cross-sectional area (size) of the power conductor where the power conductor used is No. 6 A.W.G., or larger.

(b) Where the power conductor used is less than No. 6 A.W.G., the cross-sectional area (size) of the grounding wire is equal to the cross-sectional area (size) of the power conductor.

§ 75.701-5 Use of grounding connectors.

The attachment of grounding wires to a mine track or other grounded power conductor will be approved if separate clamps, suitable for such purpose, are used and installed to provide a solid connection.

§ 75.702 Protection other than grounding.

[STATUTORY PROVISIONS]

Methods other than grounding which provide no less effective protection may be permitted by the Secretary or his authorized representative.

§ 75.702-1 Protection other than grounding; approved by an authorized representative of the Secretary.

Under this subpart no method other than grounding may be used to ensure against a difference in potential between metallic sheaths, armors and conduits, enclosing power conductors and frames, casings and metal enclosures of electric equipment, and the earth, unless approved by an authorized representative of the Secretary.

§ 75.703 Grounding offtrack direct-current machines and the enclosures of related detached components.

[STATUTORY PROVISIONS]

The frames of all offtrack direct-current machines and the enclosures of related detached components shall be effectively grounded, or otherwise main-

tained at no less safe voltages, by methods approved by an authorized representative of the Secretary.

§ 75.703-1 Approved method of grounding.

In instances where the metal frames both of an offtrack direct-current machine and of the metal frames of its component parts are grounded to the same grounding medium the requirements of § 75.703 will be met.

§ 75.703-2 Approved grounding media.

For purposes of grounding offtrack direct-current machines, the following grounding mediums are approved:

(a) The grounded polarity of the direct-current power system feeding such machines; or,

(b) The alternating current grounding medium where such machines are fed by an ungrounded direct-current power system originating in a portable rectifier receiving its power from a section power center. However, when such a medium is used, a separate grounding conductor must be employed.

§ 75.703-3 Approved methods of grounding offtrack mobile, portable and stationary direct-current machines.

In grounding offtrack direct-current machines and the enclosures of their component parts, the following methods of grounding will meet the requirements of § 75.703:

(a) The use of a separate grounding conductor located within the trailing cable of mobile and portable equipment and connected between such equipment and the direct-current grounding medium;

(b) The use of a separate ground conductor located within the direct-current power cable feeding stationary equipment and connected between such stationary equipment and the direct-current grounding medium;

(c) The use of a separate external ground conductor connected between stationary equipment and the direct-current grounding medium; or,

(d) The use of silicon diodes; however, the installation of such devices shall meet the following minimum requirements:

(1) Installation of silicon diodes shall be restricted to electric equipment re-

ceiving power from a direct-current system with one polarity grounded;

(2) Where such diodes are used on circuits having a nominal voltage rating of 250, they must have a forward current rating of 400 amperes or more, and have a peak inverse voltage rating of 400 or more;

(3) Where such diodes are used on circuits having a nominal voltage rating of 550, they must have a forward current rating of 250 amperes or more, and have a peak inverse voltage rating of 800 or more;

(4) Where fuses approved by the Secretary are used at the outby end of a trailing cable connected to electrical equipment employing silicon diodes, the rating of such fuses must not exceed 150 percent of the nominal current rating of the grounding diodes;

(5) Where circuit breakers are used at the outby end of a trailing cable connected to electrical equipment employing silicon diodes, the instantaneous trip setting shall not exceed 300 percent of the nominal current rating of the grounding diode;

(6) Overcurrent devices must be used and installed in such a manner that the operating coil circuit of the main contactor will open when a fault current with a value of 25 percent or less of the diode rating flows through the diode;

(7) The silicon diode installed must be suitable to the grounded polarity of the power system in which it is used and its threaded base must be solidly connected to the machine frame on which it is installed;

(8) In addition to the grounding diode, a polarizing diode must be installed in the machine control circuit to prevent operation of the machine when the polarity of a trailing cable is reversed;

(9) When installed on permissible equipment, all grounding diodes, overcurrent devices, and polarizing diodes must be placed in explosion proof compartments;

(10) When grounding diodes are installed on a continuous miner, their nominal diode current rating must be at least 750 amperes or more; and,

(11) All grounding diodes shall be tested, examined and maintained as electrical equipment in accordance with the provisions of § 75.512.

§ 75.703-4 Other methods of protecting offtrack direct-current equipment; approved by an authorized representative of the Secretary.

Other methods of maintaining safe voltage by preventing a difference between the frames of offtrack direct-current machines and the earth must be approved by an authorized representative of the Secretary.

§ 75.704 Grounding frames of stationary high voltage equipment receiving power from ungrounded delta systems.

[STATUTORY PROVISIONS]

The frames of all stationary high-voltage equipment receiving power from ungrounded delta systems shall be grounded by methods approved by an authorized representative of the Secretary.

§ 75.704-1 Approved methods of grounding.

The methods of grounding stated in § 75.701-1 will also be approved with respect to the grounding of frames of high-voltage equipment referred to in § 75.704.

§ 75.705 Work on high-voltage lines; deenergizing and grounding.

[STATUTORY PROVISIONS]

High-voltage lines, both on the surface and underground, shall be deenergized and grounded before work is performed on them, except that repairs may be permitted, in the case of energized surface high-voltage lines, if such repairs are made by a qualified person in accordance with procedures and safeguards, including, but not limited to, a requirement that the operator of such mine provide, test, and maintain protective devices in making such repairs, to be prescribed by the Secretary prior to March 30, 1970.

§ 75.705-1 Work on high-voltage lines.

(a) Section 75.705 specifically prohibits work on energized high-voltage lines underground;

(b) No high-voltage line, either on the surface or underground, shall be regarded as deenergized for the purpose of performing work on it, until it has been determined by a qualified person (as provided in § 75.153) that such high-voltage line has been deenergized

and grounded. Such qualified person shall by visual observation (1) determine that the disconnecting devices on the high-voltage circuit are in open position and (2) ensure that each ungrounded conductor of the high-voltage circuit upon which work is to be done is properly connected to the system-grounding medium. In the case of resistance grounded or solid wye-connected systems, the neutral wire is the system-grounding medium. In the case of an ungrounded power system, either the steel armor or conduit enclosing the system or a surface grounding field is a system grounding medium;

(c) No work shall be performed on any high-voltage line on the surface which is supported by any pole or structure which also supports other high-voltage lines until: (1) All lines supported on the pole or structure are deenergized and grounded in accordance with all of the provisions of this section which apply to the repair of energized surface high-voltage lines; or (2) the provisions of §§ 75.705-2 through 75.705-10 have been complied with, with respect to all lines, which are supported on the pole or structure.

(d) Work may be performed on energized surface high-voltage lines only in accordance with the provisions of §§ 75.705-2 through 75.705-10, inclusive.

§ 75.705-2 Repairs to energized surface high-voltage lines.

An energized high-voltage surface line may be repaired only when

(a) The operator has determined that:

(1) Such repairs cannot be scheduled during a period when the power circuit could be properly deenergized and grounded;

(2) Such repairs will be performed on power circuits with a phase-to-phase nominal voltage no greater than 15,000 volts;

(3) Such repairs on circuits with a phase-to-phase nominal voltage of 5,000 volts or more will be performed only with the use of live line tools;

(4) Weather conditions will not interfere with such repairs or expose those persons assigned to such work to an imminent danger; and

(b) The operator has designated a person qualified under the provisions of § 75.154 as the person responsible for carrying out such repairs and such person, in order to ensure protection for

himself and other qualified persons assigned to perform such repairs from the hazards of such repair, has prepared and filed with the operator:

(1) A general description of the nature and location of the damage or defect to be repaired;

(2) The general plan to be followed in making such repairs;

(3) A statement that a briefing of all qualified persons assigned to make such repairs was conducted informing them of the general plan, their individual assignments, and the dangers inherent in such assignments;

(4) A list of the proper protective equipment and clothing that will be provided; and

(5) Such other information as the person designated by the operator feels necessary to describe properly the means or methods to be employed in such repairs.

§ 75.705-3 Work on energized high-voltage surface lines; reporting.

Any operator designating and assigning qualified persons to perform repairs on energized high-voltage surface lines under the provisions of § 75.705-2 shall maintain a record of such repairs. Such record shall contain a notation of the time, date, location, and general nature of the repairs made, together with a copy of the information filed with the operator by the qualified person designated as responsible for performing such repairs.

§ 75.705-4 Simultaneous repairs.

When two or more persons are working on an energized high-voltage surface line simultaneously, and any one of them is within reach of another, such persons shall not be allowed to work on different phases or on equipment with different potentials.

§ 75.705-5 Installation of protective equipment.

Before repair work on energized high-voltage surface lines is begun, protective equipment shall be used to cover all bare conductors, ground wires, guys, telephone lines, and other attachments in proximity to the area of planned repairs. Such protective equipment shall be installed from a safe position below the conductors or other apparatus being covered. Each rubber protective device employed in the making of repairs shall have a dielectric strength of 20,000 volts, or more.

§ 75.705-6 Protective clothing; use and inspection.

All persons performing work on energized high-voltage surface lines shall wear protective rubber gloves, sleeves, and climber guards if climbers are worn. Protective rubber gloves shall not be worn wrong side out or without protective leather gloves. Protective devices worn by a person assigned to perform repairs on high-voltage surface lines shall be worn continuously from the time he leaves the ground until he returns to the ground, and, if such devices are employed for extended periods, such person shall visually inspect the equipment assigned him for defects before each use and, in no case, less than twice each day.

§ 75.705-7 Protective equipment; inspection.

Each person shall visually inspect protective equipment and clothing provided him in connection with work on high-voltage surface lines before using such equipment and clothing, and any equipment or clothing containing any defect or damage shall be discarded and replaced with proper protective equipment or clothing prior to the performance of any electrical work on such lines.

§ 75.705-8 Protective equipment; testing and storage.

(a) All rubber protective equipment used on work on energized high-voltage surface lines shall be electrically tested by the operator in accordance with ASTM standards, Part 28, published February 1968, and such testing shall be conducted in accordance with the following schedule:

- (1) Rubber gloves, once each month;
- (2) Rubber sleeves, once every 3 months;
- (3) Rubber blankets, once every 6 months;
- (4) Insulator hoods and line hose, once a year; and
- (5) Other electric protective equipment, once a year.

(b) Rubber gloves shall not be stored wrong side out. Blankets shall be rolled when not in use, and line hose and insulator hoods shall be stored in their natural position and shape.

§ 75.705-9 Operating disconnecting or cutout switches.

Disconnecting or cutout switches on energized high-voltage surface lines shall be operated only with insulated sticks,

fuse tongs, or pullers which are adequately insulated and maintained to protect the operator from the voltage to which he is exposed. When such switches are operated from the ground, the person operating such devices shall wear protective rubber gloves.

§ 75.705-10 Tying into energized high-voltage surface circuits.

If the work of forming an additional circuit by tying into an energized high-voltage surface line is performed from the ground, any person performing such work must wear and employ all of the protective equipment and clothing required under the provisions of §§ 75.705-5 and 75.705-6. In addition, the insulated stick used by such person must have been designed for such purpose and must be adequately insulated and be maintained to protect such person from the voltage to which he is exposed.

§ 75.705-11 Use of grounded messenger wires; ungrounded systems.

Solely for purposes of grounding ungrounded high-voltage power systems, grounded messenger wires used to suspend the cables of such systems may be used as a grounding medium.

§ 75.706 Deenergized underground power circuits; idle days-idle shifts.**[STATUTORY PROVISIONS]**

When not in use, power circuits underground shall be deenergized on idle days and idle shifts, except that rectifiers and transformers may remain energized.

Subpart I—Underground High-Voltage Distribution**§ 75.800 High-voltage circuits; circuit breakers.****[STATUTORY PROVISIONS]**

High-voltage circuits entering the underground area of any coal mine shall be protected by suitable circuit breakers of adequate interrupting capacity which are properly tested and maintained as prescribed by the Secretary. Such breakers shall be equipped with devices to provide protection against under-voltage, grounded phase, short circuit, and over-current.

§ 75.800-1 Circuit breakers; location.

Circuit breakers protecting high-voltage circuits entering an underground area of any coal mine shall be located

on the surface and in no case installed either underground or within a drift.

§ 75.800-2 Approved circuit schemes.

The following circuit schemes will be regarded as providing the necessary protection to the circuits required by § 75.800:

(a) Ground check relays may be used for undervoltage protection if the relay coils are designed to trip the circuit breaker when line voltage decreases to 40 percent to 60 percent of the nominal line voltage;

(b) Ground trip relays on resistance grounded systems will be acceptable as grounded phase protection;

(c) One circuit breaker may be used to protect two or more branch circuits, if the circuit breaker is adjusted to afford overcurrent protection for the smallest conductor.

§ 75.800-3 Testing, examination and maintenance of circuit breakers; procedures.

(a) Circuit breakers and their auxiliary devices protecting underground high-voltage circuits shall be tested and examined at least once each month by a person qualified as provided in § 75.153;

(b) Tests shall include:

(1) Breaking continuity of the ground check conductor, where ground check monitoring is used; and

(2) Actuating at least two (2) of the auxiliary protective relays.

(c) Examination shall include visual observation of all components of the circuit breaker and its auxiliary devices, and such repairs or adjustments as are indicated by such tests and examinations shall be carried out immediately.

§ 75.800-4 Testing, examination and maintenance of circuit breakers; record.

The operator of any coal mine shall maintain a written record of each test, examination, repair, or adjustment of all circuit breakers protecting high voltage circuits which enter any underground area of the coal mine. Such record shall be kept in a book approved by the Secretary.

§ 75.801 Grounding resistors.

[STATUTORY PROVISIONS]

The grounding resistor, where required, shall be of the proper ohmic value to limit the voltage drop in the grounding circuit external to the resistor to not more than 100 volts under fault

conditions. The grounding resistor shall be rated for maximum fault current continuously and insulated from ground for a voltage equal to the phase-to-phase voltage of the system.

§ 75.802 Protection of high-voltage circuits extending underground.

(a) Except as provided in paragraph (b) of this section, high-voltage circuits extending underground and supplying portable, mobile, or, stationary high-voltage equipment shall contain either a direct or derived neutral which shall be grounded through a suitable resistor at the source transformers, and a grounding circuit, originating at the grounded side of the grounding resistor, shall extend along with the power conductors and serve as a grounding conductor for the frames of all high-voltage equipment supplied power from that circuit.

(b) Notwithstanding the requirements of paragraph (a) of this section, the Secretary or his authorized representative may permit ungrounded high-voltage circuits to be extended underground to feed stationary electric equipment if:

(1) Such circuits are either steel armored or installed in grounded, rigid steel conduit throughout their entire length; or,

(2) The voltage of such circuits is nominally 2,400 volts or less phase-to-phase and the cables used in such circuits are equipped with metallic shields around each power conductor, and contain one or more ground conductors having a total cross sectional area of not less than one-half the power conductor; and,

(3) Upon a finding by the Secretary or his authorized representative that the use of the circuits described in paragraph (b) (1) and (2) of this section does not pose a hazard to the miners.

(c) Within 100 feet of the point on the surface where high-voltage circuits enter the underground portion of the mine, disconnecting devices shall be installed and so equipped or designed in such a manner that it can be determined by visual observation that the power is disconnected, except that the Secretary or his authorized representative may permit such devices to be installed at a greater distance from such area of the mine if he determines, based on existing physical conditions, that such installation will be more accessible at a greater distance and will not pose any hazard to the miners.

[38 FR 4975, Feb. 23, 1973]

§ 75.803 Fail safe ground check circuits on high-voltage resistance grounded systems.

[STATUTORY PROVISIONS]

On and after September 30, 1970, high-voltage, resistance grounded systems shall include a fail safe ground check circuit to monitor continuously the grounding circuit to assure continuity and the fail safe ground check circuit shall cause the circuit breaker to open when either the ground or pilot check wire is broken, or other no less effective device approved by the Secretary or his authorized representative to assure such continuity, except that an extension of time, not in excess of 12 months, may be permitted by the Secretary on a mine-by-mine basis if he determines that such equipment is not available.

§ 75.803-1 Maximum voltage ground check circuits.

The maximum voltage used for ground check circuits under § 75.803 shall not exceed 96 volts.

§ 75.803-2 Ground check systems not employing pilot check wires; approval by the Secretary.

Ground check systems not employing pilot check wires will be approved only if it is determined that the system includes a fail safe design causing the circuit breaker to open when ground continuity is broken.

§ 75.804 Underground high-voltage cables.

(a) Underground high-voltage cables used in resistance grounded systems shall be equipped with metallic shields around each power conductor with one or more ground conductors having a total cross sectional area of not less than one-half the power conductor, and with an insulated external conductor not smaller than No. 8 (A.W.G.) or an insulated internal ground check conductor not smaller than No. 10 (A.W.G.) for the ground continuity check circuit.

(b) All such cables shall be adequate for the intended current and voltage. Splices made in such cables shall provide continuity of all components.

[38 FR 4976, Feb. 23, 1973]

§ 75.805 Couplers.

[STATUTORY PROVISIONS]

Couplers that are used with medium-voltage or high-voltage power circuits shall be of the three-phase type with a

full metallic shell, except that the Secretary may permit, under such guidelines as he may prescribe, no less effective couplers constructed of materials other than metal. Couplers shall be adequate for the voltage and current expected.

All exposed metal on the metallic couplers shall be grounded to the ground conductor in the cable. The coupler shall be constructed so that the ground check continuity conductor shall be broken first and the ground conductors shall be broken last when the coupler is being uncoupled.

§ 75.806 Connection of single-phase loads.

[STATUTORY PROVISIONS]

Single-phase loads, such as transformer primaries, shall be connected phase-to-phase.

§ 75.807 Installation of high-voltage transmission cables.

[STATUTORY PROVISIONS]

All underground high-voltage transmission cables shall be installed only in regularly inspected air courses and haulageways, and shall be covered, buried, or placed so as to afford protection against damage, guarded where men regularly work or pass under them unless they are 6½ feet or more above the floor or rail, securely anchored, properly insulated, and guarded at ends, and covered, insulated, or placed to prevent contact with trolley wires and other low-voltage circuits.

§ 75.808 Disconnecting devices.

[STATUTORY PROVISIONS]

Disconnecting devices shall be installed at the beginning of branch lines in high-voltage circuits and equipped or designed in such a manner that it can be determined by visual observation that the circuit is deenergized when the switches are open.

§ 75.809 Identification of circuit breakers and disconnecting switches.

[STATUTORY PROVISIONS]

Circuit breakers and disconnecting switches underground shall be marked for identification.

§ 75.810 High-voltage trailing cables; splices.

[STATUTORY PROVISIONS]

In the case of high-voltage cables used as trailing cables, temporary splices shall

not be used and all permanent splices shall be made in accordance with § 75.-604. Terminations and splices in all other high voltage cables shall be made in accordance with the manufacturer's specifications.

§ 75.811 High-voltage underground equipment; grounding.

[STATUTORY PROVISIONS]

Frames, supporting structures and enclosures of stationary, portable, or mobile underground high-voltage equipment and all high-voltage equipment supplying power to such equipment receiving power from resistance grounded systems shall be effectively grounded to the high-voltage ground.

§ 75.812 Movement of high-voltage power centers and portable transformers; permit.

[STATUTORY PROVISIONS]

Power centers and portable transformers shall be deenergized before they are moved from one location to another, except that, when equipment powered by sources other than such centers or transformers is not available, the Secretary may permit such centers and transformers to be moved while energized, if he determines that another equivalent or greater hazard may otherwise be created, and if they are moved under the supervision of a qualified person, and if such centers and transformers are examined prior to such movement by such person and found to be grounded by methods approved by an authorized representative of the Secretary and otherwise protected from hazards to the miner. A record shall be kept of such examinations. High-voltage cables, other than trailing cables, shall not be moved or handled at any time while energized, except that, when such centers and transformers are moved while energized as permitted under this section, energized high-voltage cables attached to such centers and transformers may be moved only by a qualified person and the operator of such mine shall require that such person wear approved and tested insulated wireman's gloves.

§ 75.812-1 Qualified person.

A person who meets the requirements of § 75.153 is a qualified person within the meaning of § 75.812.

§ 75.812-2 High-voltage power centers and transformers; record of examination.

The operator shall maintain a record of all examinations conducted in accordance with § 75.812. Such record shall be kept in a book approved by the Secretary.

Subpart J—Underground Low- and Medium-Voltage Alternating Current Circuits

§ 75.900 Low- and medium-voltage circuits serving three-phase alternating current equipment; circuit breakers.

[STATUTORY PROVISIONS]

Low- and medium-voltage power circuits serving three-phase alternating current equipment shall be protected by suitable circuit breakers of adequate interrupting capacity which are properly tested and maintained as prescribed by the Secretary. Such breakers shall be equipped with devices to provide protection against undervoltage, grounded phase, short circuit, and overcurrent.

§ 75.900-1 Circuit breakers; location.

Circuit breakers used to protect low- and medium-voltage circuits underground shall be located in areas which are accessible for inspection, examination, and testing, have safe roofs, and are clear of any moving equipment used in haulageways.

§ 75.900-2 Approved circuit schemes.

The following circuit schemes will be regarded as providing the necessary protection to the circuit required by § 75.900:

(a) Ground check relays may be used for undervoltage protection if the relay coils are designed to trip the circuit breaker when line voltage decreases to 40 to 60 percent of the nominal line voltage.

(b) One undervoltage device installed in the main secondary circuit at the source transformer may be used to provide undervoltage protection for each circuit that receives power from that transformer.

(c) One circuit breaker may be used to protect two or more branch circuits if the circuit breaker is adjusted to afford overcurrent protection for the smallest conductor.

(d) Circuit breakers with shunt trip, series trip or undervoltage release devices may be used if the tripping elements of

such devices are selected or adjusted in accordance with the settings listed in the Tables of the National Electric Code, 1968.

§ 75.900-3 Testing, examination, and maintenance of circuit breakers; procedures.

Circuit breakers protecting low- and medium-voltage alternating current circuits serving three-phase alternating current equipment and their auxiliary devices shall be tested and examined at least once each month by a person qualified as provided in § 75.153. In performing such tests, actuating any of the circuit breaker auxiliaries or control circuits in any manner which causes the circuit breaker to open, shall be considered a proper test. All components of the circuit breaker and its auxiliary devices shall be visually examined and such repairs or adjustments as are indicated by such tests and examinations shall be carried out immediately.

§ 75.900-4 Testing, examination, and maintenance of circuit breakers; record.

The operator of any coal mine shall maintain a written record of each test, examination, repair, or adjustment of all circuit breakers protecting low- and medium-voltage circuits serving three-phase alternating current equipment used in the mine. Such record shall be kept in a book approved by the Secretary.

§ 75.901 Protection of low- and medium-voltage three-phase circuits used underground.

[STATUTORY PROVISIONS]

(a) Low- and medium-voltage three-phase alternating-current circuits used underground shall contain either a direct or derived neutral which shall be grounded through a suitable resistor at the power center, and a grounding circuit, originating at the grounded side of the grounding resistor, shall extend along with the power conductors and serve as a grounding conductor for the frames of all the electrical equipment supplied power from that circuit, except that the Secretary or his authorized representative may permit ungrounded low- and medium-voltage circuits to be used underground to feed such stationary electrical equipment if such circuits are grounded rigid steel conduit throughout their entire length. The grounding res-

istor, where required, shall be of the proper ohmic value to limit the ground fault current to 25 amperes. The grounding resistor shall be rated for maximum fault current continuously and insulated from ground for a voltage equal to the phase-to-phase voltage of the system.

§ 75.902 Low- and medium-voltage ground check monitor circuits.

[STATUTORY PROVISIONS]

On or before September 30, 1970, low- and medium-voltage resistance grounded systems shall include a fail-safe ground check circuit to monitor continuously the grounding circuit to assure continuity which ground check circuit shall cause the circuit breaker to open when either the ground or pilot check wire is broken, or other no less effective device approved by the Secretary or his authorized representative to assure such continuity, except that an extension of time, not in excess of 12 months, may be permitted by the Secretary on a mine-by-mine basis if he determines that such equipment is not available. Cable couplers shall be constructed so that the ground check continuity conductor shall be broken first and the ground conductors shall be broken last when the coupler is being uncoupled.

§ 75.902-1 Maximum voltage ground check circuits.

The maximum voltage used for such ground check circuits shall not exceed 40 volts.

§ 75.902-2 Approved ground check systems not employing pilot check wires.

Ground check systems not employing pilot check wires will be approved only if it is determined that the system includes a fail safe design causing the circuit breaker to open when ground continuity is broken.

§ 75.902-4 Attachment of ground conductors and ground check wires to equipment frames; use of separate connections.

In grounding equipment frames of all stationary, portable or mobile equipment receiving power from resistance grounded systems separate connections shall be used when practicable.

§ 75.903 Disconnecting devices.

[STATUTORY PROVISIONS]

Disconnecting devices shall be installed in conjunction with the circuit breaker

to provide visual evidence that the power is disconnected.

§ 75.904 Identification of circuit breakers.

[STATUTORY PROVISIONS]

Circuit breakers shall be marked for identification.

§ 75.905 Connection of single-phase loads.

[STATUTORY PROVISIONS]

Single-phase loads shall be connected phase-to-phase.

§ 75.906 Trailing cables for mobile equipment, ground wires, and ground check wires.

[STATUTORY PROVISIONS]

Trailing cables for mobile equipment shall contain one or more ground conductors having a cross-sectional area of not less than one-half the power conductor, and, on September 30, 1970, an insulated conductor for the ground continuity check circuit or other no less effective device approved by the Secretary or his authorized representative to assure such continuity, except that an extension of time, not in excess of 12 months may be permitted by the Secretary on a mine-by-mine basis if he determines that such equipment is not available. Splices made in the cables shall provide continuity of all components.

§ 75.907 Design of trailing cables for medium-voltage circuits.

[STATUTORY PROVISIONS]

Trailing cables for medium-voltage circuits shall include grounding conductors, a ground check conductor, and grounded metallic shields around each power conductor or a ground metallic shield over the assembly, except that on equipment employing cable reels, cables without shields may be used if the insulation is rated 2,000 volts or more.

Subpart K—Trolley Wires and Trolley Feeder Wires

§ 75.1000 Cutout switches.

[STATUTORY PROVISIONS]

Trolley wires and trolley feeder wires, shall be provided with cutout switches at intervals of not more than 2,000 feet and near the beginning of all branch lines.

§ 75.1001 Overcurrent protection.

[STATUTORY PROVISIONS]

Trolley wires and trolley feeder wires shall be provided with overcurrent protection.

§ 75.1001-1 Devices for overcurrent protection; testing and calibration requirements; records.

(a) Automatic circuit interrupting devices that will deenergize the affected circuit upon occurrence of a short circuit at any point in the system will meet the requirements of § 75.1001.

(b) Automatic circuit interrupting devices described in paragraph (a) of this section shall be tested and calibrated at intervals not to exceed six months. Testing of such devices shall include passing the necessary amount of electric current through the device to cause activation. Calibration of such devices shall include adjustment of all associated relays to ± 15 percent of the indicated value. An authorized representative of the Secretary may require additional testing or calibration of these devices.

(c) A record of the tests and calibrations required by paragraph (b) of this section shall be kept, and shall be made available, upon request, to an authorized representative of the Secretary.

[38 FR 29998, Oct. 31, 1973]

§ 75.1002 Location of trolley wires, trolley feeder wires, high-voltage cables and transformers.

[STATUTORY PROVISIONS]

Trolley wires and trolley feeder wires, high-voltage cables and transformers shall not be located inby the last open crosscut and shall be kept at least 150 feet from pillar workings.

§ 75.1002-1 Location of other electric equipment; requirements for permissibility.

(a) Electric equipment other than trolley wires, trolley feeder wires, high-voltage cables, and transformers shall be permissible, and maintained in a permissible condition when such electric equipment is located within 150 feet from pillar workings, except as provided in paragraphs (b) and (c) of this section.

(b) Notwithstanding the provisions of paragraph (a) of this section, in any coal mine where nonpermissible electric face equipment may be taken into or used inby the last open crosscut until

March 30, 1974, such nonpermissible electric face equipment may be located within 150 feet from pillar workings.

(c) Notwithstanding the provisions of paragraph (a) of this section, in any coal mine where a permit for noncompliance is in effect, nonpermissible electric face equipment specified in such permit for noncompliance may be located within 150 feet from pillar workings for the duration of such permit.

[38 FR 4976, Feb. 23, 1973]

§ 75.1003 Insulation of trolley wires, trolley feeder wires and bare signal wires; guarding of trolley wires and trolley feeder wires.

[STATUTORY PROVISIONS]

Trolley wires, trolley feeder wires, and bare signal wires shall be insulated adequately where they pass through doors and stoppings, and where they cross other power wires and cables. Trolley wires and trolley feeder wires shall be guarded adequately:

(a) At all points where men are required to work or pass regularly under the wires;

(b) On both sides of all doors and stoppings; and

(c) At man-trip stations.

The Secretary or his authorized representatives shall specify other conditions where trolley wires and trolley feeder wires shall be adequately protected to prevent contact by any person, or shall require the use of improved methods to prevent such contact. Temporary guards shall be provided where trackmen and other persons work in proximity to trolley wires and trolley feeder wires.

§ 75.1003-1 Other requirements for guarding of trolley wires and trolley feeder wires.

Adequate precaution shall be taken to insure that equipment being moved along haulageways will not come in contact with trolley wires or trolley feeder wires.

§ 75.1003-2 Requirements for movement of off-track mining equipment in areas of active workings where energized trolley wires or trolley feeder wires are present; pre-movement requirements; certified and qualified persons.

(a) Prior to moving or transporting any unit of off-track mining equipment in areas of the active workings where

energized trolley wires or trolley feeder wires are present:

(1) The unit of equipment shall be examined by a certified person to ensure that coal dust, float coal dust, loose coal, oil, grease, and other combustible materials have been cleaned up and have not been permitted to accumulate on such unit of equipment; and,

(2) A qualified person, as specified in § 75.153 of this part, shall examine the trolley wires, trolley feeder wires, and the associated automatic circuit interrupting devices provided for short circuit protection to ensure that proper short circuit protection exists.

(b) A record shall be kept of the examinations required by paragraph (a) of this section, and shall be made available, upon request, to an authorized representative of the Secretary.

(c) Off-track mining equipment shall be moved or transported in areas of the active workings where energized trolley wires or trolley feeder wires are present only under the direct supervision of a certified person who shall be physically present at all times during moving or transporting operations.

(d) The frames of off-track mining equipment being moved or transported, in accordance with this section, shall be covered on the top and on the trolley wire side with fire-resistant material which has met the applicable requirements of Part 18 of Subchapter D of this Chapter (Bureau of Mines Schedule 2G).

(e) Electrical contact shall be maintained between the mine track and the frames of off-track mining equipment being moved in-track and trolley entries, except that rubber-tired equipment need not be grounded to a transporting vehicle if no metal part of such rubber-tired equipment can come into contact with the transporting vehicle.

(f) A minimum vertical clearance of 12 inches shall be maintained between the farthest projection of the unit of equipment which is being moved and the energized trolley wires or trolley feeder wires at all times during the movement or transportation of such equipment; provided, however, that if the height of the coal seam does not permit 12 inches of vertical clearance to be so maintained, the following additional precautions shall be taken:

(1) (i) Except as provided in paragraph (f) (1) (ii) of this section electric power shall be supplied to the trolley wires or trolley feeder wires only from outby the

unit of equipment being moved or transported. (ii) Where direct current electric power is used and such electric power can be supplied only from inby the equipment being moved or transported, power may be supplied from inby such equipment provided a miner with the means to cut off the power, and in direct communication with persons actually engaged in the moving or transporting operation, is stationed outby the equipment being moved.

(2) The settings of automatic circuit interrupting devices used to provide short circuit protection for the trolley circuit shall be reduced to not more than one-half of the maximum current that could flow if the equipment being moved or transported were to come into contact with the trolley wire or trolley feeder wire;

(3) At all times the unit of equipment is being moved or transported, a miner shall be stationed at the first automatic circuit breaker outby the equipment being moved and such miner shall be: (i) In direct communication with persons actually engaged in the moving or transporting operation, and (ii) capable of communicating with the responsible person on the surface required to be on duty in accordance with § 75.1600-1 of this part;

(4) Where trolley phones are utilized to satisfy the requirements of paragraph (f) (3) of this section, telephones or other equivalent two-way communication devices that can readily be connected with the mine communication system shall be carried by the miner stationed at the first automatic circuit breaker outby the equipment being moved and by a miner actually engaged in the moving or transporting operation; and,

(5) No person shall be permitted to be inby the unit of equipment being moved or transported, in the ventilating current of air that is passing over such equipment, except those persons directly engaged in moving such equipment.

(g) The provisions of paragraphs (a) through (f) of this section shall not apply to units of mining equipment that are transported in mine cars, provided that no part of the equipment extends above or over the sides of the mine car. [38 FR 29998, Oct. 31, 1973]

Subpart L—Fire Protection

§ 75.1100 Requirements.

[STATUTORY PROVISION]

Each coal mine shall be provided with suitable firefighting equipment adapted for the size and conditions of the mine. The Secretary shall establish minimum requirements of the type, quality, and quantity of such equipment.

§ 75.1100-1 Type and quality of firefighting equipment.

Firefighting equipment required under this subpart shall meet the following minimum requirements:

(a) **Waterlines:** Waterlines shall be capable of delivering 50 gallons of water a minute at a nozzle pressure of 50 pounds per square inch.

(b) **Portable water cars:** A portable water car shall be of at least 1,000 gallons capacity (500 gallons capacity for anthracite mines) and shall have at least 300 feet of fire hose with nozzles. A portable water car shall be capable of providing a flow through the hose of 50 gallons of water per minute at a nozzle pressure of 50 pounds per square inch.

(c) A portable chemical car shall carry enough chemicals to provide a fire extinguishing capacity equivalent to that of a portable water car.

(d) **Portable foam-generating machines or devices:** A portable foam-generating machine or device shall have facilities and equipment for supplying the machine with 30 gallons of water per minute at 30 pounds per square inch for a period of 35 minutes.

(e) **Portable fire extinguisher:** A portable fire extinguisher shall be either (1) a multipurpose dry chemical type containing a nominal weight of 5 pounds of dry powder and enough expellant to apply the powder or (2) a foam-producing type containing at least 2½ gallons of foam-producing liquids and enough expellant to supply the foam. Only fire extinguishers approved by the Underwriters Laboratories, Inc., or Factory Mutual Research Corp., carrying appropriate labels as to type and purpose, shall be used. After March 30, 1971, all new portable fire extinguishers acquired for use in a coal mine shall have a 2A 10 BC or higher rating.

(f) (1) Except as provided in subparagraph (2) of this paragraph, the fire

hose shall be lined with a material having flame resistant qualities meeting requirements for hose in Bureau of Mines' Schedule 2G. The cover shall be polyester, or other material with flame-spread qualities and mildew resistance equal or superior to polyester. The bursting pressure shall be at least 4 times the water pressure at the valve to the hose inlet with the valve closed; the maximum water pressure in the hose nozzle shall not exceed 100 p.s.i.g.

(2) Fire hose installed for use in underground coal mines prior to December 30, 1970, shall be mildew-proof and have a bursting pressure at least 4 times the water pressure at the valve to the hose inlet with the valve closed, and the maximum water pressure in the hose nozzle with water flowing shall not exceed 100 p.s.i.g.

§ 75.1100-2 Quantity and location of firefighting equipment.

(a) *Working sections.* (1) Each working section of coal mines producing 300 tons or more per shift shall be provided with two portable fire extinguishers and 240 pounds of rock dust in bags or other suitable containers; waterlines shall extend to each section loading point and be equipped with enough fire hose to reach each working face unless the section loading point is provided with one of the following:

- (i) Two portable water cars; or
- (ii) Two portable chemical cars; or
- (iii) One portable water car or one portable chemical car, and either (a) a portable foam-generating machine or (b) a portable high-pressure rock-dusting machine fitted with at least 250 feet of hose and supplied with at least 60 sacks of rock dust.

(2) Each working section of coal mines producing less than 300 tons of coal per shift shall be provided with two portable fire extinguishers, 240 pounds of rock dust in bags or other suitable containers, and at least 500 gallons of water and at least 3 pails of 10 quart capacity. In lieu of the 500 gallon water supply a waterline with sufficient hose to reach the working places, a portable water car (500 gallons capacity) or a portable all-purpose dry powder chemical car of at least 125-pounds capacity may be provided.

(b) *Belt conveyors.* In all coal mines, waterlines shall be installed parallel

to the entire length of belt conveyors and shall be equipped with firehose outlets with valves at 300-foot intervals along each belt conveyor and at tailpieces. At least 500 feet of firehose with fittings suitable for connection with each belt conveyor waterline system shall be stored at strategic locations along the belt conveyor. Waterlines may be installed in entries adjacent to the conveyor entry belt as long as the outlets project into the belt conveyor entry.

(c) *Haulage tracks.* (1) In mines producing 300 tons of coal or more per shift waterlines shall be installed parallel to all haulage tracks using mechanized equipment in the track or adjacent entry and shall extend to the loading point of each working section. Waterlines shall be equipped with outlet valves at intervals of not more than 500 feet, and 500 feet of firehose with fittings suitable for connection with such waterlines shall be provided at strategic locations. Two portable water cars, readily available, may be used in lieu of waterlines prescribed under this paragraph.

(2) In mines producing less than 300 tons of coal per shift, there shall be provided at 500-foot intervals in all main and secondary haulage roads:

- (i) A tank of water of at least 55-gallon capacity with at least 3 pails of not less than 10-quart capacity; or
- (ii) Not less than 240 pounds of bagged rock dust.

(d) *Transportation.* Each track or off-track locomotive, self-propelled man-trip car, or personnel carrier shall be equipped with one portable fire extinguisher.

(e) *Electrical installations.* (1) Two portable fire extinguishers or one extinguisher having at least twice the minimum capacity specified for a portable fire extinguisher in § 75.1100-1(e) shall be provided at each permanent electrical installation.

(2) One portable fire extinguisher and 240 pounds of rock dust shall be provided at each temporary electrical installation.

(f) *Oil storage stations.* Two portable fire extinguishers and 240 pounds of rock dust, shall be provided at each permanent underground oil storage station. One portable fire extinguisher shall be provided at each working section where 25 gallons or more of oil are stored in addition to extinguishers required under paragraph (a) of this section.

(g) *Welding, cutting, soldering.* One portable fire extinguisher or 240 pounds of rock dust shall be provided at locations where welding, cutting, or soldering with arc or flame is being done.

(h) *Powerlines.* At each wooden door through which powerlines pass there shall be one portable fire extinguisher or 240 pounds of rock dust within 25 feet of the door on the intake air side.

(i) *Emergency materials.* (1) At each mine producing 300 tons of coal or more per shift there shall be readily available the following materials at locations not exceeding 2 miles from each working section:

- 1,000 board feet of brattice boards
- 2 rolls of brattice cloth
- 2 hand saws
- 25 pounds of 8^d nails
- 25 pounds of 10^d nails
- 25 pounds of 16^d nails
- 3 claw hammers
- 25 bags of wood fiber plaster or 10 bags of cement (or equivalent material for stop-pings)
- 5 tons of rock dust

(2) At each mine producing less than 300 tons of coal per shift the above materials shall be available at the mine, provided, however, that the emergency materials for one or more mines may be stored at a central warehouse or building supply company and such supply must be the equivalent of that required for all mines involved and within 1-hour's delivery time from each mine. This exception shall not apply where the active working sections are more than 2 miles from the surface.

§ 75.1100-3 Condition and examination of firefighting equipment.

All firefighting equipment shall be maintained in a usable and operative condition. Chemical extinguishers shall be examined every 6 months and the date of the examination shall be written on a permanent tag attached to the extinguisher.

§ 75.1101 Deluge-type water sprays, foam generators; main and secondary belt-conveyor drives.

[STATUTORY PROVISIONS]

Deluge-type water sprays or foam generators automatically actuated by rise in temperature, or other no less effective means approved by the Secretary of controlling fire, shall be installed at main and secondary belt-conveyor drives.

§ 75.1101-1 Deluge-type water spray systems.

(a) Deluge-type spray systems shall consist of open nozzles attached to branch lines. The branch lines shall be connected to a waterline through a control valve operated by a fire sensor. Actuation of the control valve shall cause water to flow into the branch lines and discharge from the nozzles.

(b) Nozzles attached to the branch lines shall be full cone, corrosion resistant and provided with blow-off dust covers. The spray application rate shall not be less than 0.25 gallon per minute per square foot of the top surface of the top belt and the discharge shall be directed at both the upper and bottom surfaces of the top belt and to the upper surface of the bottom belt.

§ 75.1101-2 Installation of deluge-type sprays.

Deluge-type water spray systems shall provide protection for the belt drive and 50 feet of fire-resistant belt or 150 feet of nonfire-resistant belt adjacent to the belt drive.

§ 75.1101-3 Water requirements.

Deluge-type water spray systems shall be attached to a water supply. Water so supplied shall be free of excessive sediment and noncorrosive to the system. Water pressure shall be maintained consistent with the pipe, fittings, valves, and nozzles at all times. Water systems shall include strainers with a flush-out connection and a manual shut-off valve. The water supply shall be adequate to provide flow for 10 minutes except that pressure tanks used as a source of water supply shall be of 1,000-gallon capacity for a fire-resistant belt and 3,000 gallons for a nonfire-resistant belt may be provided.

§ 75.1101-4 Branch lines.

As a part of the deluge-type water spray system, two or more branch lines of nozzles shall be installed. The maximum distance between nozzles shall not exceed 8 feet.

§ 75.1101-5 Installation of foam generator systems.

(a) Foam generator systems shall be located so as to discharge foam to the belt drive, belt take-up, electrical controls, gear reducing unit and the conveyor belt.

(b) Foam generator systems shall be equipped with a fire sensor which actu-

ates the system, and each system shall be capable of producing and delivering the following amounts of foam within 5 minutes:

(1) At fire-resistant belt installations, an amount which will fully envelop the belt drive, belt take-up, electrical controls, gear reducing unit, and the conveyor belt over a distance of 50 feet; and,

(2) At nonfire-resistant belt installations, an amount which will fully envelop the belt drive, belt take-up electrical controls, gear reducing unit, and the conveyor belt over a distance of 150 feet.

(c) The foam generator shall be equipped with a warning device designed to stop the belt drive when a fire occurs and all such warning devices shall be capable of giving both an audible and visual signal when actuated by fire.

(d) Water, power, and chemicals required shall be adequate to maintain water or foam flow for no less than 25 minutes.

(e) Water systems shall include strainers with a flush-out connection and a manual shut-off valve.

§ 75.1101-6 Water sprinkler systems; general.

Water sprinkler systems may be installed to protect main and secondary belt-conveyor drives, however, where such systems are employed, they shall be installed and maintained in accordance with §§ 75.1101-7 through 75.1101-11.

§ 75.1101-7 Installation of water sprinkler systems; requirements.

(a) The fire-control components of each water sprinkler system shall be installed, as far as practicable in accordance with the recommendations set forth in National Fire Protection Association 1968-69 edition, Code No. 13, "Installation of Sprinkler Systems" and such systems' components shall be of a type approved by the Underwriters' Laboratories, Inc., Factory Mutual Research Corp.

(b) Each sprinkler system shall provide protection for the motor drive belt take-up, electrical controls, gear reducing unit, and the 50 feet of fire-resistant belt, or 150 feet of nonfire-resistant belt adjacent to the belt drive.

(c) The components of each water sprinkler system shall be located so as to minimize the possibility of damage by roof fall or by the moving belt and its load.

§ 75.1101-8 Water sprinkler systems; arrangement of sprinklers.

(a) At least one sprinkler shall be installed above each belt drive, belt take-up, electrical control, and gear-reducing unit, and individual sprinklers shall be installed at intervals of no more than 8 feet along all conveyor branch lines.

(b) Two or more branch lines, at least one of which shall be above the top belt and one between the top and bottom belt, shall be installed in each sprinkler system to provide a uniform discharge of water to the belt surface.

(c) The water discharge rate from the sprinkler system shall not be less than 0.25 gallon per minute per square foot of the top surface of the top belt and the discharge shall be directed at both the upper and bottom surfaces of the top belt and to the upper surface of the bottom belt. The supply of water shall be adequate to provide a constant flow of water for 10 minutes with all sprinklers functioning.

(d) Each individual sprinkler shall be activated at a temperature of not less than 150° F. and not more than 300° F.

(e) Water systems shall include strainers with a flush-out connection and a manual shut-off valve.

§ 75.1101-9 Back-up water system.

One fire hose outlet together with a length of hose capable of extending to the belt drive shall be provided within 300 feet of each belt drive.

§ 75.1101-10 Water sprinkler systems; fire warning devices at belt drives.

Each water sprinkler system shall be equipped with a device designed to stop the belt drive in the event of a rise in temperature and each such warning device shall be capable of giving both an audible and visual warning when a fire occurs.

§ 75.1101-11 Inspection of water sprinkler systems.

Each water sprinkler system shall be examined weekly and a functional test of the complete system shall be conducted at least once each year.

§ 75.1101-12 Equivalent dry-pipe system.

Where water sprinkler systems are installed to protect main and secondary belt conveyor drives and freezing temperatures prevail, an equivalent dry-pipe system may be installed.

§ 75.1101-13 Dry powder chemical systems; general.

Self-contained dry powder chemical systems may be installed to protect main and secondary belt conveyor drives, however, where such systems are employed, they shall be installed and maintained in accordance with the provisions of § 75.1101-14 through 75.1101-22.

§ 75.1101-14 Installation of dry powder chemical systems.

(a) Self-contained dry powder chemical systems shall be installed to protect each belt-drive, belt takeup, electrical-controls, gear reducing units and 50 feet of fire-resistant belt or 150 feet of non-fire-resistant belt adjacent to the belt drive.

(b) The fire-control components of each dry powder chemical system shall be a type approved by the Underwriters' Laboratories, Inc., or Factory Mutual Engineering Corp.

(c) The components of each dry powder chemical system shall be located so as to minimize the possibility of damage by roof fall or by the moving belt and its load.

§ 75.1101-15 Construction of dry powder chemical systems.

(a) Each self-contained dry powder system shall be equipped with hose or pipe lines which are no longer than necessary.

(b) Metal piping and/or hose between control valves and nozzles shall have a minimum bursting pressure of 500 p.s.i.g.

(c) Hose shall be protected by wire braid or its equivalent.

(d) Nozzles and reservoirs shall be sufficient in number to provide maximum protection to each belt, belt takeup, electrical controls, and gear reducing unit.

(e) Each belt shall be protected on the top surface of both the top and bottom belts and the bottom surface of the top belt.

§ 75.1101-16 Dry powder chemical systems; sensing and fire-suppression devices.

(a) Each self-contained dry powder chemical system shall be equipped with sensing devices which shall be designed to activate the fire-control system, sound an alarm and stop the conveyor drive motor in the event of a rise in temperature, and provision shall be made to minimize contamination of the lens of

any optical sensing device installed in such system.

(b) Where sensors are operated from the same power source as the belt drive, each sensor shall be equipped with a standby power source which shall be capable of remaining operative for at least 4 hours after a power cutoff.

(c) Sensor systems shall include a warning indicator (or test circuit) which shows it is operative.

(d) Each fire-suppression system shall be equipped with a manually operated control valve which shall be independent of the sensor.

§ 75.1101-17 Sealing of dry powder chemical systems.

Each dry powder chemical system shall be adequately sealed to protect all components of the system from moisture, dust, and dirt.

§ 75.1101-18 Dry powder requirements.

Each dry powder chemical system shall contain the following minimum amounts of multipurpose dry powder:

| <i>Belt</i> | <i>Dry powder, pounds</i> |
|-------------------------|-------------------------------|
| Fire resistant..... | 125 |
| Non-fire resistant..... | 250 |

§ 75.1101-19 Nozzles; flow rate and direction.

The nozzles of each dry powder chemical system shall be capable of discharging all powder within 1 minute after actuation of the system and such nozzles shall be directed so as to minimize the effect of ventilation upon fire control.

§ 75.1101-20 Safeguards for dry powder chemical systems.

Adequate guards shall be provided along all belt conveyors in the vicinity of each dry powder chemical system to protect persons whose vision is restricted by a discharge of powder from the system. In addition, hand-rails shall be installed in such areas to provide assistance to those passing along the conveyor after a powder discharge.

§ 75.1101-21 Back-up water system.

One fire hose outlet together with a length of hose capable of extending to the belt drive shall be provided within 300 feet of each belt drive.

§ 75.1101-22 Inspection of dry powder chemical systems.

(a) Each dry powder chemical system shall be examined weekly and a func-

tional test of the complete system shall be conducted at least once each year.

(b) Where the dry powder chemical system has been actuated, all components of the system shall be cleaned immediately by flushing all powder from pipes and hoses and all hose damaged by fire shall be replaced.

§ 75.1101-23 Program of instruction; location and use of fire fighting equipment; location of escapeways, exits and routes of travel; evacuation procedures; fire drills.

(a) Each operator of an underground coal mine shall adopt a program for the instruction of all miners in the location and use of fire fighting equipment, location of escapeways, exits, and routes of travel to the surface, and proper evacuation procedures to be followed in the event of an emergency. Such program shall be submitted for approval to the District Manager of the Coal Mine Health and Safety District in which the mine is located no later than June 30, 1974.

(1) The approved program of instruction shall include a specific fire fighting and evacuation plan designed to acquaint miners on all shifts with procedures for:

(i) Evacuation of all miners not required for fire fighting activities;

(ii) Rapid assembly and transportation of necessary men, fire suppression equipment, and rescue apparatus to the scene of the fire; and,

(iii) Operation of the fire suppression equipment available in the mine.

(2) The approved program of instruction shall be given to all miners annually, and to newly employed miners within six months after the date of employment.

(b) In addition to the approved program of instruction required by paragraph (a) of this section, each operator of an underground coal mine shall ensure that:

(1) At least two miners in each working section on each production shift are proficient in the use of all fire suppression equipment available on such working section, and know the location of such fire suppression equipment;

(2) Each operator of attended equipment specified in § 75.1107-1(c) (1) of this subpart, and each miner assigned to perform job duties at the job site in the direct line of sight of attended equipment as described in § 75.1107-1 (c) (2) of this subpart, is proficient in the use of fire suppression devices installed on such attended equipment; and,

(3) The shift foreman and at least one miner for every five miners working underground on a maintenance shift are proficient in the use of fire suppression equipment available in the mine, and know the location of such fire suppression equipment.

(c) Each operator of an underground coal mine shall require all miners to participate in fire drills, which shall be held at periods of time so as to ensure that all miners participate in such a drill no later than January 31, 1974, and at intervals of not more than 90 days thereafter.

(1) A record of such fire drills shall be kept at the mine, and shall include the date on which the drill was held, the number of persons participating, the area of the mine involved in the drill, the procedures followed, and the equipment used.

(2) For purposes of this paragraph (c), a fire drill shall consist of a simulation of the actions required by the approved fire fighting and evacuation plan described in subparagraph (a) (1) of this section.

[38 FR 29999, Oct. 31, 1973]

EDITORIAL NOTE: A clarification notice to § 75.1101-23 was issued at 38 FR 33397, Dec. 4, 1973 and corrected at 38 FR 34873, Dec. 20, 1973.

§ 75.1102 Slippage and sequence switches.

[STATUTORY PROVISIONS]

Underground belt conveyors shall be equipped with slippage and sequence switches.

§ 75.1103 Automatic fire warning devices.

[STATUTORY PROVISIONS]

On or before May 29, 1970, devices shall be installed on all such belts which will give a warning automatically when a fire occurs on or near such belt. The Secretary shall prescribe a schedule for installing fire suppression devices on belt haulageways.

§ 75.1103-1 Automatic fire sensors.

A fire sensor system shall be installed on each underground belt conveyor. Sensors so installed shall be of a type which will (a) give warning automatically when a fire occurs on or near such belt; (b) provide both audible and visual signals that permit rapid location of the fire.

§ 75.1103-2 Automatic fire sensors; approved components; installation requirements.

(a) The components of each automatic fire sensor required to be installed in accordance with the provisions of § 75.1103-1 shall be of a type and installed in a manner approved by the Secretary, or the components shall be of a type listed, approved and installed in accordance with the recommendations of a nationally recognized testing laboratory approved by the Secretary.

(b) Where applicable, and not inconsistent with these regulations, automatic fire sensors shall be installed in accordance with the recommendations set forth in National Fire Code No. 72A "Local Protective Signaling Systems" (NFPA No. 72A-1967). National Fire Code No. 72A (1967) is hereby incorporated by reference and made a part hereof. National Fire Code No. 72A is available for examination at each Coal Mine Health and Safety District and Subdistrict Office of the Mining Enforcement and Safety Administration, and may be obtained from the National Fire Protection Association, 60 Battery-march Street, Boston, MA 02110.

[37 FR 16545, Aug. 16, 1972]

§ 75.1103-3 Automatic fire sensor and warning device systems; minimum requirements; general.

Automatic fire sensor and warning device systems installed in belt haulageways of underground coal mines shall be assembled from components which meet the minimum requirements set forth in §§ 75.1103-4 through 75.1103-7 unless otherwise approved by the Secretary.

[37 FR 16545, Aug. 16, 1972]

§ 75.1103-4 Automatic fire sensor and warning device systems; installation; minimum requirements.

(a) Automatic fire sensor and warning device systems shall provide identification of fire within each belt flight (each belt unit operated by a belt drive).

(1) Where used, sensors responding to temperature rise at a point (point-type sensors) shall be located at or above the elevation of the top belt, and installed at the beginning and end of each belt flight, at the belt drive, and in increments along each belt flight so that the maximum distance between sensors does not exceed 125 feet, except as provided in subparagraph (3) of this paragraph (a).

(2) Where used, sensors responding to radiation, smoke, gases, or other indications of fire, shall be spaced at regular intervals to provide protection equivalent to point-type sensors, and installed within the time specified in subparagraph (3) of this paragraph (a).

(3) When the distance from the tailpiece at loading points to the first outby sensor reaches 125 feet when point-type sensors are used, such sensors shall be installed and put in operation within 24 production shift hours after the distance of 125 feet is reached. When sensors of the kind described in subparagraph (2) of this paragraph (a) are used, such sensor shall be installed and put in operation within 24 production shift hours after the equivalent distance which has been established for the sensor from the tailpiece at loading points to the first outby sensor is first reached.

(b) Automatic fire sensor and warning device systems shall be installed so as to minimize the possibility of damage from roof falls and the moving belt and its load.

(c) Infrared, ultraviolet, and other sensors whose effectiveness is impaired by contamination shall be protected from dust, dirt, and moisture.

(d) The voltage of automatic fire sensor and warning device systems shall not exceed 120 volts.

(e) Except when power is required to be cut off in the mine under the provisions of § 75.321, automatic fire sensor and warning device systems shall be capable of giving warning of fire for a minimum of 4 hours after the source of power to the belt is removed unless the belt haulageway is examined for hot rollers and fire as provided in subparagraphs (1) or (2) of this paragraph (e).

(1) When an unplanned removal of power from the belt occurs an examination for hot rollers and fire in the operating belts of a conveyor system shall be completed within 2 hours after the belt has stopped.

(2) When a preplanned removal of power from the belt occurs an examination for hot rollers and fire on the operating belts of a conveyor system may commence not more than 30 minutes before the belts are stopped and shall be completed within 2 hours after the examination is commenced, or the examination shall be commenced when the belts are stopped and completed within 2 hours after the belts are stopped.

[37 FR 16545, Aug. 16, 1972]

§ 75.1103-5 Automatic fire warning devices; manual resetting.

(a) Automatic fire sensor and warning device systems shall upon activation provide an effective warning signal at either of the following locations:

(1) At all work locations where men may be endangered from a fire at the belt flight; or

(2) At a manned location where personnel have an assigned post of duty and have telephone or equivalent communication with all men who may be endangered.

The automatic fire sensor and warning device system shall be monitored for a period of 4 hours after the belt is stopped, unless an examination for hot rollers and fire is made as prescribed in § 75.1103-4(e).

(b) The fire sensor and warning device system shall include a means for rapid evaluation of electrical short and open circuits, ground faults, pneumatic leaks, or other defect detrimental to its proper operational condition.

(c) Automatic fire sensor and warning devices shall include a manual reset feature.

[37 FR 16545, Aug. 16, 1972]

§ 75.1103-6 Automatic fire sensors; actuation of fire suppression systems.

Automatic fire sensor and warning device systems may be used to actuate deluge-type water systems, foam generator systems, multipurpose dry-powder systems, or other equivalent automatic fire suppression systems.

[37 FR 16546, Aug. 16, 1972]

§ 75.1103-7 Electrical components; permissibility requirements.

The electrical components of each automatic fire sensor and warning device system shall:

(a) Remain functional when the power circuits are deenergized as required by § 75.706; and

(b) Be provided with protection against ignition of methane or coal dust when the electrical power is deenergized as required by § 75.321, but such components shall be permissible or intrinsically safe if installed in a return airway.

[37 FR 16546, Aug. 16, 1972]

§ 75.1103-8 Automatic fire sensor and warning device systems; inspection and test requirements.

(a) Automatic fire sensor and warning device systems shall be inspected

weekly, and a functional test of the complete system shall be made at least once annually. Inspection and maintenance of such systems shall be by a qualified person.

(b) A record of the annual functional test conducted in accordance with paragraph (a) of this section shall be maintained by the operator. A record card of the weekly inspection shall be kept at each belt drive.

[37 FR 16546, Aug. 16, 1972]

§ 75.1103-9 Minimum requirements; fire suppression materials and location; maintenance of entries and crosscuts; access doors; communications; fire crews; high-expansion foam devices.

(a) The following materials shall be stored within 300 feet of each belt drive or at a location where the material can be moved to the belt drive within 5 minutes, except that when the ventilating current in the belt haulageway travels in the direction of the normal movement of coal on the belt, the materials shall be stored within 300 feet of the belt tailpiece or at a location where the materials can be moved to the belt tailpiece within 5 minutes.

(1) 500 feet of fire hose, except that if the belt flight is less than 500 feet in length the fire hose may be equal to the length of the belt flight. A high expansion foam device may be substituted for 300 feet of the 500 feet of the fire hose. Where used, such foam generators shall produce foam sufficient to fill 100 feet of the belt haulageway in not more than 5 minutes. Sufficient power cable and water hose shall be provided so that the foam generator can be installed at any crosscut along the belt by which the generator is located. A 1-hour supply of foam producing chemicals and tools and hardware required for its operation shall be stored at the foam generator.

(2) Tools to open a stopping between the belt entry and the adjacent intake entry; and

(3) 240 pounds of bagged rock dust.

(b) The entry containing the main waterline and the crosscuts containing water outlets between such entry and the belt haulageway (if the main waterline is in an adjacent entry) shall be maintained accessible and in safe condition for travel and firefighting activities. Each stopping in such crosscuts or adjacent crosscuts shall have an access door.

(c) Suitable communication lines extending to the surface shall be provided in the belt haulageway or adjacent entry.

(d) The fire suppression system required at the belt drive shall include the belt discharge head.

(e) A crew consisting of at least five members for each working shift shall be trained in firefighting operations. Fire drills shall be held at intervals not exceeding 6 months.

[37 FR 16546, Aug. 16, 1972]

§ 75.1103-10 Fire suppression systems; additional requirements.

Where the average air velocity along the belt haulage entry exceeds 100 feet per minute, or the belt is not fire resistant, or both, the fire suppression system in the belt haulageway shall conform with the following additional sensor and cache requirements:

(a) The maximum distance between sensors along the belt haulageway shall be 40 percent of those distances specified or established in accordance with § 75.1103-4(a) (1) or (2), as applicable, and shall be installed and put in operation within the period of time specified in § 75.1103-4(a) (3).

(b) For each conveyor belt flight exceeding 2,000 feet in length, an additional cache of the materials specified in § 75.1103-9(a) (1), (2), and (3) shall be provided. The additional cache may be stored at the locations specified in § 75.1103-9(a), or at some other strategic location readily accessible to the conveyor belt flight.

[37 FR 16546, Aug. 16, 1972]

§ 75.1103-11 Tests of fire hydrants and fire hose; record of tests.

Each fire hydrant shall be tested by opening to insure that it is in operating condition, and each fire hose shall be tested, at intervals not exceeding 1 year. A record of these tests shall be maintained at an appropriate location.

[37 FR 16546, Aug. 16, 1972]

§ 75.1104 Underground storage, lubricating oil and grease.

[STATUTORY PROVISIONS]

Underground storage places for lubricating oil and grease shall be of fireproof construction. Except for specially prepared materials approved by the Secretary, lubricating oil and grease kept in

all underground areas in a coal mine shall be in fireproof, closed metal containers or other no less effective containers approved by the Secretary.

§ 75.1105 Housing of underground transformer stations, battery-charging stations, substations, compressor stations, shops, and permanent pumps.

[STATUTORY PROVISIONS]

Underground transformer stations, battery-charging stations, substations, compressor stations, shops, and permanent pumps shall be housed in fireproof structures or areas. Air currents used to ventilate structures or areas enclosing electrical installations shall be coursed directly into the return. Other underground structures installed in a coal mine as the Secretary may prescribe shall be of fireproof construction.

§ 75.1106 Welding, cutting, or soldering with arc or flame underground.

[STATUTORY PROVISIONS]

All welding, cutting, or soldering with arc or flame in all underground areas of a coal mine shall, whenever practicable, be conducted in fireproof enclosures. Welding, cutting, or soldering with arc or flame in other than a fireproof enclosure shall be done under the supervision of a qualified person who shall make a diligent search for fire during and after such operations and shall, immediately before and during such operations, continuously test for methane with means approved by the Secretary for detecting methane. Welding, cutting, or soldering shall not be conducted in air that contains 1.0 volume per centum or more of methane. Rock dust or suitable fire extinguishers shall be immediately available during such welding, cutting or soldering.

§ 75.1106-1 Test for methane.

Until December 31, 1970, a permissible flame safety lamp may be used to make tests for methane required by the regulations in this part. On and after December 31, 1970 a methane detector approved by the Secretary shall be used for such tests and a permissible flame safety lamp may be used as a supplemental testing device. A person qualified to test for methane under § 75.151 will be a qualified person for the purpose of this section.

TRANSPORTATION, HANDLING AND STORAGE OF LIQUEFIED AND NONLIQUEFIED COMPRESSED GAS CYLINDERS

§ 75.1106-2 Transportation of liquefied and nonliquefied compressed gas cylinders; requirements.

(a) Liquefied and nonliquefied compressed gas cylinders transported into or through an underground coal mine shall be:

(1) Placed securely in devices designed to hold the cylinder in place during transit on self-propelled equipment or belt conveyors;

(2) Disconnected from all hoses and gages;

(3) Equipped with a metal cap or "headband" (fence-type metal protector around the valve stem) to protect the cylinder valve during transit; and,

(4) Clearly labeled "empty" or "MT" when the gas in the cylinder has been expended.

(b) In addition to the requirements of paragraph (a) of this section, when liquefied and nonliquefied compressed gas cylinders are transported by a trolley wire haulage system into or through an underground coal mine, such cylinders shall be placed in well insulated and substantially constructed containers which are specifically designed for holding such cylinders.

(c) Liquefied and nonliquefied compressed gas cylinders shall not be transported on mantrips.

[36 F.R. 22061, Nov. 19, 1971]

§ 75.1106-3 Storage of liquefied and nonliquefied compressed gas cylinders; requirements.

(a) Liquefied and nonliquefied compressed gas cylinders stored in an underground coal mine shall be:

(1) Clearly marked and identified as to their contents in accordance with Department of Transportation regulations.

(2) Placed securely in storage areas designated by the operator for such purpose, and where the height of the coalbed permits, in an upright position, preferably in specially designated racks, or otherwise secured against being accidentally tipped over.

(3) Protected against damage from falling material, contact with power lines and energized electrical equipment, heat from welding, cutting or soldering, and exposure to flammable liquids.

(b) Liquefied and nonliquefied compressed gas cylinders shall not be stored or left unattended in any area inby the last open crosscut of an underground coal mine.

(c) When not in use, the valves of all liquefied and nonliquefied compressed gas cylinders shall be in the closed position, and all hoses shall be removed from the cylinder.

[36 F.R. 22061, Nov. 19, 1971]

§ 75.1106-4 Use of liquefied and nonliquefied compressed gas cylinders; general requirements.

(a) Persons assigned by the operator to use and work with liquefied and nonliquefied compressed gas shall be trained and designated by the operator as qualified to perform the work to which they are assigned, and such qualified persons shall be specifically instructed with respect to the dangers inherent in the use of such gases in an underground coal mine.

(b) Persons who perform welding, cutting, or burning operations shall wear clothing free from excessive oil or grease.

(c) Liquefied and nonliquefied compressed gas shall be used only in well-ventilated areas.

(d) Not more than one liquefied or nonliquefied compressed gas unit, consisting of one oxygen cylinder and one additional gas cylinder, shall be used to repair any unit of equipment which is inby the loading point of any section.

(e) Where liquefied and nonliquefied compressed gas is used regularly in underground shops or other underground structures, such shops or structures shall be on a separate split of air.

(f) Where liquefied and nonliquefied compressed gas is used in any area in which oil, grease, or coal dust is present, oil and grease deposits shall, where practicable, be removed and the entire area within 10 feet of the worksite covered with a heavy coating of rock dust.

(g) Liquefied and nonliquefied compressed gas cylinders shall be located no less than 10 feet from the worksite, and where the height of the coal seam permits, they shall be placed in an upright position and chained or otherwise secured against falling.

(h) Liquefied and nonliquefied compressed gas shall not be used under direct pressure from the cylinder and, where such gases are used under reduced pres-

sure, the pressure level shall not exceed that recommended by the manufacturer.

(i) "Manifolding cylinders" shall only be performed in well-ventilated shops where the necessary equipment is properly installed and operated in accordance with specifications for safety prescribed by the manufacturer.

[36 F.R. 22061, Nov. 19, 1971]

§ 75.1106-5 Maintenance and tests of liquefied and nonliquefied compressed gas cylinders; accessories, and equipment; requirements.

(a) Hose lines, gages, and other cylinder accessories shall be maintained in a safe operating condition.

(b) Defective cylinders, cylinder accessories, torches, and other welding, cutting, and burning equipment shall be labeled "defective" and taken out of service.

(c) Each qualified person assigned to perform welding, cutting, or burning with liquefied and nonliquefied compressed gas shall be equipped with a wrench specifically designed for use with liquefied and nonliquefied compressed gas cylinders and a suitable torchtip cleaner to maintain torches in a safe operating condition.

(d) Tests for leaks on the hose valves or gages of liquefied and nonliquefied compressed gas cylinders shall only be made with a soft brush and soapy water or soap suds, or other device approved by the Secretary.

[36 F.R. 22062, Nov. 19, 1971]

§ 75.1106-6 Exemption of small low pressure gas cylinders containing nonflammable or nonexplosive gas mixtures.

Small low pressure gas cylinders containing nonflammable or nonexplosive gas mixtures, which provide for the emission of such gas under a pressure reduced from a pressure which does not exceed 250 p.s.i.g., and which is manufactured and sold in conformance with U.S. Department of Transportation Special Permit No. 6029 as a calibration test kit for methane monitoring systems, shall be exempt from the requirements of §§ 75.1106-2(c) and 75.1106-4(d), (f) and (g).

[36 F.R. 22062, Nov. 19, 1971]

FIRE SUPPRESSION DEVICES AND FIRE-RESISTANT HYDRAULIC FLUIDS ON UNDERGROUND EQUIPMENT

§ 75.1107 Fire suppression devices.

[STATUTORY PROVISIONS]

On and after March 30, 1971, fire-suppression devices meeting specifications prescribed by the Secretary shall be installed on unattended underground equipment and suitable fire-resistant hydraulic fluids approved by the Secretary shall be used in the hydraulic systems of such equipment. Such fluids shall be used in the hydraulic systems of other underground equipment unless fire suppression devices meeting specifications prescribed by the Secretary are installed on such equipment.

§ 75.1107-1 Fire-resistant hydraulic fluids and fire suppression devices on underground equipment.

(a) (1) Unattended electrically powered equipment used underground which uses hydraulic fluid shall use approved fire-resistant hydraulic fluid.

(2) Except as provided in subparagraph (3) of this paragraph (a), within 24 production shift hours after being installed, unattended electrically powered equipment used underground shall be equipped with a fire suppression device which meets the applicable requirements of §§ 75.1107-3 through 75.1107-16.

(3) Unattended enclosed motors, controls, transformers, rectifiers, and other similar noncombustible electrically powered equipment containing no flammable fluid may be protected:

(i) By an approved fire suppression device, or

(ii) Be located at least 2 feet from coal or other combustible materials, or

(iii) Be separated from the coal or combustible materials by a 4-inch-thick masonry firewall or equivalent; and be mounted on a minimum 4-inch-thick noncombustible surface, platform, or equivalent. The electrical cables at such equipment shall conform with the requirements of Part 18 of this chapter (Bureau of Mines Schedule 2G) or be in metal conduit.

(b) Attended electrically powered equipment used underground which uses hydraulic fluid shall use approved fire-resistant hydraulic fluid unless such

equipment is protected by a fire suppression device which meets the applicable requirements of §§ 75.1107-3—75.1107-16.

(c) For purpose of §§ 75.1107-75-1107-16 the following underground equipment shall be considered attended equipment:

(1) Any machine or device regularly operated by a miner assigned to operate such machine or device;

(2) Any machine or device which is mounted in the direct line of sight of a jobsite which is located within 500 feet of such machine or device and which jobsite is regularly occupied by a miner assigned to perform job duties at such jobsite during each production shift.

(d) Machines and devices described under paragraph (c) of this section must be inspected for fire and the input powerline deenergized when workmen leave the area for more than 30 minutes.

[37 FR 15301, July 29, 1972]

§ 75.1107-2 Approved fire-resistant hydraulic fluids; minimum requirements.

Fire-resistant hydraulic fluids and concentrates required to be employed in the hydraulic system of underground equipment in accordance with the provisions of § 75.1107-1 shall be considered suitable only if they have been produced under an approval, or any modification thereof, issued pursuant to Part 35 Subchapter I of this chapter (Bureau of Mines Schedule 30), or any revision thereof.

[37 FR 15301, July 29, 1972]

§ 75.1107-3 Fire suppression devices; approved components; installation requirements.

(a) The components of each fire suppression device required to be installed in accordance with the provisions of § 75.1107-1 shall be approved by the Secretary, or where appropriate be listed as approved by a nationally recognized agency approved by the Secretary.

(b) Where used, pressure vessels shall conform with the requirements of sections 3603, 3606, 3607, 3707, and 3708 of National Fire Code No. 22 "Water Tanks for Private Fire Protection" (NFPA No. 22-1971).

(c) The cover of hose of fire suppression devices, if used on the protected equipment and installed after the effective

date of this section, shall meet the flame-resistant requirements of Part 18 of this chapter (Bureau of Mines Schedule 2G).

(d) Fire suppression devices required to be installed in accordance with the provisions of § 75.1107-1 shall where appropriate be installed in accordance with the manufacturer's specifications.

[37 FR 15301, July 29, 1972]

§ 75.1107-4 Automatic fire sensors and manual actuators; installation; minimum requirements.

(a) (1) Where fire suppression devices are installed on unattended underground equipment, one or more point-type sensors or equivalent shall be installed for each 50 square feet of top surface area, or fraction thereof, of such equipment, and each sensor shall be designed to activate the first suppression system and disconnect the electrical power source to the equipment protected, and, except where sprinklers are used, there shall be in addition, a manual actuator installed to operate the system. Where sprinklers are used, provision shall be made for manual application of water to the protected equipment in lieu of a manual actuator.

(2) Two or more manual actuators, where practicable, shall be installed, as provided in subdivisions (i) and (ii) of this subparagraph (2), to activate fire suppression devices on attended equipment purchased on or after the effective date of this § 75.1107-4. At least one manual actuator shall be used on equipment purchased prior to the effective date of this § 75.1107-4.

(i) Manual actuators installed on attended equipment regularly operated by a miner, as provided in § 75.1107-1(c) (1) shall be located at different locations on the equipment, and at least one manual actuator shall be located within easy reach of the operator's normal operating position.

(ii) Manual actuators to activate fire suppression devices on attended equipment not regularly operated by a miner, as provided in § 75.1107-1(c) (2), shall be installed at different location, and at least one manual actuator shall be installed so as to be easily reached by the miner at the jobsite or by persons approaching the equipment.

(b) Sensors shall, where practicable, be installed in accordance with the rec-

ommendations set forth in National Fire Code No. 72A "Local Protective Signaling Systems" (NFPA No. 72A-1967).

(c) On unattended equipment the fire suppression device shall operate independently of the power to the main motor (or equivalent) so it will remain operative if the circuit breakers (or other protective device) actuates. On attended equipment powered through a trailing cable the fire suppression device shall operate independently of the electrical power provided by the cable.

(d) Point-type sensors (such as thermocouple, bimetallic strip, or rate of temperature rise) located in ventilated passageways shall be installed downwind from the equipment to be protected.

(e) Sensor systems shall include a device or method for determining their operative condition.

[37 FR 15301, July 29, 1972]

§ 75.1107-5 Electrical components of fire suppression devices; permissibility requirements.

The electrical components of each fire suppression device used on permissible equipment in the last open crosscut or on equipment in the return airways of any coal mine shall be permissible or intrinsically safe and such components shall be maintained in permissible or intrinsically safe condition.

[37 FR 15302, July 29, 1972]

§ 75.1107-6 Capacity of fire suppression devices; location and direction of nozzles.

(a) Each fire suppression device shall be:

(1) Adequate in size and capacity to extinguish potential fires in or on the equipment protected; and

(2) Suitable for the atmospheric conditions surrounding the equipment protected (e.g., air velocity, type, and proximity of adjacent combustible material); and

(3) Rugged enough to withstand rough usage and vibration when installed on mining equipment.

(b) The extinguishant-discharge nozzles of each fire suppression device shall, where practicable, be located so as to take advantage of mine ventilation air currents. The fire suppression device may be of the internal injection, inundating, or combination type. Where fire control is achieved by internal injection, or combination of internal injection and inundation, hazardous locations shall be enclosed to minimize runoff and over-

shoot of the extinguishing agent and the extinguishing agent shall be directed onto:

(1) Cable reel compartments and electrical cables on the equipment which are subject to flexing or to external damage; and

(2) All hydraulic components on the equipment which are exposed directly to or located in the immediate vicinity of electrical cables which are subject to flexing or to damage.

[37 FR 15302, July 29, 1972]

§ 75.1107-7 Water spray devices; capacity; water supply; minimum requirements.

(a) Where water spray devices are used on unattended underground equipment the rate of flow shall be at least 0.25 gallon per minute per square foot over the top surface area of the equipment and the supply of water shall be adequate to provide the required flow of water for 10 minutes.

(b) Where water spray devices are used for inundating attended underground equipment the rate of flow shall be at least 0.18 gallon per minute per square foot over the top surface area of the equipment (excluding conveyors, cutters, and gathering heads), and the supply of water shall be adequate to provide the required flow of water for 10 minutes.

(c) Where water is used for internal injection on attended equipment the total quantity of water shall be at least 4.5 gallons times the number of hazardous locations; however, the total minimum amount of water shall not be less than the following:

| <i>Type of equipment:</i> | <i>Water in gallons</i> |
|------------------------------------|-----------------------------|
| (1) Cutting machines..... | 36 |
| (2) Continuous miners..... | 36 |
| (3) Haulage vehicles..... | 22.5 |
| (4) All other attended equipment.. | 18.0 |

The rate of flow shall be not less than 7 gallons per minute.

(d) Where water is used in a combination internal injection and inundation system on attended equipment the rate of flow shall be at least 0.12 gallon per minute per square foot over the top surface area of the equipment (excluding conveyors, cutters, and gathering heads), and the supply of water shall be adequate to provide the required flow of water for 10 minutes.

(e) On equipment provided with a cable reel and an internal injection or combination-type system, the amount of

water discharged into the cable reel compartments shall be approximately 25 percent of the amount required to be discharged by the system, however, such quantity need not exceed 10 gallons.

(f) Liquid chemicals may be used, as approved by the Secretary in self-contained fire suppression devices. Such liquid chemicals shall be nontoxic and when applied to a fire shall not produce excessive toxic compounds. The quantity of liquid chemicals required shall be proportionately less than water as based on equivalency ratings established by the Secretary or equivalency ratings made by a nationally recognized agency approved by the Secretary.

[37 FR 15302, July 29, 1972]

§ 75.1107-8 Fire suppression devices; extinguishant supply systems.

(a) Fire suppression systems using water or liquid chemical to protect attended equipment shall:

(1) Be maintained at a pressure consistent with the pipe, fittings, valves, and nozzles used in the system.

(2) Be located so as to be protected against damage during operation of the equipment protected.

(3) Employ liquid which is free from excessive sediment and noncorrosive to the system.

(4) Include strainers equipped with flush-out connections or equivalent protective devices and a rising stem or other visual indicator-type shutoff valve.

(b) Water supplies for fire suppression devices installed on underground equipment may be maintained in mounted water tanks or by connection to water mains. Such water supplies shall be continuously connected to the fire suppression device whenever the equipment is connected to a power source, except for a reasonable time for changing hose connections to hydrants while the machine is stopped in a ventilated passageway.

[37 FR 15302, July 29, 1972]

§ 75.1107-9 Dry chemical devices; capacity; minimum requirements.

(a) Dry chemical fire extinguishing systems used on underground equipment shall be of the multipurpose powder-type and shall include the following:

(1) The system including all hose and nozzles shall be protected against the entrance of moisture, dust, or dirt;

(2) The system shall be guarded against damage during operation of the equipment protected;

(3) Hose and pipe shall be as short as possible; the distance between the chemical container and furthest nozzle shall not exceed 50 feet;

(4) Hose, piping, and fittings between the actuator and the chemical container shall have a bursting pressure of 500 pounds per square inch (gage) or higher; the hose, piping, and fittings between the chemical container and the nozzles shall have a bursting pressure of 300 pounds per square inch (gage) or higher; and

(5) The system shall discharge in 1 minute or less, for quantities less than 50 pounds (nominal)¹ and in less than 2 minutes for quantities more than 50 pounds;

(b) On unattended underground equipment, the number of pounds of dry chemical employed by the system shall be not less than 1 pound per square foot of top surface area of the equipment; however, the minimum amount in any system shall be 20 pounds (nominal). The discharge shall be directed into and on potentially hazardous locations of the equipment.

(c) On attended underground equipment, the number of pounds (nominal) employed by the system shall equal 5 times the total number of hazardous locations; however, the minimum amount in any system shall not be less than the following, except that systems on haulage vehicles installed prior to the effective date of this section may contain 20 pounds (nominal).

| <i>Type of equipment:</i> | <i>Dry chemical pounds (nominal)</i> |
|--------------------------------------|--------------------------------------|
| (1) Cutting machines..... | 40 |
| (2) Continuous miners..... | 40 |
| (3) Haulage vehicles..... | 30 |
| (4) All other attended equipment.... | 20 |

(d) The amount of dry chemical discharged into the cable reel compartments of attended underground equipment shall be approximately 25 percent of the total amount required to be discharged by the

¹ Many dry chemical systems were originally designed for sodium bicarbonate before all-purpose chemical (ammonium phosphate) was shown to be more effective. Sodium bicarbonate is denser than ammonium phosphate; hence, for example, a 50-pound system designed for the sodium bicarbonate will hold slightly more by weight than all-purpose dry chemical (ammonium phosphate) by weight. The word "nominal" is used in § 75.1107-9 to express the approximate weight in pounds of all-purpose dry chemical.

system; however, the quantity discharged into cable reel compartments need not exceed 10 pounds.

[37 FR 15302, July 29, 1972]

§ 75.1107-10 High expansion foam devices; minimum capacity.

(a) On unattended underground equipment the amount of water delivered as high expansion foam for a period of approximately 20 minutes shall be not less than 0.06 gallon per minute per square foot of surface area of the equipment protected; however, the minimum total rate for any system shall be not less than 3 gallons per minute.

(b) On attended underground equipment, foam may be delivered by internal injection, inundation, or combination-type systems. Each system shall deliver water as foam for a minimum of 10 minutes. For internal injection, the rate of water application as high expansion foam shall be not less than 0.5 gallon per minute per hazardous location; however, the minimum total rate shall be not less than 2 gallons per minute. For inundation, the rate of water application as high expansion foam shall be not less than 0.05 gallon per minute per square foot of top surface area of the equipment protected; however, the minimum total rate shall be not less than 5 gallons of water per minute.

(c) In combined internal injection and inundation systems the rate of water applied as foam shall not be less than 0.035 gallon per minute per square foot of top surface area of the equipment protected; however, the minimum total rate shall not be less than 3.5 gallons of water per minute.

(d) Where internal injection is employed, the amount of water discharged as high expansion foam into the cable reel compartments of underground equipment regularly operated by a miner shall be approximately 25 percent of the total amount required to be discharged by the system; however, the quantity of water discharged as foam into the cable reel compartment need not exceed 1.5 gallons.

[37 FR 15303, July 29, 1972]

§ 75.1107-11 Extinguishing agents; requirements on mining equipment employed in low coal.

On mining equipment no more than 32 inches high, the quantity of extinguishing agent required under the provisions of §§ 75.1107-7, 75.1107-9, and

75.1107-10 may be reduced by one-fourth if space limitations on the equipment require such reduction.

[37 FR 15303, July 29, 1972]

§ 75.1107-12 Inerting of mine atmosphere prohibited.

No fire suppression device designed to control fire by total flooding shall be installed to protect unattended underground equipment except in enclosed dead-end entries or enclosed rooms.

[37 FR 15303, July 29, 1972]

§ 75.1107-13 Approval of other fire suppression devices.

Notwithstanding the provisions of §§ 75.1107-1 through 75.1107-12 the District Manager for the District in which the mine is located may approve any other fire suppression system or device which provides substantially equivalent protection as would be achieved through compliance with those sections: Provided, that no such system or device shall be approved which does not meet the following minimum criteria:

(a) Components shall be approved by the Secretary, or where appropriate be listed as approved by a nationally recognized agency approved by the Secretary.

(b) The fire suppression equipment shall be designed to withstand the rigors of the mine environment. Where used, pressure vessels shall conform with the requirements of sections 3603, 3606, 3607, 3707, and 3708 of National Fire Code No. 22 "Water Tanks for Private Fire Protection" (NFPA No. 22-1971).

(c) The cover of hose of fire suppression devices, if used on the protected equipment, shall meet the flame-resistant requirements of Part 18 of this chapter (Bureau of Mines Schedule 2G).

(d) Extinguishing agents shall not create a serious toxic or other hazard to the miners.

(e) The electrical components of the fire suppression device shall meet the requirements for electrical components of the mining machine.

(f) Where used, manual actuators for initiating the operation of the fire suppression device shall be readily accessible to the machine operator. On unattended equipment, an automatic as well as a manual actuator shall be provided.

(g) On unattended equipment the fire suppression device shall operate independently of the power to the main motor (or equivalent) so it will remain operative if the circuit breakers (or other

protective device) actuates. On attended equipment powered through a trailing cable the fire suppression device shall operate independently of the electrical power provided by the cable.

(h) On unattended equipment, the sensor system shall have a means for checking its operative condition.

(i) The fire suppression agent shall be directed at locations where the greatest potential fire hazard exists. Cable reel compartments shall receive approximately twice the quantity of extinguishing agent as each other hazardous location.

(j) The rate of application of the fire suppression agent shall minimize the time for quenching and the total quantity applied shall be sufficient to quench a fire in its incipient stage.

(k) The effectiveness of the quenching agent, together with the total quantity of agent and its rate of application shall provide equivalent protection to the water, dry powder, or foam systems described in §§ 75.1107-7, 75.1107-9, and 75.1107-10.

(l) The fire suppression device shall be operable at all times electrical power is connected to the mining machine, except during tramming when the machine is in a ventilated passageway, the water hose if used, may be switched from one hydrant to another in a reasonable time and except in systems meeting the minimum special criteria set forth in paragraph (m) of this section.

(m) Systems for attended equipment which are not continuously connected to a water supply shall not be approved unless they meet the following minimum criteria:

(1) The machine shall be equipped with a firehose at least 50 feet in length which is continuously connected to the machine-mounted portion of the system.

(2) Hydrants in proximity to the area where the machine is to be used shall be equipped with sufficient hose to reach the machine at any time it is connected to a power source.

(3) The machine shall be used only where the operator (or other person) will always be in ventilated air uncontaminated by smoke and hot gases from the machine fire while extending the machine-mounted hose to connect with the hydrant-mounted hose.

(4) The machine and hydrant hoses shall be readily accessible so that the connection between the machine-mounted hose and the hydrant hose can

be made and water flow achieved in not more than 3 minutes under actual mining conditions for any location of the machine while electric power is connected.

(5) The rate of water flow at the machine shall provide a minimum of 0.12 gallon of water per minute per square foot of top surface area (excluding conveyors, cutters, and gathering heads). The water shall discharge to all hazardous locations on the machine.

(6) Hose, if used on the machine, in addition to meeting the flame resistant requirements for the cover of a hose provided in §§ 75.1107-3(b) and 75.1107-13(c) shall have a minimum burst pressure 4 times that of the static water pressure at the mining machine. Fabric braid hose shall have at least two braids, and wire braid hose shall have at least a single braid.

(7) In addition to the hose located at the hydrant (which is intended to be connected to the hose on the machine) the firefighting equipment required by § 75.1100-2(a) shall be maintained.

(8) A sufficient number of trained miners shall be kept on the section when the machine is in use to connect the machine hose to the hydrant hose and achieve water flow in not more than 3 minutes.

[37 FR 15303, July 29, 1972]

§ 75.1107-14 Guards and handrails; requirements where fire suppression devices are employed.

All unattended underground equipment provided with fire suppression devices which are mounted in dead end entries, enclosed rooms or other potentially hazardous locations shall be equipped with adequate guards at moving or rotating components. Handrails or other effective protective devices shall be installed at such locations where necessary to facilitate rapid egress from the area surrounding such equipment.

[37 FR 15303, July 29, 1972]

§ 75.1107-15 Fire suppression devices; hazards; training of miners.

Each operator shall instruct all miners normally assigned to the active workings of the mine with respect to any hazards inherent in the operation of all fire suppression devices installed in accordance with § 75.1107-1 and, where appropriate, the safeguards available at each such installation.

[37 FR 15303, July 29, 1972]

§ 75.1107-16 Inspection of fire suppression devices.

(a) All fire suppression devices shall be visually inspected at least once each week by a person qualified to make such inspections.

(b) Each fire suppression device shall be tested and maintained in accordance with the requirements specified in the appropriate National Fire Code listed as follows for the type and kind of device used:

National Fire Code No. 11A "High Expansion Foam Systems" (NFFA No. 11A—1970).

National Fire Code No. 13A "Care and Maintenance of Sprinkler Systems" (NFFA No. 13A—1971).

National Fire Code No. 15 "Water Spray Fixed Systems for Fire Protection" (NFFA No. 15—1969).

National Fire Code No. 17 "Dry Chemical Extinguishing Systems" (NFFA No. 17—1969).

National Fire Code No. 72A "Local Protective Signaling Systems" (NFFA No. 72A—1967).

National Fire Code No. 198 "Care of Fire Hose" (NFFA No. 198—1969).

(c) A record of the inspections required by this section shall be maintained by the operator. The record of the weekly inspections may be maintained at an appropriate location by each fire suppression device.

[37 FR 15304, July 29, 1972]

§ 75.1107-17 Incorporation by reference; availability of publications.

In accordance with 5 U.S.C. 552(a), the technical publications to which reference is made in §§ 75.1107-1 through 75.1107-16, and which have been prepared by organizations other than the Bureau of Mines or the Mining Enforcement and Safety Administration, are hereby incorporated by reference and made a part hereof. The incorporated publications are available for examination at each Coal Mine Health and Safety District and Subdistrict Office of the Mining Enforcement and Safety Administration. National Fire Codes are available from the National Fire Protection Association, 60 Batterymarch Street, Boston, MA 02110.

[37 FR 15304, July 29, 1972]

§ 75.1108 Flame-resistant conveyor belts.

[STATUTORY PROVISIONS]

On and after March 30, 1970, all conveyor belts acquired for use underground

shall meet the requirements to be established by the Secretary for flame-resistant conveyor belts.

§ 75.1108-1 Approved conveyor belts.

Conveyor belts which have been approved as flame-resistant by the Bureau of Mines under Part 18 of this chapter (Bureau of Mines Schedule 2G) meet the requirements of § 75.1108.

Subpart M—Maps

§ 75.1200 Mine map.

[STATUTORY PROVISIONS]

The operator of a coal mine shall have in a fireproof repository located in an area on the surface of the mine chosen by the mine operator to minimize the danger of destruction by fire or other hazard, an accurate and up-to-date map of such mine drawn on scale. Such map shall show:

- (a) The active workings;
- (b) All pillared, worked out, and abandoned areas, except as provided in this section;
- (c) Entries and aircourses with the direction of airflow indicated by arrows;
- (d) Contour lines of all elevations;
- (e) Elevations of all main and cross or side entries;
- (f) Dip of the coalbed;
- (g) Escapeways;
- (h) Adjacent mine workings within 1,000 feet;

- (i) Mines above or below;
- (j) Water pools above; and
- (k) Either producing or abandoned oil and gas wells located within 500 feet of such mine and any underground area of such mine; and,

(l) Such other information as the Secretary may require. Such map shall identify those areas of the mine which have been pillared, worked out, or abandoned, which are inaccessible or cannot be entered safely and on which no information is available.

§ 75.1200-1 Additional information on mine map.

Additional information required to be shown on mine maps under § 75.1200 shall include the following:

- (a) Name and address of the mine;
- (b) The scale and orientation of the map;
- (c) The property or boundary lines of the mine;
- (d) All drill holes that penetrate the coalbed being mined;

(e) All shaft, slope, drift, and tunnel openings and auger and strip mined areas of the coalbed being mined;

(f) The location of all surface mine ventilation fans; the location may be designated on the mine map by symbols;

(g) The location of railroad tracks and public highways leading to the mine, and mine buildings of a permanent nature with identifying names shown;

(h) The location and description of at least two permanent base line points coordinated with the underground and surface mine traverses, and the location and description of at least two permanent elevation bench marks used in connection with establishing or referencing mine elevation surveys;

(i) The location of any body of water dammed in the mine or held back in any portion of the mine; provided, however, such bodies of water may be shown on overlays or tracings attached to the mine maps used to show contour lines as provided under paragraph (m) of this section;

(j) The elevations of tops and bottoms of shafts and slopes, and the floor at the entrance to drift and tunnel openings;

(k) The elevation of the floor at intervals of not more than 200 feet in:

(1) At least one entry of each working section, and main and cross entries;

(2) The last line of open crosscuts of each working section, and main and cross entries before such sections and main and cross entries are abandoned;

(3) Rooms advancing toward or adjacent to property or boundary lines or adjacent mines;

(l) The elevation of any body of water dammed in the mine or held back in any portion of the mine; and,

(m) Contour lines passing through whole number elevations of the coalbed being mined. The spacing of such lines shall not exceed 10-foot elevation levels, except that a broader spacing of contour lines may be approved by the District Manager for steeply-pitching coalbeds. Contour lines may be placed on overlays or tracings attached to mine maps.

§ 75.1200-2 Accuracy and scale of mine maps.

(a) The scale of mine maps submitted to the Secretary shall not be less than 100 or more than 500 feet to the inch.

(b) Mine traverses shall be advanced by closed loop methods of traversing or

other equally accurate methods of traversing.

§ 75.1201 Certification.

[STATUTORY PROVISIONS]

Such map shall be made or certified by a registered engineer or a registered surveyor of the State in which the mine is located.

§ 75.1202 Temporary notations, revisions, and supplements.

[STATUTORY PROVISIONS]

Such map shall be kept up-to-date by temporary notations and such map shall be revised and supplemented at intervals prescribed by the Secretary on the basis of a survey made or certified by such engineer or surveyor.

§ 75.1202-1 Temporary notations, revisions, and supplements.

(a) Mine maps shall be revised and supplemented at intervals of not more than 6 months.

(b) Temporary notations shall include:

(1) The location of each working face of each working place;

(2) Pillars mined or other such second mining;

(3) Permanent ventilation controls constructed or removed, such as seals, overcasts, undercasts, regulators, and permanent stoppings, and the direction of air currents indicated;

(4) Escapeways designated by means of symbols.

§ 75.1203 Availability of mine map.

[STATUTORY PROVISIONS]

The coal mine map and any revision and supplement thereof shall be available for inspection by the Secretary or his authorized representative, by coal mine inspectors of the State in which the mine is located, by miners in the mine and their representatives and by operators of adjacent coal mines and by persons owning, leasing, or residing on surface areas of such mines or areas adjacent to such mines. The operator shall furnish to the Secretary or his authorized representative and to the Secretary of Housing and Urban Development, upon request, one or more copies of such maps and any revision and supplement thereof. Such map or revision and supplement thereof shall be kept confidential and its contents shall not be divulged to any other person,

except to the extent necessary to carry out the provisions of this Act and in connection with the functions and responsibilities of the Secretary of Housing and Urban Development.

§ 75.1204 Mine closure; filing of map with Secretary.

[STATUTORY PROVISIONS]

Whenever an operator permanently closes or abandons a coal mine, or temporarily closes a coal mine for a period of more than 90 days, he shall promptly notify the Secretary of such closure. Within 60 days of the permanent closure or abandonment of the mine, or, when the mine is temporarily closed, upon the expiration of a period of 90 days from the date of closure, the operator shall file with the Secretary a copy of the mine map revised and supplemented to the date of the closure. Such copy of the mine map shall be certified by a registered surveyor or registered engineer of the State in which the mine is located and shall be available for public inspection.

§ 75.1204-1 Places to give notice and file maps.

Operators shall give notice of mine closures and file copies of maps with the Coal Mine Safety District Office for the district in which the mine is located.

Subpart N—Blasting and Explosives

§ 75.1300 Black blasting powder; mudcaps.

[STATUTORY PROVISIONS]

Black blasting powder shall not be stored or used underground. Mudcaps (adobes) or other unconfined shots shall not be fired underground.

§ 75.1301 Separate containers for explosives and detonators.

[STATUTORY PROVISIONS]

Explosives and detonators shall be kept in separate containers until immediately before blasting.

§ 75.1302 Blasting in underground anthracite mines.

[STATUTORY PROVISIONS]

In underground anthracite mines:

(a) Mudcaps or other open, unconfined shake shots may be fired, if restricted to battery starting when methane or a fire hazard is not present, and

if it is otherwise impracticable to start the battery;

(b) Open unconfined shake shots in pitching veins may be fired, when no methane or fire hazard is present, if the taking down of loose-hanging coal by other means is too hazardous; and

(c) Tests for methane shall be made immediately before such shots are fired and if 1.0 volume per centum or more of methane is present, when tested, such shot shall not be made until the methane content is reduced below 1.0 volume per centum.

§ 75.1303 Permissible explosives, detonators, blasting devices and shot-firing units; stemming boreholes.

[STATUTORY PROVISIONS]

Except as provided in this section, in all underground areas of a coal mine only permissible explosives, electric detonators of proper strength, and permissible blasting devices shall be used and all explosives and blasting devices shall be used in a permissible manner. Permissible explosives shall be fired only with permissible shot firing units. Only incombustible materials shall be used for stemming boreholes. The Secretary may, under such safeguards as he may prescribe, permit the firing of more than 20 shots and allow the use of nonpermissible explosives in sinking shafts and slopes from the surface in rock. Nothing in this subpart shall prohibit the use of compressed air blasting.

§ 75.1303-1 Use of nonpermissible shot-firing units; permits for use; procedures and safeguards.

(a) Where the Coal Mine Health and Safety District Manager has determined that the firing of more than 20 shots of permissible explosives will be necessary to reduce the overall hazard to which miners are exposed during underground blasting, he may, in writing, permit the use of nonpermissible shot-firing units if he finds that a permissible shot-firing unit does not have adequate blasting capacity and that the use of such permissible units will create any of the following development or construction hazards.

(1) Exposure to disturbed roof in an adjacent cavity while scaling and supporting the remaining roof prior to wiring a new series of shots;

(2) Exposure to underburden shots where prior shots have removed the burden adjacent to a remaining borehole;

(3) Exposure to an unsupported roof while redrilling large fragmented rock following the loss of predrilled boreholes during earlier blasting operations; and,

(4) Any other hazard created by the use of permissible shot-firing units during underground development or construction.

(b) Applications for permits for the use of nonpermissible shot-firing units shall be submitted in writing to the Coal Mine Health and Safety District Manager for the district in which the mine is located and shall contain the following information:

(1) The name and address of the mine;

(2) The active workings in the mine in which such units will be used and the approximate number of shots to be fired;

(3) The period during which such units are to be used;

(4) The nature of the development or construction for which they will be used, e.g., overcasts, undercasts, track grading, roof brushing or boomholes;

(5) A plan, proposed by the operator designed to protect miners in the mine from the hazards of methane and other explosive gases during each multiple shot, e.g., changes in the mine ventilation system, provisions for auxiliary ventilation and any other safeguards necessary to minimize such hazards.

(6) A statement of the specific hazards anticipated by the operator in blasting for overcasts, undercasts, track grading, brushing of roof, boomholes or other unusual blasting situations such as coalbeds of abnormal thickness.

(7) The method to be employed in the use of nonpermissible shot-firing units to avoid the dangers anticipated during development or construction which will ensure the protection of life and the prevention of injuries to the miners exposed to such underground blasting.

(c) (1) Permits for the use of nonpermissible shot-firing units shall be issued on a mine-by-mine basis for periods of time to be specified by the District Manager.

(2) Permits issued under the provisions of this § 75.1303-1 shall specify and include as a condition of their use, any safeguards, in addition to those proposed by the operator, which the Health and Safety District Manager issuing such permit has determined will be re-

quired to safeguard the welfare of the miners employed in the mine at the time of the blasting permitted.

§ 75.1304 Persons carrying explosives or detonators underground.

[STATUTORY PROVISIONS]

Explosives or detonators carried anywhere underground in a coal mine by any person shall be in containers constructed of nonconductive material, maintained in good condition, and kept closed.

§ 75.1305 Transporting explosives or detonators.

[STATUTORY PROVISIONS]

Explosives or detonators shall be transported in special closed containers:

(a) In cars moved by means of a locomotive or rope;

(b) On belts;

(c) In shuttle cars; or

(d) In equipment designed especially to transport such explosives or detonators.

§ 75.1306 Storage of explosives and detonators underground for one or more working sections.

[STATUTORY PROVISIONS]

When supplies of explosives and detonators for use in one or more working sections are stored underground, they shall be kept in section boxes or magazines of substantial construction with no metal exposed on the inside, located at least 25 feet from roadways and power wires, and in a dry, well rock-dusted location protected from falls of roof, except in pitching beds, where it is not possible to comply with the location requirement, such boxes shall be placed in niches cut into the solid coal or rock.

§ 75.1307 Storage of explosives and detonators in underground working places.

[STATUTORY PROVISIONS]

Explosives and detonators stored in the working places shall be kept in separate closed containers which shall be located out of the line of blast and not less than 50 feet from the working face and 15 feet from any pipeline, powerline, rail, or conveyor, except that, if kept in niches in the rib, the distance from any pipeline, powerline, rail, or conveyor shall be at least 5 feet. Such explosives and detonators, when stored, shall be separated by a distance of at least 5 feet.

§ 75.1308 Examinations for fires after blasting.

[STATUTORY PROVISIONS]

After every blasting operation, an examination shall be made to determine whether fires have been started.

Subpart O—Hoisting and Mantrips

§ 75.1400 Hoisting equipment; general.

[STATUTORY PROVISIONS]

Every hoist used to transport persons at a coal mine shall be equipped with overspeed, overwind, and automatic stop controls. Every hoist-handling platforms, cages, or other devices used to transport persons shall be equipped with brakes capable of stopping the fully loaded platform, cage, or other device; with hoisting cable adequately strong to sustain the fully loaded platform, cage, or other device; and have a proper margin of safety. Cages, platforms, or other devices which are used to transport persons in shafts and slopes shall be equipped with safety catches or other no less effective devices approved by the Secretary that act quickly and effectively in an emergency, and such catches shall be tested at least once every 2 months. Hoisting equipment, including automatic elevators, that is used to transport persons shall be examined daily. Where persons are transported into, or out of, a coal mine by hoists, a qualified hoisting engineer shall be on duty while any person is underground, except that no such engineer shall be required for automatically operated cages, platforms, or elevators.

§ 75.1400-1 Hoists; brakes, capability.

Brakes on hoists used to transport persons shall be capable of stopping and holding the fully loaded platform, cage, or other device at any point in the shaft, slope, or incline.

§ 75.1400-2 Hoists; tests of safety catches; records.

A record shall be made in a book of the tests, required by § 75.1400, of the safety catches or other devices approved by the Secretary. Each entry shall be signed by the person making the tests and countersigned by a responsible official.

§ 75.1400-3 Daily examination of hoisting equipment.

The daily examination required by § 75.1400, of hoisting equipment, includ-

ing automatic elevators shall include but not be limited to the following:

(a) A visual examination of the rope for wear, broken wires, and corrosion, especially at excessive strain points, such as near the attachments, where the rope rests on the sheaves and where the rope leaves the drum at both ends.

(b) An examination of the rope fastenings for defects.

(c) An examination of safety catches.

(d) An examination of the cage, platforms, elevators, or other devices for loose, missing, or defective parts.

(e) An examination of the head sheaves to check for broken flanges, defective bearings, rope alignment, and proper lubrication.

(f) An observation of the lining and all other equipment and appurtenances installed in the shaft.

§ 75.1400-4 Daily examinations of hoisting equipment; records.

Records of the daily examinations of hoisting equipment required by § 75.1400 shall be kept listing all items examined. Daily entries shall be signed by the person or persons making examinations. The reports of the examinations shall be read and countersigned by a responsible company official daily.

§ 75.1401 Hoists; rated capacities; ropes; indicators.

[STATUTORY PROVISIONS]

Hoists shall have rated capacities consistent with the loads handled and the recommended safety factors of the ropes used. An accurate and reliable indicator of the position of the cage, platform, skip, bucket, or cars shall be provided.

§ 75.1401-1 Hoists, standards for ropes.

The American National Standards Institute "Specifications For the Use of Wire Ropes For Mines," M11.1-1960, or the latest revision thereof, shall be used as a guide in the use, selection, installation, and maintenance of wire ropes used for hoisting.

§ 75.1401-2 Hoists; notification of changes affecting rated capacity.

Alterations or changes in a hoist which affect the rated capacity shall be made only with the approval of the Coal Mine Safety District or Subdistrict Manager.

§ 75.1401-3 Hoists; indicators.

The indicator required by § 17.1401 of this chapter shall be placed so that it is

in clear view of the hoisting engineer and shall be checked daily to determine its accuracy.

§ 75.1402 Communication between shaft stations and hoist room.

(STATUTORY PROVISIONS)

There shall be at least two effective methods approved by the Secretary of signaling between each of the shaft stations and the hoist room, one of which shall be a telephone or speaking tube.

§ 75.1402-1 Communication between shaft stations and hoist room.

One of the methods used to communicate between shaft stations and the hoist room shall give signals which can be heard by the hoisting engineer at all times while men are underground.

§ 75.1402-2 Tests of signaling systems.

Signaling systems used for communication between shaft stations and the hoist room shall be tested daily.

§ 75.1403 Other safeguards.

(STATUTORY PROVISIONS)

Other safeguards adequate, in the judgment of an authorized representative of the Secretary, to minimize hazards with respect to transportation of men and materials shall be provided.

§ 75.1403-1 General criteria.

(a) Sections 75.1403-2 through 75.1403-11 set out the criteria by which an authorized representative of the Secretary will be guided in requiring other safeguards on a mine-by-mine basis under § 75.1403. Other safeguards may be required.

(b) The authorized representative of the Secretary shall in writing advise the operator of a specific safeguard which is required pursuant to § 75.1403 and shall fix a time in which the operator shall provide and thereafter maintain such safeguard. If the safeguard is not provided within the time fixed and if it is not maintained thereafter, a notice shall be issued to the operator pursuant to section 104 of the Act.

(c) Nothing in the sections in the § 75.1403 series in this Subpart O precludes the issuance of a withdrawal order because of imminent danger.

§ 75.1403-2 Criteria—Hoists transporting materials; brakes.

Hoists and elevators used to transport materials should be equipped with brakes

capable of stopping and holding the fully loaded platform, cage, skip, car, or other device at any point in the shaft, slope, or incline.

§ 75.1403-3 Criteria—Drum clutch; attachment of ropes; cage construction.

(a) The clutch of free-drums on man-hoist should be provided with a locking mechanism or interlocked with the brake to prevent the accidental withdrawal of the clutch.

(b) The hoist rope attached to a cage, man car, or trip should be equipped with two bridle chains or cables connected securely to the rope at least 3 feet above the attaching device and to the cross-piece of the cage, man car or trip.

(c) The hoist rope should have at least three full turns on the drum when extended to its maximum working length and should make at least one full turn on the drum shaft or around the spoke of the drum in the case of a free drum, and be fastened securely.

(d) Cages used for hoisting men should be constructed with the sides enclosed to a height of at least 6 feet and should have gates, safety chains, or bars across the ends of the cage when men are being hoisted or lowered.

(e) Self-dumping cages, platforms, or other devices used for transportation of men should have a locking device to prevent tilting when men are transported thereon.

(f) An attendant should be on duty at the surface when men are being hoisted or lowered at the beginning and end of each operating shift.

(g) Precautions should be taken to protect persons working in shaft sumps.

(h) Workmen should wear safety belts while doing work in or over shafts.

§ 75.1403-4 Criteria—Automatic elevators.

(a) The doors of automatic elevators should be equipped with interlocking switches so arranged that the elevator car will be immovable while any door is opened or unlocked, and arranged so that such door or doors cannot be inadvertently opened when the elevator car is not at a landing.

(b) A "Stop" switch should be provided in the automatic elevator compartment that will permit the elevator to be stopped at any location in the shaft.

(c) A slack cable device should be used where appropriate on automatic elevators which will automatically shut-off

the power and apply the brakes in the event the elevator is obstructed while descending.

(d) Each automatic elevator should be provided with a telephone or other effective communication system by which aid or assistance can be obtained promptly.

§ 75.1403-5 Criteria—Belt conveyors.

(a) Positive-acting stop controls should be installed along all belt conveyors used to transport men, and such controls should be readily accessible and maintained so that the belt can be stopped or started at any location.

(b) Belt conveyors used for regularly scheduled mantrips should be stopped while men are loading or unloading.

(c) All belt conveyors used for the transportation of persons should have a minimum vertical clearance of 18 inches from the nearest overhead projection when measured from the edge of the belt and there should be at least 36 inches of side clearance where men board or leave such belt conveyors.

(d) When men are being transported on regularly scheduled mantrips on belt conveyors the belt speed should not exceed 300 feet per minute when the vertical clearance is less than 24 inches, and should not exceed 350 feet per minute when the vertical clearance is 24 inches or more.

(e) Adequate illumination including colored lights or reflective signs should be installed at all loading and unloading stations. Such colored lights and reflective signs should be so located as to be observable to all persons riding the belt conveyor.

(f) After supplies have been transported on belt conveyors such belts should be examined for unsafe conditions prior to the transportation of men on regularly scheduled mantrips, and belt conveyors should be clear before men are transported.

(g) A clear travelway at least 24 inches wide should be provided on both sides of all belt conveyors installed after March 30, 1970. Where roof supports are installed within 24 inches of a belt conveyor, a clear travelway at least 24 inches wide should be provided on the side of such support farthest from the conveyor.

(h) On belt conveyors that do not transport men, stop and start controls should be installed at intervals not to exceed 1,000 feet. Such controls should

be properly installed and positioned so as to be readily accessible.

(i) Telephone or other suitable communications should be provided at points where men or supplies are regularly loaded on or unloaded from the belt conveyors.

(j) Persons should not cross moving belt conveyors, except where suitable crossing facilities are provided.

§ 75.1403-6 Criteria—Self-propelled personnel carriers.

(a) Each self-propelled personnel carrier should:

(1) Be provided with an audible warning device;

(2) Be provided with a sealed-beam headlight, or its equivalent, on each end;

(3) Be provided with reflectors on both ends and sides.

(b) In addition, each track-mounted self-propelled personnel carrier should:

(1) Be provided with a suitable lifting jack and bar, which shall be secured or carried in a tool compartment;

(2) Be equipped with 2 separate and independent braking systems properly installed and well maintained;

(3) Be equipped with properly installed and well-maintained sanding devices, except that personnel carriers (Jitneys), which transport not more than 5 men, need not be equipped with such sanding device;

(4) If an open type, be equipped with guards of sufficient strength and height to prevent personnel from being thrown from such carriers.

§ 75.1403-7 Criteria—Mantrips.

(a) Mantrips should be operated independently of any loaded trip, empty trip, or supply trip and should not be operated within 300 feet of any trip, including another mantrip.

(b) A sufficient number of mantrip cars should be provided to prevent overcrowding of men.

(c) Mantrips should not be pushed.

(d) Where mantrips are operated by locomotives on slopes such mantrips should be coupled to the front and rear by locomotives capable of holding such mantrips. Where ropes are used on slopes for mantrip haulage, such conveyances should be connected by chains, steel ropes, or other effective devices between mantrip cars and the rope.

(e) Safety goggles or eyeshields should be provided for all persons being transported in open-type mantrips.

(f) All trips, including trailers and sleds, should be operated at speeds consistent with conditions and the equipment used, and should be so controlled that they can be stopped within the limits of visibility.

(g) All mantrips should be under the direction of a supervisor and the operator of each mantrip should be familiar with the haulage safety rules and regulations.

(h) Men should proceed in an orderly manner to and from mantrips and no person should be permitted to get on or off a moving mantrip.

(i) Explosives and detonators should not be permitted on any mantrip or hauled within 5 minutes before or after any mantrip.

(j) Mantrips should not be permitted to proceed until the operator of the mantrip is assured that he has a clear road.

(k) Supplies or tools, except small hand tools or instruments, should not be transported with men.

(l) At places where men enter or leave mantrip conveyances, ample clearance should be provided and provisions made to prevent persons from coming in contact with energized electric circuits.

(m) The mine car next to a trolley locomotive should not be used to transport men. Such cars may be used to transport small tools and supplies. This is not to be construed as permitting the transportation of large or bulky supplies such as shuttle car wheel units, or similar material.

(n) Drop-bottom cars used to transport men should have the bottoms secured with an additional locking device.

(o) Extraneous materials or supplies should not be transported on top of equipment; however, materials and supplies that are necessary for or related to the operation of such equipment may be transported on top of such equipment if a hazard is not introduced.

§ 75.1403-8 Criteria—Track haulage roads.

(a) The speed at which haulage equipment is operated should be determined by the condition of the roadbed, rails, rail joints, switches, frogs, and other elements of the track and the type and condition of the haulage equipment.

(b) Track haulage roads should have a continuous clearance on one side of at least 24 inches from the farthest projection of normal traffic. Where it is necessary to change the side on which clear-

ance is provided, 24 inches of clearance should be provided on both sides for a distance of not less than 100 feet and warning signs should be posted at such locations.

(c) Track haulage roads developed after March 30, 1970, should have clearance on the "tight" side of a least 12 inches from the farthest projection of normal traffic. A minimum clearance of 6 inches should be maintained on the "tight" side of all track haulage roads developed prior to March 30, 1970.

(d) The clearance space on all track haulage roads should be kept free of loose rock, supplies, and other loose materials.

(e) Positive stopblocks or derails should be installed on all tracks near the top and at landings of shafts, slopes, and surface inclines.

§ 75.1403-9 Criteria—Shelter holes.

(a) Shelter holes should be provided on track haulage roads at intervals of not more than 105 feet unless otherwise approved by the Coal Mine Safety District Manager(s).

(b) Shelter holes should be readily accessible and should be at least 5 feet in depth, not more than 4 feet in width (except crosscuts used as shelter holes) and at least the height of the coal seam where the coal seam is less than 6 feet high and at least 6 feet in height where the coal seam is 6 feet or more in height.

(c) Shelter holes should be kept free of refuse and other obstructions. Crosscuts used as shelter holes should be kept free of refuse or other materials to a depth of at least 15 feet.

(d) Shelter holes should be provided at all manually operated doors and at switch throws except: (1) At room switches, or (2) at switches where more than 6 feet of side clearance is provided. The Coal Mine Safety District Manager(s) may permit exemption of this requirement if such shelter holes create a hazardous roof condition.

(e) At each underground slope landing where men pass and cars are handled, a shelter hole at least 10 feet in depth, 4 feet in width, and 6 feet in height should be provided.

§ 75.1403-10 Criteria—Haulage; general.

(a) A permissible trip light or other approved device such as reflectors, approved by the Coal Mine Safety District Manager(s), should be used on the rear of trips pulled, on the front of trips

pushed and on trips lowered in slopes. However, trip lights or other approved devices need not be used on cars being shifted to and from loading machines, on cars being handled at loading heads, during gathering operations at working faces, when trailing locomotives are used, or on trips pulled by animals.

(b) Cars on main haulage roads should not be pushed, except where necessary to push cars from side tracks located near the working section to the producing entries and rooms, where necessary to clear switches and side-tracks, and on the approach to cages, slopes, and surface inclines.

(c) Warning lights or reflective signs or tapes should be installed along haulage roads at locations of abrupt or sudden changes in the overhead clearance.

(d) No person, other than the motor-man and brakeman, should ride on a locomotive unless authorized by the mine foreman, and then only when safe riding facilities are provided. No person should ride on any loaded car or on the bumper of any car. However, the brakeman may ride on the rear bumper of the last car of a slow moving trip pulled by a locomotive.

(e) Positive-acting stopblocks or derails should be used where necessary to protect persons from danger of runaway haulage equipment.

(f) An audible warning should be given by the operator of all self-propelled equipment including off-track equipment, where persons may be endangered by the movement of the equipment.

(g) Locomotives and personnel carriers should not approach to within 300 feet of preceding haulage equipment, except trailing locomotives that are an integral part of the trip.

(h) A total of at least 36 inches of unobstructed side clearance (both sides combined) should be provided for all rubber-tired haulage equipment where such equipment is used.

(i) Off-track haulage roadways should be maintained as free as practicable from bottom irregularities, debris, and wet or muddy conditions that affect the control of the equipment.

(j) Operators of self-propelled equipment should face in the direction of travel.

(k) Mechanical steering and control devices should be maintained so as to provide positive control at all times.

(l) All self-propelled rubber-tired haulage equipment should be equipped

with well maintained brakes, lights, and a warning device.

(m) On and after March 30, 1971, all tram control switches on rubber-tired equipment should be designed to provide automatic return to the stop or off position when released.

§ 75.1403-11 Criteria—Entrances to shafts and slopes.

All open entrances to shafts should be equipped with safety gates at the top and at each landing. Such gates should be self-closing and should be kept closed except when the cage is at such landing.

§ 75.1404 Automatic brakes; speed reduction gear.

[STATUTORY PROVISIONS]

Each locomotive and haulage car used in an underground coal mine shall be equipped with automatic brakes, where space permits. Where space does not permit automatic brakes, locomotives and haulage cars shall be subject to speed reduction gear, or other similar devices approved by the Secretary, which are designed to stop the locomotives and haulage cars with the proper margin of safety.

§ 75.1404-1 Braking system.

A locomotive equipped with a dual braking system will be deemed to satisfy the requirements of § 75.1404 for a train comprised of such locomotive and haulage cars, provided the locomotive is operated within the limits of its design capabilities and at speeds consistent with the condition of the haulage road. A trailing locomotive or equivalent devices should be used on trains that are operated on ascending grades.

§ 75.1405 Automatic couplers.

[STATUTORY PROVISIONS]

All haulage equipment acquired by an operator of a coal mine on or after March 30, 1971, shall be equipped with automatic couplers which couple by impact and uncouple without the necessity of persons going between the ends of such equipment. All haulage equipment without automatic couplers in use in a mine on March 30, 1970, shall also be so equipped within 4 years after March 30, 1970.

§ 75.1405-1 Automatic couplers, haulage equipment.

The requirement of § 75.1405 with respect to automatic couplers applies only

to track haulage cars which are regularly coupled and uncoupled.

Subpart P—Emergency Shelters

§ 75.1500 Emergency shelters.

[STATUTORY PROVISIONS]

The Secretary or an authorized representative of the Secretary may prescribe in any coal mine that rescue chambers, properly sealed and ventilated, be erected at suitable locations in the mine to which persons may go in case of an emergency for protection against hazards. Such chambers shall be properly equipped with first aid materials, an adequate supply of air and self-contained breathing equipment, an independent communication system to the surface, and proper accommodations for the persons while awaiting rescue, and such other equipment as the Secretary may require. A plan for the erection, maintenance, and revisions of such chambers and the training of the miners in their proper use shall be submitted by the operator to the Secretary for his approval.

Subpart Q—Communications

§ 75.1600 Communications.

[STATUTORY PROVISIONS]

Telephone service or equivalent two-way communication facilities, approved by the Secretary or his authorized representative, shall be provided between the surface and each landing of main shafts and slopes and between the surface and each working section of any coal mine this is more than 100 feet from a portal.

§ 75.1600-1 Communication facilities; main portals; installation requirements.

A telephone or equivalent two-way communication facility shall be located on the surface within 500 feet of all main portals, and shall be installed either in a building or in a box-like structure designed to protect the facilities from damage by inclement weather. At least one of these communication facilities shall be at a location where a responsible person who is always on duty when men are underground can hear the facility and respond immediately in the event of an emergency.

[38 FR 29999, Oct. 31, 1973]

§ 75.1600-2 Communication facilities; working sections; installation and maintenance requirements; audible or visual alarms.

(a) Telephones or equivalent two-way communication facilities provided at each working section shall be located not more than 500 feet outby the last open crosscut and not more than 800 feet from the farthest point of penetration of the working places on such section.

(b) The incoming communication signal shall activate an audible alarm, distinguishable from the surrounding noise level, or a visual alarm that can be seen by a miner regularly employed on the working section.

(c) If a communication system other than telephones is used and its operation depends entirely upon power from the mine electric system, means shall be provided to permit continued communication in the event the mine electric power fails or is cut off; provided, however, that where trolley phones and telephones are both used, an alternate source of power for the trolley phone system is not required.

(d) Trolley phones connected to the trolley wire shall be grounded in accordance with Subpart H of this part.

(e) Telephones or equivalent two-way communication facilities shall be maintained in good operating condition at all times. In the event of any failure in the system that results in loss of communication, repairs shall be started immediately, and the system restored to operating condition as soon as possible.

[38 FR 29999, Oct. 31, 1973]

Subpart R—Miscellaneous

§ 75.1700 Oil and gas wells.

[STATUTORY PROVISIONS]

Each operator of a coal mine shall take reasonable measures to locate oil and gas wells penetrating coalbeds or any underground area of a coal mine. When located, such operator shall establish and maintain barriers around such oil and gas wells in accordance with State laws and regulations, except that such barriers shall not be less than 300 feet in diameter, unless the Secretary or his authorized representative permits a lesser barrier consistent with the applicable State laws and regulations where such lesser barrier will be adequate to protect against hazards from such wells to the miners in such mine,

or unless the Secretary or his authorized representative requires a greater barrier where the depth of the mine, other geologic conditions, or other factors warrant such a greater barrier.

§ 75.1701 Abandoned areas, adjacent mines; drilling of boreholes.

[STATUTORY PROVISIONS]

Whenever any working place approaches within 50 feet of abandoned areas in the mine as shown by surveys made and certified by a registered engineer or surveyor, or within 200 feet of any other abandoned areas of the mine which cannot be inspected and which may contain dangerous accumulations of water or gas, or within 200 feet of any workings of an adjacent mine, a borehole or boreholes shall be drilled to a distance of at least 20 feet in advance of the working face of such working place and shall be continually maintained to a distance of at least 10 feet in advance of the advancing working face. When there is more than one borehole, they shall be drilled sufficiently close to each other to insure that the advancing working face will not accidentally hole through into abandoned areas or adjacent mines. Boreholes shall also be drilled not more than 8 feet apart in the rib of such working place to a distance of at least 20 feet and at an angle of 45 degrees. Such rib holes shall be drilled in one or both ribs of such working place as may be necessary for adequate protection of miners in such place.

§ 75.1702 Smoking; prohibition.

[STATUTORY PROVISIONS]

No person shall smoke, carry smoking materials, matches, or lighters underground, or smoke in or around oil houses, explosives magazines, or other surface areas where such practice may cause a fire or explosion. The operator shall institute a program, approved by the Secretary, to insure that any person entering the underground area of the mine does not carry smoking materials, matches, or lighters.

§ 75.1702-1 Smoking programs.

Programs required under § 75.1702 shall be submitted to the Coal Mine Safety District Manager for approval on or before May 30, 1970.

§ 75.1703 Portable electric lamps.

[STATUTORY PROVISIONS]

Persons underground shall use only permissible electric lamps approved by the Secretary for portable illumination. No open flame shall be permitted in the underground area of any coal mine, except as permitted under § 75.1106.

§ 75.1703-1 Permissible lamps.

Lamps approved by the Bureau of Mines or the Mining Enforcement and Safety Administration under Part 19 or Part 20 of this chapter (Bureau of Mines Schedule 6D and Schedule 10C) are approved lamps for the purposes of § 75.1703.

§ 75.1704 Escapeways.

[STATUTORY PROVISIONS]

Except as provided in §§ 75.1705 and 75.1706, at least two separate and distinct travelable passageways which are maintained to insure passage at all times of any person, including disabled persons, and which are to be designated as escapeways, at least one of which is ventilated with intake air, shall be provided from each working section continuous to the surface escape drift opening, or continuous to the escape shaft or slope facilities to the surface, as appropriate, and shall be maintained in safe condition and properly marked. Mine openings shall be adequately protected to prevent the entrance into the underground area of the mine of surface fires, fumes, smoke, and floodwater. Escape facilities approved by the Secretary or his authorized representative, properly maintained and frequently tested, shall be present at or in each escape shaft or slope to allow all persons, including disabled persons, to escape quickly to the surface in the event of an emergency.

§ 75.1704-1 Escapeways and escape facilities.

This section sets out criteria by which District Managers will be guided in approving escapeways and escape facilities. Escapeways and escape facilities that do not meet these criteria may be approved providing the operator can satisfy the District Manager that such escapeways and facilities will enable miners to escape quickly to the surface in the event of an emergency.

(a) Except in situations where the height of the coalbed is less than 5 feet, escapeways should be maintained at a height of at least 5 feet (excluding necessary roof support) and the travelway in such escapeway should be maintained at a width of at least 6 feet. In those situations where the height of the coalbed is less than 5 feet the escapeway should be maintained to the height of the coalbed (excluding any necessary roof support) and the travelway in such escapeways should be maintained at a width of at least 6 feet.

(b) Each escape shaft which is more than 20 feet deep shall include elevators, hoists, cranes, or other such equipment, which shall be equipped with cages and buckets. When such facilities are not automatically operated, an attendant shall be on duty during any coal-producing or maintenance shift. An "attendant" as used in this subsection means a person located on the surface in a position where it is possible to hear or see a signal calling for the use of such facilities and who is readily available to operate such facilities or to readily obtain another person to operate such facilities.

(c) Stairways shall be installed in all escape shafts which are 20 feet or less in depth; however, in shafts 5 feet or less in depth, ladders may be substituted for stairways. Stairways and ladders shall be installed and maintained as follows:

(1) Stairways shall be of substantial construction, set on an angle not greater than 45 degrees with the horizontal and equipped on the open side with suitable handrails. Where landing platforms are necessary, they shall be at least 2 feet wide and 4 feet long and properly railed.

(2) Ladders shall be anchored securely, set on an angle of not more than 60 degrees and be substantially constructed and maintained in good condition.

§ 75.1704-2 Escapeway routes; examination; escapeway maps; drills.

(a) In mines and working sections opened on and after January 1, 1974, all travelable passageways designated as escapeways in accordance with § 75.1704 shall be located to follow, as determined by an authorized representative of the Secretary, the safest direct practical route to the nearest mine opening suitable for the safe evacuation of miners.

Escapeways from working sections may be located through existing entries, rooms, or crosscuts.

(b) In mines and working sections in existence prior to January 1, 1974, all travelable passageways designated as escapeways in accordance with § 75.1704 shall, no later than June 30, 1974, be located to follow, as determined by an authorized representative of the Secretary, the safest, direct practical route to the nearest mine opening suitable for the safe evacuation of miners. Escapeways from working sections may be located through existing entries, rooms and crosscuts.

(c) (1) All escapeways shall be examined in their entirety at least once each week by a certified person. Such weekly examination need not be made during any week in which the mine is idle for the entire week, except that such examination shall be made before any miner other than the certified person returns to the mine. The phrase "once each week" shall mean at intervals not exceeding seven days.

(2) The certified person making such examination shall place his initials, the date, and time at various locations along the passageways and, if any hazardous conditions are found, such conditions shall be reported promptly to the operator. The results of the examinations shall be recorded in the book specified in § 75.1801 relating to the examination of emergency escapeways. Any hazardous conditions observed shall be corrected immediately.

(d) A map of the mine, showing the main escape system, shall be posted at a location where all miners can acquaint themselves with the main escape system. A map showing the designated escapeways from the working section to the main escape system, shall be posted in each working section, in order that the miners in the section can acquaint themselves with the designated escapeways from the section to the main escape system. All maps shall be kept up to date, and any changes in routes of travel, location of doors, or direction of air-flow shall be promptly shown on the maps when the changes are made and shall be promptly brought to the attention of all miners.

(e) Practice escapeway drills shall be conducted so that all miners are kept in-

formed of the route of escape, any necessary ventilation changes, the location of fire doors, check curtains, or smoke-retarding doors, and plans for diverting smoke from escapeways. Such practice drills shall ensure that each miner travels the escapeways through his respective working section up to the main escapeways at least once every 90 days, and that at least two miners, including the supervisor, on each producing section travel through the main escapeways up to the portal at least once every six weeks.

(f) The practice escapeway drills may be utilized to satisfy the evacuation specifications of the fire drills required by § 75.1101-23.

[38 FR 30000, Oct. 31, 1973]

§ 75.1705 Opening new mines.

[STATUTORY PROVISIONS]

When new coal mines are opened, not more than 20 miners shall be allowed at any one time in any mine until a connection has been made between the two mine openings, and such connections shall be made as soon as possible.

§ 75.1706 Final mining of pillars.

[STATUTORY PROVISIONS]

When only one mine opening is available, owing to final mining of pillars, not more than 20 miners shall be allowed in such mine at any one time, and the distance between the mine opening and working face shall not exceed 500 feet.

§ 75.1707 Escapeways; intake air; separation from belt and trolley haulage entries.

[STATUTORY PROVISIONS]

In the case of all coal mines opened on or after March 30, 1970, and in the case of all new working sections opened on or after such date in mines opened prior to such date, the escapeway required by this section to be ventilated with intake air shall be separated from the belt and trolley haulage entries of the mine for the entire length of such entries to the beginning of each working section, except that the Secretary or his authorized representative may permit such separation to be extended for a greater or lesser distance so long as such extension does not pose a hazard to the miners.

§ 75.1707-1 New working section.

The term "new working section" as used in § 75.1707 means any extension of the belt or trolley haulage system in

main, cross, and room entries necessary for the development of the mine on and after March 30, 1970. Room entries being developed as of March 30, 1970, with certified stop line limitations as shown on the mine map and retreating panels shall not be considered as new working sections.

§ 75.1708 Surface structures, fireproofing.

[STATUTORY PROVISIONS]

After March 30, 1970, all structures erected on the surface within 100 feet of any mine opening shall be of fireproof construction. Unless structures existing on or prior to such date which are located within 100 feet of any mine opening are of such construction, fire doors shall be erected at effective points in mine openings to prevent smoke or fire from outside sources endangering miners underground. These doors shall be tested at least monthly to insure effective operation. A record of such tests shall be kept in an area on the surface of the mine chosen by the operator to minimize the danger of destruction by fire or other hazard and shall be available for inspection by interested persons.

§ 75.1708-1 Surface structures; fireproof construction.

Structures of fireproof construction is interpreted to mean structures with fireproof exterior surfaces.

§ 75.1709 Accumulations of methane and coal dust on surface coal-handling facilities.

[STATUTORY PROVISIONS]

Adequate measures shall be taken to prevent methane and coal dust from accumulating in excessive concentrations in or on surface coal-handling facilities, but in no event shall methane be permitted to accumulate in concentrations in or on surface coal-handling facilities in excess of limits established for methane by the Secretary on and after March 30, 1971. Where coal is dumped at or near air-intake openings, provisions shall be made to avoid dust from entering the mine.

§ 75.1710 Canopies or cabs; electric face equipment.

[STATUTORY PROVISIONS]

An authorized representative of the Secretary may require in any coal mine where the height of the coalbed permits

that electric face equipment, including shuttle cars, be provided with substantially constructed canopies, or cabs, to protect the miners operating such equipment from roof falls and from rib and face rolls.

§ 75.1710-1 Canopies or cabs; self-propelled electric face equipment; installation requirements.

(a) Except as provided in paragraph (f) of this section, all self-propelled electric face equipment, including shuttle cars, which is employed in the active workings of each underground coal mine on and after January 1, 1973, shall, in accordance with the schedule of time specified in subparagraphs (1), (2), (3), (4), (5), and (6) of this paragraph (a), be equipped with substantially constructed canopies or cabs, located and installed in such a manner that when the operator is at the operating controls of such equipment he shall be protected from falls of roof, face, or rib, or from rib and face rolls. The requirements of this paragraph (a) shall be met as follows:

(1) On and after January 1, 1974, in coal mines having mining heights of 72 inches or more;

(2) On and after July 1, 1974, in coal mines having mining heights of 60 inches or more, but less than 72 inches;

(3) On and after January 1, 1975, in coal mines having mining heights of 48 inches or more, but less than 60 inches;

(4) On and after July 1, 1975, in coal mines having mining heights of 36 inches or more, but less than 48 inches;

(5) On and after January 1, 1976, in coal mines having mining heights of 24 inches or more, but less than 36 inches, and

(6) On and after July 1, 1976, in coal mines having mining heights of less than 24 inches.

(b) (1) For purposes of this section, a canopy means a structure which provides overhead protection against falls of roof.

(2) For purposes of this section, a cab means a structure which provides overhead and lateral protection against falls of roof, rib, and face, or rib and face rolls.

(c) In determining whether to install substantially constructed canopies as opposed to substantially constructed cabs, the operator shall consider and take into account the following factors:

(1) The mining method used;

(2) Physical limitations, including but not limited to the dip of the coalbed, and roof, rib, and face conditions;

(3) Previous accident experience, if any, caused by falls of roof, rib, and face, or rib and face rolls;

(4) Overhead protection, such as that afforded by a substantially constructed canopy, against falls of roof will always be required; and

(5) Lateral protection, such as that afforded by a substantially constructed cab, may also be necessary where the occurrence of falls of rib and face, or rib and face rolls is likely.

(d) For purposes of this section, a canopy or cab will be considered to be substantially constructed if a registered engineer certifies that such canopy or cab has the minimum structural capacity to support elastically: (1) A dead weight load of 18,000 pounds, or (2) 15 p.s.i. distributed uniformly over the plan view area of the structure, whichever is lesser.

(e) Evidence of the certification required by paragraph (d) of this section shall be furnished by attaching a plate, label, or other appropriate marking to the canopy or cab for which certification has been made, stating that such canopy or cab meets the minimum requirements for structural capacity set forth in paragraph (d) of this section. Written evidence of such certification shall also be retained by the operator, and shall be made available to an authorized representative of the Secretary upon request. Written evidence of certification may consist of the report of the registered engineer who certified the canopy or cab, or of information from the manufacturer of the canopy or cab stating that a registered engineer has certified that the canopy or cab meets the minimum requirements for structural capacity set forth in paragraph (d) of this section.

(f) An operator may apply to the Assistant Administrator—Technical Support, Mining Enforcement and Safety Administration, Department of the Interior, Washington, D.C. 20240 for approval of the installation of devices to be used in lieu of substantially constructed canopies or cabs on self-propelled electric face equipment. The Assistant Administrator—Technical Support may approve such devices if he determines that the use thereof will afford the equipment operator no less than the same measure of protection from falls of roof, face, or rib, or from rib and face

rolls as would a substantially constructed canopy or cab meeting the requirements of this section.

[37 FR 20690, Oct. 3, 1972]

§ 75.1711 Sealing of mines.

[STATUTORY PROVISIONS]

On or after March 30, 1970, the opening of any coal mine that is declared inactive by the operator, or is permanently closed, or abandoned for more than 90 days, shall be sealed by the operator in a manner prescribed by the Secretary. Openings of all other mines shall be adequately protected in a manner prescribed by the Secretary to prevent entrance by unauthorized persons.

§ 75.1711-1 Sealing of shaft openings.

Shaft openings required to be sealed under § 75.1711 shall be effectively capped or filled. Filling shall be for the entire depth of the shaft and, for the first 50 feet from the bottom of the coal bed, the fill shall consist of incombustible material. Caps consisting of a 6-inch thick concrete cap or other equivalent means may be used for sealing. Caps shall be equipped with a vent pipe at least 2 inches in diameter extending for a distance of at least 15 feet above the surface of the shaft.

§ 75.1711-2 Sealing of slope or drift openings.

Slope or drift openings required to be sealed under § 75.1711 shall be sealed with solid, substantial, incombustible material, such as concrete blocks, bricks or tile, or shall be completely filled with incombustible material for a distance of at least 25 feet into such openings.

§ 75.1711-3 Openings of active mines.

The openings of all mines not declared by the operator, to be inactive, permanently closed, or abandoned for less than 90 days shall be adequately fenced or posted with conspicuous signs prohibiting the entrance of unauthorized persons.

§ 75.1712 Bath houses and toilet facilities.

[STATUTORY PROVISIONS]

The Secretary may require any operator to provide adequate facilities for the miners to change from the clothes worn underground, to provide for the storing of such clothes from shift to shift, and to provide sanitary and bathing facilities.

Sanitary toilet facilities shall be provided in the active workings of the mine when such surface facilities are not readily accessible to the active workings.

§ 75.1712-1 Availability of surface bathing facilities; change rooms; and sanitary facilities.

Except where a waiver has been granted pursuant to the provisions of § 75.1712-4, each operator of an underground coal mine shall on and after December 30, 1970, provide bathing facilities, clothing change rooms, and sanitary facilities, as hereinafter prescribed, for the use of the miners at the mine.

§ 75.1712-2 Location of surface facilities.

Bathhouses, change rooms, and sanitary toilet facilities shall be in a location convenient for the use of the miners. Where such facilities are designed to serve more than one mine, they shall be centrally located so as to be as convenient for the use of the miners in all the mines served by such facilities.

§ 75.1712-3 Minimum requirements of surface bathing facilities, change rooms, and sanitary toilet facilities.

(a) All bathing facilities, change rooms, and sanitary toilet facilities shall be provided with adequate light, heat, and ventilation so as to maintain a comfortable air temperature and to minimize the accumulation of moisture and odors, and such facilities shall be maintained in a clean and sanitary condition.

(b) Bathing facilities, change rooms, and sanitary toilet facilities shall be constructed and equipped so as to comply with applicable State and local building codes: *Provided, however,* That where no State or local building codes apply to such facilities, or where no State or local building codes exist, such facilities shall be constructed and equipped so as to meet the minimum construction requirements of the National Building Code; and the minimum plumbing requirements of the U.S.A. Standard Plumbing Code, ASA A40.8-1955.

(c) In addition to the minimum requirements specified in paragraphs (a) and (b) of this § 75.1712-3, facilities maintained in accordance with § 75.1712-1 shall include the following:

(1) *Bathing facilities.* (1) Showers shall be provided with both hot and cold water.

(ii) At least one shower head shall be provided where five or less miners use such showers.

(iii) Where five or more miners use such showers, sufficient showers shall be furnished to provide approximately one shower head for each five miners.

(iv) A suitable cleansing agent shall be provided for use at each shower.

(2) *Sanitary toilet facilities.* (i) At least one sanitary flush toilet shall be provided where 10 or less miners use such facilities.

(ii) Where 10 or more miners use such sanitary toilet facilities, sufficient toilets shall be furnished to provide approximately one sanitary flush toilet for each 10 miners.

(iii) Where 30 or more miners use sanitary toilet facilities, one urinal may be substituted for one sanitary flush toilet, however, where such substitutions are made they shall not reduce the number of toilets below a ratio of two toilets to one urinal.

(iv) An adequate supply of toilet paper shall be provided with each toilet.

(v) Adequate handwashing facilities or hand lavatories shall be provided in or adjacent to each toilet facility.

(3) *Change rooms.* (i) Individual clothes storage containers or lockers shall be provided for storage of miners clothing and other incidental personal belongings during and between shifts.

(ii) Change rooms shall be provided with ample space to permit the use of such facilities by all miners changing clothes prior to and after each shift.

§ 75.1712-4 Waiver of surface facilities requirements.

The Coal Mine Safety District Manager for the district in which the mine is located may, upon written application by the operator, waive any or all of the requirements of §§ 75.1712-1 through 75.1712-3 if he determines that the operator of the mine cannot or need not meet any part or all of such requirements, and, upon issuance of such waiver, he shall set forth the facilities which will not be required and the specific reason or reasons for such waiver.

§ 75.1712-5 Application for waiver of surface facilities.

Applications for waivers of the requirements of §§ 75.1712-1 through 75.1712-3 shall be filed with the Coal

Mine Safety District Manager and shall contain the following information:

(a) The name and address of the mine operator;

(b) The name and location of the mine;

(c) A statement explaining why, in the opinion of the operator, the installation or maintenance of the facilities is impractical or unnecessary.

§ 75.1712-6 Underground sanitary facilities; approved sanitary toilets; installation and maintenance.

(a) Except as provided in § 75.1712-7, each operator of an underground coal mine shall, on and after December 30, 1970, provide and maintain one approved sanitary toilet, together with an adequate supply of toilet tissue, in a dry location under protected roof, within 500 feet of each working place in the mine where miners are regularly employed during the mining cycle. A single approved sanitary toilet may serve two or more working places in the same mine, if it is located within 500 feet of each such working place.

(b) Only sanitary toilets approved by the Health Division, Coal Mine Health and Safety, Mining Enforcement and Safety Administration shall meet the requirements of this section.

(c) Applications for approval of sanitary toilets shall be submitted to:

Health Division, Coal Mine Health and Safety, Mining Enforcement and Safety Administration, U.S. Department of the Interior, Washington, D.C. 20240.

§ 75.1712-7 Underground sanitary facilities; waiver of requirements.

If it has been determined by the Coal Mine Safety District Manager for the district in which the mine is located that sanitary toilets cannot be provided and maintained within 500 feet of a working place because of the thickness of the coal seam or because of any other physical restriction in the underground workings, he may, upon written application by the operator, waive the location requirements for underground sanitary facilities with respect to such working place.

§ 75.1712-8 Application for waiver of location requirements for underground sanitary facilities.

Applications for waivers of the location requirements of § 75.1712-6 shall

be filed with the Coal Mine Safety District Manager and shall contain the following information:

(a) The name and address of the mine operator;

(b) The name and location of the mine;

(c) The thickness of the coal seam in each working place in the mine for which a waiver is requested; and

(d) Other physical restrictions in the mine (for example, poor roof conditions, excessive water, timbering, etc.)

If a sanitary toilet cannot be installed within 500 feet of a working place because of physical conditions other than the thickness of the coal seam, the operator shall also include a short statement specifying areas in the mine which could be considered possible alternative sites for installation of such facilities.

§ 75.1712-9 Issuance of waivers.

Following the receipt of an application submitted in accordance with the provisions of § 75.1712-8, the Coal Mine Safety District Manager shall, if he determines that the operator cannot meet the location requirements of § 75-1712-6 with respect to any or all of the working places in the mine because of the coal seam thickness or because of other physical restriction, issue a waiver of the requirements of this section and designate an alternative site for installation of such facilities. The waiver issued shall specify each working place to which it shall apply, set forth the reasons for such waiver, and the reasons for designation of the alternative site.

§ 75.1712-10 Underground sanitary facilities; maintenance.

Sanitary toilets shall be regularly maintained in a clean and sanitary condition. Holding tanks shall be serviced and cleaned when full and in no case less than once each week by draining or pumping or by removing them to the surface for cleaning or recharging. Transfer tanks and transfer equipment used underground shall be equipped with suitable fittings to permit complete drainage of holding tanks without spillage and allow for the sanitary transportation of wastes to the surface. Waste shall be disposed of on the surface in accordance with State and local laws and regulations.

§ 75.1713 Emergency medical assistance; first-aid.

[STATUTORY PROVISIONS]

Each operator shall make arrangements in advance for obtaining emergency medical assistance and transportation for injured persons. Emergency communications shall be provided to the nearest point of assistance. Selected agents of the operator shall be trained in first-aid and first-aid training shall be made available to all miners. Each coal mine shall have an adequate supply of first-aid equipment located on the surface, at the bottom of shafts and slopes, and at other strategic locations near the working faces. In fulfilling each of the requirements of this section, the operator shall meet at least minimum requirements prescribed by the Secretary of Health, Education, and Welfare.

§ 75.1713-1 Arrangements for emergency medical assistance and transportation for injured persons; agreements; reporting requirements; posting requirements.

(a) Each operator of an underground coal mine shall make arrangements with a licensed physician, medical service, medical clinic, or hospital to provide 24-hour emergency medical assistance for any person injured at the mine.

(b) Each operator of an underground coal mine shall make arrangements with an ambulance service, or otherwise provide, for 24-hour emergency transportation for any person injured at the mine.

(c) Each operator shall, on or before December 30, 1970, report to the District Manager for the district in which the mine is located the name, title and address of the physician, medical service, medical clinic, hospital or ambulance service with whom arrangements have been made, or otherwise provided, in accordance with the provisions of paragraphs (a) and (b) of this § 75.1713-1.

(d) Each operator shall, within 10 days after any change of the arrangements required to be reported under the provisions of this § 75.1713-1, report such changes to the District Manager. If such changes involve a substitution of persons, the operator shall provide the name, title, and address of the person substituted together with the name and address of the medical service, medical clinic, hospital, or ambulance service with which such person or persons are associated.

(e) Each operator shall, immediately after making an arrangement required under the provisions of paragraphs (a) and (b) of this § 75.1713-1, or immediately after any change of such arrangement, post at appropriate places at the mine the names, titles, addresses, and telephone numbers of all persons or services currently available under such arrangements to provide medical assistance and transportation at the mine.

§ 75.1713-2 Emergency communications; requirements.

(a) Each operator of an underground coal mine shall establish and maintain a communication system from the mine to the nearest point of medical assistance for use in an emergency.

(b) The emergency communication system required to be maintained under paragraph (a) of this § 75.1713-2 may be established by telephone or radio transmission or by any other means of prompt communication to any facility (for example, the local sheriff, the State highway patrol, or local hospital) which has available the means of communication with the person or persons providing emergency medical assistance or transportation in accordance with the provisions of § 75.1713-1.

§ 75.1713-3 First-aid training; supervisory employees.

On or before December 30, 1970, each operator of an underground coal mine shall conduct first-aid training courses for selected supervisory employees at the mine, and report in writing to the District Manager the names and job titles of all supervisory employees so trained. Thereafter, each operator shall, within 60 days after the selection of a new supervisory employee to be trained, report in writing to the District Manager the name and job title of such employee and the date on which such employee satisfactorily completed a first-aid training course.

§ 75.1713-4 First-aid training program; availability of instruction to all miners.

On or before June 30, 1971, each operator of an underground coal mine shall make available to all miners employed in the mine a course of instruction in first-aid conducted by the operator or under the auspices of the operator, and such a course of instruction shall be made avail-

able to newly employed miners within 6 months after the date of employment.

§ 75.1713-5 First-aid training program; retraining of supervisory employees; availability to all miners.

Beginning January 1, 1971, each operator of an underground coal mine shall conduct refresher first-aid training courses each calendar year for all selected supervisory employees, and make available refresher first-aid training courses to all miners employed in the mine.

§ 75.1713-6 First-aid training program; minimum requirements.

(a) All first-aid training programs required under the provisions of §§ 75.1713-3 and 75.1713-4 shall include 10 class hours of training in a course of instruction similar to that outlined in "First Aid, A Bureau of Mines Instruction Manual."

(b) Refresher first-aid training programs required under the provisions of § 75.1713-5 shall include five class hours of refresher training in a course of instruction similar to that outlined in "First Aid, A Bureau of Mines Instruction Manual."

§ 75.1713-7 First-aid equipment; location; minimum requirements.

(a) Each operator of an underground coal mine shall maintain a supply of the first-aid equipment set forth in paragraph (b) of this § 75.1713-7 at each of the following locations:

(1) At the mine dispatcher's office or other appropriate work area on the surface in close proximity to the mine entry;

(2) At the bottom of each regularly traveled slope or shaft; however, where the bottom of such slope or shaft is not more than 1,000 feet from the surface, such first-aid supplies may be maintained on the surface at the entrance to the mine; and

(3) At a point in each working section not more than 500 feet outby the active working face or faces.

(b) The first-aid equipment required to be maintained under the provisions of paragraph (a) of this § 75.1713-7 shall include at least the following:

(1) One stretcher;

(2) One broken-back board. (If a splint stretcher combination is used it will satisfy the requirements of both (1) and (2)).

(3) 24 triangular bandages (15 if a splint-stretcher combination is used).

- (4) Eight 4-inch bandage compresses;
- (5) Eight 2-inch bandage compresses.
- (6) Twelve 1-inch adhesive compresses;
- (7) One foille;
- (8) Two cloth blankets;
- (9) One rubber blanket or equivalent substitute.

(10) Two tourniquets;

(11) One 1-ounce bottle of aromatic spirits of ammonia or 1 dozen ammonia ampules.

(12) The necessary complements of arm and leg splints or two each inflatable plastic arm and leg splints.

(c) All first-aid supplies required to be maintained under the provisions of paragraphs (a) and (b) of this § 75.1713-7 shall be stored in suitable, sanitary, dust tight, moisture proof containers and such supplies shall be accessible to the miners.

§ 75.1714 Self-rescue device.

[STATUTORY PROVISIONS]

A self-rescue device approved by the Secretary shall be made available to each miner by the operator which shall be adequate to protect such miner for 1 hour or longer. Each operator shall train each miner in the use of such device.

§ 75.1714-1 Approved self-rescue devices.

(a) Until March 31, 1971, the requirements of § 75.1714 may be met by making available to each miner two MSA self-rescuers bearing Bureau of Mines approval number BM-1447.

(b) The requirements of § 75.1714 may be met by furnishing an Auer self-rescuer, bearing Bureau of Mines approval number BM-14F-76 or any other self-rescuer which has been officially approved by the Bureau of Mines or Mining Enforcement and Safety Administration as meeting the requirements of § 75.1714.

§ 75.1714-2 Approved self-rescue devices; location; requirements.

(a) Except as provided in paragraphs (b) and (c) of this section, self-rescue devices meeting the requirements of § 75.1714 shall be worn or carried on the person of each miner.

(b) Where the wearing or carrying of self-rescue devices meeting the requirements of § 75.1714 is hazardous to a miner, such self-rescue devices shall be located at a distance no greater than 25 feet from such miner.

(c) Where a miner works on or around mobile equipment, self-rescue devices may be placed in a readily accessible location on such equipment.

[36 F.B. 23722, Dec. 14, 1971]

§ 75.1715 Identification check system.

[STATUTORY PROVISIONS]

Each operator of a coal mine shall establish a check-in and check-out system which will provide positive identification of every person underground, and will provide an accurate record of the persons in the mine, kept on the surface in a place chosen to minimize the danger of destruction by fire or other hazard. Such record shall bear a number identical to an identification check that is securely fastened to the lamp belt worn by the person underground. The identification check shall be made of a rust resistant metal of not less than 16 gauge.

§ 75.1716 Operations under water.

[STATUTORY PROVISIONS]

Whenever an operator mines coal from a coal mine opened after March 30, 1970, or from any new working section of a mine opened prior to such date, in a manner that requires the construction, operation, and maintenance of tunnels under any river, stream, lake, or other body of water, that is, in the judgment of the Secretary, sufficiently large to constitute a hazard to miners, such operator shall obtain a permit from the Secretary which shall include such terms and conditions as he deems appropriate to protect the safety of miners working or passing through such tunnels from cave-ins and other hazards. Such permits shall require, in accordance with a plan to be approved by the Secretary, that a safety zone be established beneath and adjacent to such body of water. No plan shall be approved unless there is a minimum of cover to be determined by the Secretary, based on test holes drilled by the operator in a manner to be prescribed by the Secretary. No such permit shall be required in the case of any new working section of a mine which is located under any water resource reservoir being constructed by a Federal agency on December 30, 1969, the operator of which is required by such agency to operate in a manner that protects the safety of miners working in such section from cave-ins and other hazards.

§ 75.1716-1 Operations under water; notification by operator.

An operator planning to mine coal from coal mines opened after March 30, 1970, or from working sections in mines opened prior to such date, and in such manner that mining operations will be conducted, or tunnels constructed, under any river, stream, lake, or other body of water, shall give notice to the Coal Mine Safety District Manager in the district in which the mine is located prior to the commencement of such mining operations.

§ 75.1716-2 Permit required.

If in the judgment of the Coal Mine Safety District Manager the proposed mining operations referred to in § 75.1716-1 constitute a hazard to miners, he shall promptly so notify the operator that a permit is required.

§ 75.1716-3 Applications for permits.

An application for a permit required under this section shall be filed with the Coal Mine Safety District Manager and shall contain the following general information:

- (a) Name and address of the company.
- (b) Name and address of the mine.
- (c) Projected mining and ground support plans.
- (d) A mine map showing the locations of the river, stream, lake, or other body of water and its relation to the location of all working places.
- (e) A profile map showing the type of strata and the distance in elevation between the coal bed and the river, stream, lake or other body of water involved. The type of strata shall be determined by core test drill holes as prescribed by the Coal Mine Safety District Manager.

§ 75.1716-4 Issuance of permits.

If the Coal Mine Safety District Manager determines that the proposed mining operations under water can be safely conducted, he shall issue a permit for the conduct of such operations under such conditions as he deems necessary to protect the safety of miners engaged in those operations.

§ 75.1717 Exemptions.**[STATUTORY PROVISIONS]**

No notice under § 75.1716-1 and no permit under § 75.1716-2 shall be required in the case of any new working section of a mine which is located under any water resource reservoir being con-

structed by a Federal agency as of December 30, 1969, and where the operator is required by such agency to operate in a manner that adequately protects the safety of miners.

§ 75.1718 Drinking water.**[STATUTORY PROVISIONS]**

An adequate supply of potable water shall be provided for drinking purposes in the active workings of the mine, and such water shall be carried, stored, and otherwise protected in sanitary containers.

§ 75.1718-1 Drinking water; quality.

(a) Potable water provided in accordance with the provisions of § 75.1718 shall meet the applicable minimum health requirements for drinking water established by the State or community in which the mine is located.

(b) Where no state or local health requirements apply to drinking water or where no state or local minimum health requirements exist, drinking water provided in accordance with the provisions of § 75.1718 shall contain a minimum of 0.2 milligrams of free chlorine per liter of water.

§ 75.1720 Protective clothing; requirements.

On and after the effective date of this § 75.1720 each miner regularly employed in the active workings of an underground coal mine shall be required to wear the following protective clothing and devices:

(a) Protective clothing or equipment and face-shields or goggles when welding, cutting, or working with molten metal or when other hazards to the eyes exist from flying particles.

(b) Suitable protective clothing to cover those part of the body exposed to injury when handling corrosive or toxic substances or other materials which might cause injury to the skin.

(c) Protective gloves when handling materials or performing work which might cause injury to the hands; however, gloves shall not be worn where they would create a greater hazard by becoming entangled in the moving parts of equipment.

(d) A suitable hard hat or hard cap. If a hard hat or hard cap is painted, nonmetallic based paint shall be used.

(e) Suitable protective footwear.

[36 FR 19497, Oct. 7, 1971, as amended at 39 FR 7175, Feb. 25, 1974]

§ 75.1720-1 Distinctively colored hard hats, or hard caps; identification for newly employed, inexperienced miners.

Hard hats or hard caps distinctively different in color from those worn by experienced miners shall be worn by each newly employed, inexperienced miner for at least one year from the date of his initial employment as a miner or until he has been qualified or certified as a miner by the State in which he is employed.

[39 FR 7175, Feb. 25, 1974]

§ 75.1721 Opening of new underground coal mines, or reopening and reactivating of abandoned or deactivated coal mines, notification by the operator; requirements.

(a) On and after the effective date of this section, each operator of a new underground coal mine, and a mine which has been abandoned or deactivated and is to be reopened or reactivated, shall prior to opening, reopening or reactivating the mine notify the Coal Mine Health and Safety District Manager for the district in which the mine is located of the approximate date of the proposed or actual opening of such mine. Thereafter, and as soon as practicable, the operator of such mine shall submit all preliminary plans in accordance with paragraph (b) of this section to the District Manager and the operator shall not develop any part of the coalbed in such mine unless and until all preliminary plans have been approved by the District Manager.

(b) The notification required to be submitted in accordance with paragraph (a) of this section shall be in writing and the preliminary plans shall contain the following:

(1) The name and location of the proposed mine and the Mining Enforcement and Safety Administration mine identification number, if known;

(2) The name and address of the mine operator(s);

(3) The name and address of the principal official designated by the operator as the person who is in charge of health and safety at the mine;

(4) The identification and approximate height of the coalbed to be developed;

(5) The system of mining to be employed;

(6) A proposed roof control plan containing the information specified in § 75.200-5;

(7) A proposed ventilation plan and methane and dust control plan containing the information specified in §§ 75.316-1 and 75.316-2;

(8) A proposed plan for training and retraining containing the information specified in § 75.160-1;

(9) A proposed plan for sealing abandoned areas containing the information specified in § 75.330-1;

(10) A proposed program for searching miners for smoking materials in accordance with the provisions of § 75.1702; and,

(11) A proposed plan for emergency medical assistance and emergency communication in accordance with the provisions of §§ 75.1713-1 and 75.1713-2.

[36 F.R. 23722, Dec. 14, 1971]

§ 75.1722 Mechanical equipment guards.

(a) Gears; sprockets; chains; drive, head, tail, and take-up pulleys; flywheels; couplings, shafts; sawblades; fan inlets; and similar exposed moving machine parts which may be contacted by persons, and which may cause injury to persons shall be guarded.

(b) Guards at conveyor-drive, conveyor-head, and conveyor-tail pulleys shall extend a distance sufficient to prevent a person from reaching behind the guard and becoming caught between the belt and the pulley.

(c) Except when testing the machinery, guards shall be securely in place while machinery is being operated.

[38 FR 4976, Feb. 23, 1973]

§ 75.1723 Stationary grinding machines; protective devices.

(a) Stationary grinding machines other than special bit grinders shall be equipped with:

(1) Peripheral hoods (less than 90° throat openings) capable of withstanding the force of a bursting wheel.

(2) Adjustable tool rests set as close as practical to the wheel.

(3) Safety washers.

(b) Grinding wheels shall be operated within the specifications of the manufacturer of the wheel.

(c) Face shields or goggles, in good condition, shall be worn when operating a grinding wheel.

[38 FR 4976, Feb. 23, 1973]

§ 75.1724 Hand-held power tools; safety devices.

Hand-held power tools shall be equipped with controls requiring constant hand or finger pressure to operate the tools or shall be equipped with friction or other equivalent safety devices. [38 FR 4976, Feb. 23, 1973]

§ 75.1725 Machinery and equipment; operation and maintenance.

(a) Mobile and stationary machinery and equipment shall be maintained in safe operating condition and machinery or equipment in unsafe condition shall be removed from service immediately.

(b) Machinery and equipment shall be operated only by persons authorized to operate such machinery or equipment.

(c) Repairs or maintenance shall not be performed on machinery until the power is off and the machinery is blocked against motion, except where machinery motion is necessary to make adjustments.

(d) Machinery shall not be lubricated manually while in motion, unless equipped with extended fittings or cups. [38 FR 4976, Feb. 23, 1973]

§ 75.1726 Performing work from a raised position; safeguards.

(a) Men shall not work on or from a piece of mobile equipment in a raised position until it has been blocked in place securely. This does not preclude the use of equipment specifically designed as elevated mobile work platforms.

(b) No work shall be performed under machinery or equipment that has been raised until such machinery or equipment has been securely blocked in position. [38 FR 4976, Feb. 23, 1973]

§ 75.1727 Drive belts.

(a) Drive belts shall not be shifted while in motion unless the machines are provided with mechanical shifters.

(b) Belt dressing shall not be applied while belts are in motion except where it can be applied without endangering a person. [38 FR 4976, Feb. 23, 1973]

§ 75.1728 Power-driven pulleys.

(a) Belts, chains, and ropes shall not be guided onto power-driven moving pulleys, sprockets, or drums with the hands except on slow-moving equipment especially designed for hand feeding.

(b) Pulleys of conveyors shall not be cleaned manually while the conveyor is in motion.

(c) Coal spilled beneath belt conveyor drives or tail pieces shall not be removed while the conveyor is in motion, except where such coal can be removed without endangering persons. [38 FR 4976, Feb. 23, 1973]

§ 75.1729 Welding operations.

Welding operations shall be shielded and the area shall be well ventilated. [38 FR 4976, Feb. 23, 1973]

§ 75.1730 Compressed air; general; compressed air systems.

(a) All pressure vessels shall be constructed, installed, and maintained in accordance with the standards and specifications of Section VIII "Unfired Pressure Vessels," of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (1971), which is hereby incorporated by reference and made a part hereof. This document may be purchased for \$25 from the American Society of Mechanical Engineers, 345 East 47th Street, New York, NY 10017; and it is available for examination in every Coal Mine Health and Safety District and Subdistrict Office.

(b) Compressors and compressed-air receivers shall be equipped with automatic pressure-relief valves, pressure gages, and drain valves.

(c) Repairs involving the pressure system of compressors, receivers, or compressed-air-powered equipment shall not be attempted until the pressure has been relieved from that part of the system to be repaired.

(d) At no time shall compressed air be directed toward a person. When compressed air is used, all necessary precautions shall be taken to protect persons from injury.

(e) Safety chains, suitable locking devices, or automatic cut-off valves shall be used at connections to machines of high-pressure hose lines of three-fourths of an inch inside diameter or larger, and between high-pressure hose lines of three-fourths of an inch inside diameter or larger, where a connection failure would create a hazard. For purposes of this paragraph, high-pressure means pressure of 100 p.s.i. or more. [38 FR 4976, Feb. 23, 1973]

Subpart S—Approved Books and Records

§ 75.1800 Scope.

(a) The provisions of this Subpart S set forth the requirements for recording

the results of certain tests and examinations conducted in underground coal mines. In addition, it specifies the approved books in which such results are to be recorded and the manner in which they shall be maintained.

(b) The approved books required to be maintained in accordance with the provisions of §§ 75.1801 through 75.1808 shall be secured by each operator from commercial sources. Facsimile copies of Mining Enforcement and Safety Administration Forms 6-1331, 6-1489, 6-1490, 6-1491, 6-1492, 6-1493, and 6-1494, have been filed with the Office of the Federal Register, General Services Administration, Washington, D.C. 20408, and sample copies of each of these forms are available for the use of commercial printers or operators at each District or Subdistrict Coal Mine Health and Safety Office of the Mining Enforcement and Safety Administration.

(c) When the District Manager has determined that record books kept in satisfaction of State requirements provide the information specified in any record book required by this Subpart S, and so advises the operators of mines located in that State, such approved State record books will be accepted in lieu of the record books specified in this Subpart S.

§ 75.1801 Examination of emergency escapeways and facilities, smokers' articles and fire doors; recording requirements; approved books.

The results of examinations of emergency escapeways and facilities, fire doors, and for smokers' articles required to be conducted under the provisions of §§ 75.1702, 75.1704, and 75.1708, shall be recorded in a book entitled "Examinations of Emergency Escapeways and Facilities; Smokers' Articles; Fire Doors" (Mining Enforcement and Safety Administration Form 6-1331, Budget Bureau No. 42-R1589, March 1970).

§ 75.1802 Preshift—onshift and daily report; recording requirements; approved books.

The results of daily examinations and tests for hazardous conditions and roof bolt torque required to be conducted under the provisions of §§ 75.200-7(b) (3) (iii), 75.303, 75.304, 75.304-2, 75.309, 75.309-4, and 75.324, shall be recorded in a book entitled "Preshift—Onshift and Daily Report" (Mining Enforcement and Safety Administration Form 6-1489,

Budget Bureau No. 42-R1589, March 1970).

§ 75.1803 Weekly examinations for methane and hazardous conditions; recording requirements; approved books.

The results of weekly examinations for methane and hazardous conditions required to be conducted under the provisions of §§ 75.305, 75.306, and 75.316-2 (f), shall be recorded in a book entitled "Weekly Examination for Methane and Hazardous Conditions" (Mining Enforcement and Safety Administration Form 6-1490, Budget Bureau No. 42-R1589, March 1970).

§ 75.1804 Daily and monthly examination of ventilation equipment; recording requirements; approved books.

The results of daily and monthly examinations of ventilation equipment required to be conducted under the provisions of §§ 75.300 and 75.300-4, shall be recorded in a book entitled "Daily and Monthly Examination of Ventilation Equipment" (Mining Enforcement and Safety Administration Form 6-1491, Budget Bureau No. 42-R1589, March 1970).

§ 75.1805 Examination of electrical equipment; recording requirements; approved books.

The results of examinations of electrical equipment required to be conducted under the provisions of §§ 75.313-1, 75.512, 75.512-2, 75.703-3(d)(11), 75.812, 75.812-2, 75.900, 75.900-3, and 75.900-4, shall be recorded in a book entitled "Examination of Electrical Equipment" (Mining Enforcement and Safety Administration Form 6-1492, Budget Bureau No. 42-R1589, March 1970).

§ 75.1806 Monthly examination of surface high voltage circuit breakers; recording requirements; approved books.

The results of monthly examinations of high voltage circuit breakers on the surface required to be conducted under the provisions of §§ 75.800, 75.800-3, and 75.800-4, shall be recorded in a book entitled "Monthly Examination of Surface High Voltage Circuit Breakers" (Mining Enforcement and Safety Administration Form 6-1493, Budget Bureau No. 42-R1589, March 1970).

§ 75.1807 Daily inspection of hoisting equipment; recording requirements; approved books.

The results of daily examinations of hoisting equipment required to be conducted under the provisions of §§ 75.1400, 75.1400-2, 75.1400-3, 75.1400-4, 75.1401-3, and 75.1402-2, shall be recorded in a book entitled "Report of Daily Inspection of Hoisting Equipment" (Mining Enforcement and Safety Administration Form 6-1494, Budget Bureau No. 42-R1589, March 1970).

§ 75.1808 Maintenance of approved books and records; requirements.

All approved books and records maintained under the provisions of §§ 75.1801 through 75.1807 shall be stored in a fire-proof repository on the surface of the mine chosen by the mine operator to minimize their destruction by fire or other hazard and such records shall be made available to interested persons.

PART 77—MANDATORY SAFETY STANDARDS, SURFACE COAL MINES AND SURFACE WORK AREAS OF UNDERGROUND COAL MINES

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- AUTHORITY:** The mandatory safety standards for surface coal mines and surface work areas of underground coal mines set forth in this Part 77 are issued in accordance with the authority vested in the Secretary of the Interior under the provisions of §§ 101(1) and 508 of the Federal Coal Mine Health and Safety Act of 1969 (83 Stat. 742; 30 U.S.C. 801; Public Law 91-173).
- SOURCE:** The provisions of this Part 77 appear at 36 F.R. 9364, May 22, 1971, unless otherwise noted.
- NOTE:** Nomenclature changes to this part appear at 38 FR 18667, July 13, 1973.

Subpart A—General

§ 77.1 Scope.

This Part 77 sets forth mandatory safety standards for bituminous, anthracite, and lignite surface coal mines, including open pit and auger mines, and to the surface work areas of underground coal mines, pursuant to section 101(i) of the Federal Coal Mine Health and Safety Act of 1969.

§ 77.2 Definitions.

For the purpose of this Part 77, the term:

(a) "Active workings" means any place in a coal mine where miners are normally required to work or travel;

(b) "American Table of Distances" means the current edition of "The American Table of Distances for Storage of Explosives" published by the Institute of Makers of Explosives;

(c) "Barricaded" means to obstruct passage of persons, vehicles, or flying materials;

(d) "Berm" means a pile or mound of material capable of restraining a vehicle;

(e) "Blasting agent" means any material consisting of a mixture of a fuel and oxidizer which—

(1) Is used or intended for use in blasting;

(2) Is not classed as an explosive by the Department of Transportation;

(3) Contains no ingredient classed as an explosive by the Department of Transportation; and,

(4) Cannot be detonated by a No. 8 blasting cap when tested as recommended in Bureau of Mines Information Circular 8179.

(f) "Blasting area" means the area near blasting operations in which concussion or flying material can reasonably be expected to cause injury.

(g) "Blasting cap" means a detonator containing a charge of detonating compound, which is ignited by electric current, or the spark of a fuse. Used for detonating explosives.

(h) "Blasting circuit" means electric circuits used to fire electric detonators or to ignite an igniter cord by means of an electric starter.

(i) "Blasting switch" means a switch used to connect a power source to a blasting circuit.

(j) "Box-type magazine" means a small, portable magazine used to store limited quantities of explosives or detonators for short periods of time in lo-

cations at the mine which are convenient to the blasting sites at which they will be used.

(k) "Capped fuse" means a length of safety fuse to which a detonator has been attached.

(l) "Capped primer" means a package or cartridge of explosives which is specifically designed to transmit detonation to other explosives and which contains a detonator.

(m) "Certified" or "registered", as applied to any person means a person certified or registered by the State in which the coal mine is located to perform duties prescribed by this Part 77, except that, in a State where no program of certification or registration is provided or where the program does not meet at least minimum Federal standards established by the Secretary, such certification or registration shall be by the Secretary.

(n) "Detonating cord" or "detonating fuse" means a flexible cord containing a core of high explosive.

(o) "Detonator" means a device containing a small detonating charge that is used for detonating an explosive, including, but not limited to blasting caps, exploders, electric detonators, and delay electric blasting caps.

(p) "Electrical grounding" means to connect with the ground to make the earth part of the circuit.

(q) "Explosive" means any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion. Explosives include, but are not limited to black powder, dynamite, nitroglycerin, fulminate, ammonium nitrate when mixed with a hydrocarbon, and other blasting agents.

(r) "Flash point" means the minimum temperature at which sufficient vapor is released by a liquid or solid to form a flammable vapor-air mixture at atmospheric pressure.

(s) "Low voltage" means up to and including 660 volts, "medium voltage" means voltages from 661 to 1,000 volts, and "high voltage" means more than 1,000 volts.

(t) "Misfire" means the complete or partial failure of a blasting charge to explode as planned.

(u) "Primer" or "Booster" means a package or cartridge of explosive which is designed specifically to transmit detonation to other explosives and which does not contain a detonator.

(v) "Qualified person" means, as the context requires,

(1) An individual deemed qualified by the Secretary and designated by the operator to make tests and examinations required by this Part 77; and,

(2) An individual deemed, in accordance with the minimum requirements to be established by the Secretary, qualified by training, education, and experience, to perform electrical work, to maintain electrical equipment, and to conduct examinations and make tests of all electrical equipment.

(w) "Roll protection" means a framework, safety canopy, or similar protection for the operator when equipment overturns.

(x) "Safety can" means an approved container, of not over 5 gallons capacity, having a spring-closing lid and spout cover.

(y) "Safety fuse" means a train of powder enclosed in cotton, jute yarn, and waterproofing compounds, which burns at a uniform rate; used for firing a cap containing the detonating compound which in turn sets off the explosive charge.

(z) "Safety switch" means a section-alizing switch that also provides shunt protection in blasting circuits between the blasting switch and the shot area.

(aa) "Secretary" means the Secretary of the Interior or his delegate.

Subpart B—Qualified and Certified Persons

§ 77.100 Certified person.

(a)(1) The provisions of this Part 77 require that certain examinations and tests be made by a certified person. A certified person within the meaning of these provisions is a person who has been certified in accordance with the provisions of paragraph (b) of this § 77.100 to perform the duties, and make the examinations and tests which are required by this Part 77 to be performed by a certified person.

(2) A person who has been so certified shall also be considered to be a qualified person within the meaning of those provisions of this Part 77 which require that certain examinations, tests and duties be performed by a qualified person, except those provisions in Subparts F, G, H, I, and J of this part relating to performance of electrical work.

(b) Pending issuance of Federal standards, a person will be considered, to the

extent of the certification, a certified person to make examinations, tests and perform duties which are required by this Part 77 to be performed by a certified person:

(1) If he has been certified for such purpose by the State in which the coal mine is located; or

(2) If he has been temporarily certified for such purpose by the Secretary for periods of time not to exceed 6 months for each such temporary certification. The operator of the coal mine in which such person is employed shall make an application and a satisfactory showing that each such person has had at least 2 years experience at a coal mine or equivalent experience and such person demonstrates to the satisfaction of an authorized representative of the Secretary that he is able and competent to test for oxygen deficiency with a permissible flame safety lamp and to test for methane with a portable methane detector approved by the Bureau of Mines or the Mining Enforcement and Safety Administration under Part 22 of this chapter (Bureau of Mines Schedule 8C), and to perform such other duties for which application for certification is made. Applications for temporary certification by the Secretary should be submitted in writing to the Health and Safety Activity, Mining Enforcement and Safety Administration, Department of the Interior, 4800 Forbes Avenue, Pittsburgh, PA 15213.

§ 77.101 Tests for methane and for oxygen deficiency; qualified person.

(a) The provisions of Subparts C, P, R, and T of this Part 77 require that tests for methane and for oxygen deficiency be made by a qualified person. A person is a qualified person for these purposes if he is a certified person for such purposes under § 77.100.

(b) Pending issuance of Federal standards, a person will be considered a qualified person for testing for methane and oxygen deficiency:

(1) If he has been qualified for this purpose by the State in which the coal mine is located; or

(2) If he has been qualified by the Secretary for these purposes upon a satisfactory showing by the operator of the coal mine that each such person has been trained and designated by the operator to test for methane and oxygen deficiency. Applications for Secretarial

qualification should be submitted in writing to the Health and Safety Activity, Mining Enforcement and Safety Administration, 4800 Forbes Avenue, Pittsburgh, PA 15213.

§ 77.102 Tests for methane; oxygen deficiency; qualified person, additional requirement.

Notwithstanding the provisions of § 77.101, on and after December 30, 1971, no person shall be a qualified person for testing for methane and oxygen deficiency unless he has demonstrated to the satisfaction of an authorized representative of the Secretary that he is able and competent to make such tests and the Mining Enforcement and Safety Administration has issued him a current card which qualifies him to make such tests.

§ 77.103 Electrical work; qualified person.

(a) Except as provided in paragraph (f) of this section, an individual is a qualified person within the meaning of Subparts F, G, H, I, and J of this Part 77 to perform electrical work (other than work on energized surface high-voltage lines) if:

(1) He has been qualified as a coal mine electrician by a State that has a coal mine electrical qualification program approved by the Secretary; or,

(2) He has at least 1 year of experience in performing electrical work underground in a coal mine, in the surface work areas of an underground coal mine, in a surface coal mine, in a noncoal mine, in the mine equipment manufacturing industry, or in any other industry using or manufacturing similar equipment, and has satisfactorily completed a coal mine electrical training program approved by the Secretary; or,

(3) He has at least 1 year of experience, prior to the date of the application required by paragraph (c) of this section, in performing electrical work underground in a coal mine, in the surface work areas of an underground coal mine, in a surface coal mine, in a noncoal mine, in the mine equipment manufacturing industry, or in any other industry using or manufacturing similar equipment, and he attains a satisfactory grade on each of the series of five written tests approved by the Secretary as prescribed in paragraph (b) of this section.

(b) The series of five written tests approved by the Secretary shall include the following categories:

(1) Direct current theory and application;

(2) Alternating current theory and application;

(3) Electric equipment and circuits;

(4) Permissibility of electric equipment; and,

(5) Requirements of Subparts F through J and S of this Part 77.

(c) In order to take the series of five written tests approved by the Secretary, an individual shall apply to the District Manager of any Coal Mine Health and Safety District and shall certify that he meets the requirements of paragraph (a) (3) of this section. The tests will be administered in the Coal Mine Health and Safety Districts at regular intervals, or as demand requires.

(d) A score of at least 80 percent on each of the five written tests will be deemed to be a satisfactory grade. Recognition shall be given to practical experience in that 1 percentage point shall be added to an individual's score in each test for each additional year of experience beyond the 1 year requirement specified in paragraph (a) (3) of this section; however, in no case shall an individual be given more than 5 percentage points for such practical experience.

(e) An individual may, within 30 days from the date on which he received notification from the Administration of his test scores, repeat those on which he received an unsatisfactory score. If further retesting is necessary after his initial repetition, a minimum of 30 days from the date of receipt of notification of the initial retest scores shall elapse prior to such further retesting.

(f) An individual who has, prior to November 1, 1972, been qualified to perform electrical work specified in Subparts F, G, H, I, and J of this Part 77 (other than work on energized surface high-voltage lines) shall continue to be qualified until June 30, 1973. To remain qualified after June 30, 1973, such individual shall meet the requirements of either subparagraph (1), (2), or (3) of paragraph (a) of this section.

(g) An individual qualified in accordance with this section shall, in order to retain qualification, certify annually to the District Manager of the Coal Mine Health and Safety District wherein he is employed, that he has satisfactorily

completed a coal mine electrical retraining program approved by the Secretary. (30 U.S.C. 811(a); 83 Stat. 745) [37 FR 22377, Oct. 19, 1972, as amended at 37 FR 28163, Dec. 21, 1972]

§ 77.104 Repair of energized surface high-voltage lines; qualified person.

An individual is a qualified person within the meaning of § 77.704 of this part for the purpose of repairing energized surface high-voltage lines only if he has had at least 2 years experience in electrical maintenance, and at least 2 years experience in the repair of energized high-voltage lines located on poles or structures.

[36 F.R. 9364, May 22, 1971, as amended at 36 F.R. 13143, July 15, 1971]

§ 77.105 Qualified hoistman; slope or shaft sinking operation; qualifications.

(a) (1) A person is a qualified hoistman within the provisions of Subpart T of this part, for the purpose of operating a hoist at a slope or shaft sinking operation if he has at least 1 year experience operating a hoist plant or maintaining hoist equipment and is qualified by any State as a hoistman or its equivalency, or

(2) If a State has no program for qualifying persons as a hoistman, the Secretary may temporarily qualify persons for this purpose for periods of time not to exceed 6 months for each temporary certification if the operator of the slope or shaft sinking operation makes an application and a satisfactory showing that each such person has had 1 year experience in the operation of hoists.

(b) Applications for Secretarial qualification should be submitted to the Health and Safety Activity, Mining Enforcement and Safety Administration, Department of the Interior, 4800 Forbes Avenue, Pittsburgh, PA 15213.

§ 77.106 Records of certified and qualified persons.

The operator of each coal mine shall maintain a list of all certified and qualified persons designated to perform duties under this Part 77.

§ 77.107 Training programs.

Every operator of a coal mine shall provide a program, approved by the Secretary, of training and retraining both qualified and certified persons needed to

carry out functions prescribed in the Act.

§ 77.107-1 Plans for training programs.

On or before September 30, 1971, each operator shall submit to the District Manager of the Coal Mine Health and Safety District in which the mine is located a program or plan setting forth what, when, how, and where he will train and retain persons whose work assignments require that they be certified or qualified. Such program shall provide: (a) For certified persons, annual training courses in the tasks and duties which they perform as certified persons, first aid, principles of mine rescue, and the provisions of this Part 77; and (b) for qualified persons, annual courses in performance of the tasks which they perform as qualified persons.

[36 F.R. 9364, May 22, 1971, as amended at 36 F.R. 13143, July 15, 1971]

Subpart C—Surface Installations

§ 77.200 Surface installations; general.

All mine structures, enclosures, or other facilities (including custom coal preparation) shall be maintained in good repair to prevent accidents and injuries to employees.

§ 77.201 Methane content in surface installations.

The methane content in the air of any structure, enclosure or other facility shall be less than 1.0 volume per centum.

§ 77.201-1 Tests for methane; qualified person; use of approved device.

Tests for methane in structures, enclosures, or other facilities, in which coal is handled or stored shall be conducted by a qualified person with a device approved by the Secretary at least once during each operating shift, and immediately prior to any repair work in which welding or an open flame is used, or a spark may be produced.

§ 77.201-2 Methane accumulations; change in ventilation.

If, at any time, the air in any structure, enclosure or other facility contains 1.0 volume per centum or more of methane changes or adjustments in the ventilation of such installation shall be made at once so that the air shall contain less than 1.0 volume per centum of methane.

§ 77.202 Dust accumulations in surface installations.

Coal dust in the air of, or in, or on the surfaces of, structures, enclosures, or other facilities shall not be allowed to exist or accumulate in dangerous amounts.

§ 77.203 Use of material or equipment overhead; safeguards.

Where overhead repairs are being made at surface installations and equipment or material is taken into such overhead work areas, adequate protection shall be provided for all persons working or passing below the overhead work areas in which such equipment or material is being used.

§ 77.204 Openings in surface installations; safeguards.

Openings in surface installations through which men or material may fall shall be protected by railings, barriers, covers or other protective devices.

§ 77.205 Travelways at surface installations.

(a) Safe means of access shall be provided and maintained to all working places.

(b) Travelways and platforms or other means of access to areas where persons are required to travel or work, shall be kept clear of all extraneous material and other stumbling or slipping hazards.

(c) Inclined travelways shall be constructed of nonskid material or equipped with cleats.

(d) Regularly used travelways shall be sanded, salted, or cleared of snow and ice as soon as practicable.

(e) Crossovers, elevated walkways, elevated ramps, and stairways shall be of substantial construction, provided with handrails, and maintained in good condition. Where necessary toeboards shall be provided.

(f) Crossovers shall be provided where it is necessary to cross conveyors.

(g) Moving conveyors shall be crossed only at designated crossover points.

§ 77.206 Ladders; construction; installation and maintenance.

(a) Ladders shall be of substantial construction and maintained in good condition.

(b) Wooden members of ladders shall not be painted.

(c) Steep or vertical ladders which are used regularly at fixed locations shall be

anchored securely and provided with backguards extending from a point not more than 7 feet from the bottom of the ladder to the top of the ladder.

(d) Fixed ladders shall not incline backwards at any point unless provided with backguards.

(e) Fixed ladders shall be anchored securely and installed to provide at least 3 inches of toe clearance.

(f) Fixed ladders shall project at least 3 feet above landings, or substantial handholds shall be provided above the landings.

§ 77.207 Illumination.

Illumination sufficient to provide safe working conditions shall be provided in and on all surface structures, paths, walkways, stairways, switch panels, loading and dumping sites, and working areas.

§ 77.208 Storage of materials.

(a) Materials shall be stored and stacked in a manner which minimizes stumbling or fall-of-material hazards.

(b) Materials that can create hazards if accidentally liberated from their containers shall be stored in a manner that minimizes the dangers.

(c) Hazardous materials shall be stored in containers of a type approved for such use by recognized agencies; such containers shall be labeled appropriately.

(d) Compressed and liquid gas cylinders shall be secured in a safe manner.

(e) Valves on compressed gas cylinders shall be protected by covers when being transported or stored, and by a safe location when the cylinders are in use.

§ 77.209 Surge and storage piles.

No person shall be permitted to walk or stand immediately above a reclaiming area or in any other area at or near a surge or storage pile where the reclaiming operation may expose him to a hazard.

§ 77.210 Hoisting of materials.

(a) Hitches and slings used to hoist materials shall be suitable for handling the type of materials being hoisted.

(b) Men shall stay clear of hoisted loads.

(c) Taglines shall be attached to hoisted materials that require steadying or guidance.

§ 77.211 Draw-off tunnels; stockpiling and reclaiming operations; general.

(a) Tunnels located below stockpiles, surge piles, and coal storage silos shall be ventilated so as to maintain concentrations of methane below 1.0 volume per centum.

(b) In addition to the tests for methane required by § 77.201 such tests shall also be made before any electric equipment is energized or repaired, unless equipped with a continuous methane monitoring device installed and operated in accordance with the provisions of § 77.211-1. Electric equipment shall not be energized, operated, or repaired until the air contains less than 1.0 volume per centum of methane.

§ 77.211-1 Continuous methane monitoring device; installation and operation; automatic deenergization of electric equipment.

Continuous methane monitoring devices shall be set to deenergize automatically electric equipment when such monitor is not operating properly and to give a warning automatically when the concentration of methane reaches a maximum percentage determined by an authorized representative of the Secretary which shall not be more than 1.0 volume per centum of methane. An authorized representative of the Secretary shall require such monitor to deenergize automatically electric equipment when the concentration of methane reaches a maximum percentage determined by such representative which shall not be more than 2.0 volume per centum of methane.

§ 77.212 Draw-off tunnel ventilation fans; installation.

When fans are used to ventilate draw-off tunnels the fans shall be:

- (a) Installed on the surface;
- (b) Installed in fireproof housings and connected to the tunnel openings with fireproof air ducts; and,
- (c) Offset from the tunnel opening.

§ 77.213 Draw-off tunnel escapeways.

When it is necessary for a tunnel to be closed at one end, an escapeway not less than 30 inches in diameter (or of the equivalent, if the escapeway does not have a circular cross section) shall be installed which extends from the closed end of the tunnel to a safe location on the surface; and, if the escapeway is inclined more than 30 degrees from the horizontal it shall be equipped with a

ladder which runs the full length of the inclined portion of the escapeway.

§ 77.214 Refuse piles; general.

(a) Refuse piles constructed on or after July 1, 1971, shall be located in areas which are a safe distance from all underground mine airshafts, preparation plants, tipples, or other surface installations and such piles shall not be located over abandoned openings or steamlines.

(b) Where new refuse piles are constructed over exposed coal beds the exposed coal shall be covered with clay or other inert material as the piles are constructed.

(c) A fireproof barrier of clay or inert material shall be constructed between old and new refuse piles.

(d) Roadways to refuse piles shall be fenced or otherwise guarded to restrict the entrance of unauthorized persons.

[36 F.R. 9364, May 22, 1971, as amended at 36 F.R. 13143, July 15, 1971]

§ 77.215 Refuse piles; construction requirements.

(a) Refuse deposited on a pile shall be spread in layers and compacted in such a manner so as to minimize the flow of air through the pile.

(b) Refuse shall not be deposited on a burning pile except for the purpose of controlling or extinguishing a fire.

(c) Clay or other sealants shall be used to seal the surface of any refuse pile in which a spontaneous ignition has occurred.

(d) Surface seals shall be kept intact and protected from erosion by drainage facilities.

(e) Refuse piles shall not be constructed so as to impede drainage or impound water.

(f) Refuse piles shall be constructed in such a manner as to prevent accidental sliding and shifting of materials.

(g) No extraneous combustible material shall be deposited on refuse piles.

§ 77.216 Retaining dams; construction; inspection; records.

(a) If failure of a water or silt retaining dam will create a hazard, it shall be of substantial construction and shall be inspected at least once each week.

(b) Weekly inspections conducted pursuant to paragraph (a) of this § 77.216 shall be reported and the report shall be countersigned by any of the persons listed in paragraph (d) of § 77.1713.

Subpart D—Thermal Dryers**§ 77.300 Thermal dryers; general.**

On and after July 1, 1971 dryer systems used for drying coal at high temperatures, hereinafter referred to as thermal dryers, including rotary dryers, continuous carrier dyes, vertical tray, and cascade dryers, multilouver dryers, suspension or flash dryers, and fluidized bed dryers, shall be maintained and operated in accordance with the provision of § 77.301 to § 77.306.

[36 F.R. 9364, May 22, 1971, as amended at 36 F.R. 13143, July 15, 1971]

§ 77.301 Dryer heating units; operation.

(a) Dryer heating units shall be operated to provide reasonably complete combustion before heated gases are allowed to enter hot gas inlets.

(b) Dryer heating units which are fired by pulverized coal, shall be operated and maintained in accordance with the recommended standards set forth in the National Fire Protection Association Handbook, 12th Edition, Section 9, "Installation of Pulverized Fuel Systems," 1962.

§ 77.302 Bypass stacks.

Thermal dryer systems shall include a bypass stack, relief stack or individual discharge stack provided with automatic venting which will permit gases from the dryer heating unit to bypass the heating chamber and vent to the outside atmosphere during any shutdown operation.

§ 77.303 Hot gas inlet chamber dropout doors.

Thermal dryer systems which employ a hot gas inlet chamber shall be equipped with drop-out doors at the bottom of the inlet chamber or with other effective means which permit coal, fly-ash, or other heated material to fall from the chamber.

§ 77.304 Explosion release vents.

Drying chambers, dry-dust collectors, ductwork connecting dryers to dust collectors, and ductwork between dust collectors and discharge stacks shall be protected with explosion release vents which open directly to the outside atmosphere, and all such vents shall be:

(a) Hinged to prevent dislodgment;

(b) Designed and constructed to permit checking and testing by manual operation; and

(c) Equal in size to the cross-sectional area of the collector vortex finder when used to vent dry dust collectors.

§ 77.305 Access to drying chambers, hot gas inlet chambers and ductwork; installation and maintenance.

Drying chambers, hot gas inlet chambers and all ductwork in which coal dust may accumulate shall be equipped with tight sealing access doors which shall remain latched during dryer operation to prevent the emission of coal dust and the loss of fluidizing air.

§ 77.306 Fire protection.

Based on the need for fire protection measures in connection with the particular design of the thermal dryer, an authorized representative of the Secretary may require any of the following measures to be employed:

(a) Water sprays automatically actuated by rises in temperature to prevent fire, installed inside the thermal dryer systems, and such sprays shall be designed to provide for manual operation in the event of power failure.

(b) Fog nozzles, or other no less effective means, installed inside the thermal dryer systems to provide additional moisture or an artificial drying load within the drying system when the system is being started or shutdown.

(c) The water system of each thermal dryer shall be interconnected to a supply of compressed air which permits constant or frequent purging of all water sprays and fog nozzles or other no less effective means of purging shall be provided.

§ 77.307 Thermal dryers; location and installation; general.

(a) Thermal dryer systems erected or installed at any coal mine after June 30, 1971 shall be located at least 100 feet from any underground coal mine opening, and 100 feet from any surface installation where the heat, sparks, flames, or coal dust from the system might cause a fire or explosion.

(b) Thermal dryer systems erected or installed after June 30, 1971 may be covered by roofs, however, such systems shall not be otherwise enclosed unless necessary to protect the health and safety of persons employed at the mine. Where such systems are enclosed, they shall be located in separate fireproof structures of heavy construction with explosion pressure release devices (such as hinged wall panels, window sashes, or louvers),

which provide at least 1 square foot of area for each 80 cubic feet of space volume and which are distributed as uniformly as possible throughout the structure.

§ 77.308 Structures housing other facilities; use of partitions.

Thermal dryer systems installed after June 30, 1971 in any structure which also houses a tippie, cleaning plant, or other operating facility shall be separated from all other working areas of such structure by a substantial partition capable of providing greater resistance to explosion pressures than the exterior wall or walls of the structure. The partition shall also include substantial, self-closing fire doors at all entrances to the areas adjoining the dryer system.

§ 77.309 Visual check of system equipment.

Frequent visual checks shall be made by the operator of the thermal dryer system control station, or by some other competent person, of the bypass dampers, air-tempering louvers, discharge mechanism, and other dryer system equipment.

§ 77.309-1 Control stations; location.

Thermal dryer system control stations constructed after June 30, 1971, shall be installed at a location which will give to the operator of the control station the widest field of visibility of the system and equipment.

§ 77.310 Control panels.

(a) All thermal dryer system control panels constructed after June 30, 1971 shall be located in an area which is relatively free of moisture and dust and shall be installed in such a manner as to minimize vibration.

(b) A schematic diagram containing legends which show the location of each thermocouple, pressure tap, or other control or gaging instrument in the drying system shall be posted on or near the control panel of each thermal drying system.

(c) Each instrument on the control panel shall be identified by a nameplate or equivalent marking.

(d) A plan to control the operation of each thermal dryer system shall be posted at or near the control panel showing a sequence of startup, normal shutdown, and emergency shutdown procedures.

§ 77.311 Alarm devices.

Thermal dryer systems shall be equipped with both audible and visual alarm devices which are set to operate when safe dryer temperatures are exceeded.

§ 77.312 Fail safe monitoring systems.

Thermal dryer systems and controls shall be protected by a fail safe monitoring system which will safely shut down the system and any related equipment upon failure of any component in the dryer system.

§ 77.313 Wet-coal feedbins; low-level indicators.

Wet-coal bins feeding thermal drying systems shall be equipped with both audible and visual low-coal-level indicators.

§ 77.314 Automatic temperature control instruments.

(a) Automatic temperature control instruments for thermal dryer system shall be of the recording type.

(b) Automatic temperature control instruments shall be locked or sealed to prevent tampering or unauthorized adjustment. These instruments shall not be set above the maximum allowable operating temperature.

(c) All dryer control instruments shall be inspected and calibrated at least once every 3 months and a record or certificate of accuracy, signed by a trained employee or by a servicing agent, shall be kept at the plant.

§ 77.315 Thermal dryers; examination and inspection.

Thermal dryer systems shall be examined for fires and coal-dust accumulations if the dryers are not restarted promptly after a shutdown.

Subpart E—Safeguards for Mechanical Equipment

§ 77.400 Mechanical equipment guards.

(a) Gears; sprockets; chains; drive, head, tail, and take-up pulleys; flywheels; couplings; shafts; sawblades; fan inlets; and similar exposed moving machine parts which may be contacted by persons, and which may cause injury to persons shall be guarded.

(b) Overhead belts shall be guarded if the whipping action from a broken line would be hazardous to persons below.

(c) Guards at conveyor-drive, conveyor-head, and conveyor-tail pulleys

shall extend a distance sufficient to prevent a person from reaching behind the guard and becoming caught between the belt and the pulley.

(d) Except when testing the machinery, guards shall be securely in place while machinery is being operated.

§ 77.401 Stationary grinding machines; protective devices.

(a) Stationary grinding machines other than special bit grinders shall be equipped with:

(1) Peripheral hoods (less than 90° throat openings) capable of withstanding the force of a bursting wheel.

(2) Adjustable tool rests set as close as practical to the wheel.

(3) Safety washers.

(b) Grinding wheels shall be operated within the specifications of the manufacturer of the wheel.

(c) Face shields or goggles, in good condition, shall be worn when operating a grinding wheel.

§ 77.402 Hand-held power tools; safety devices.

Hand-held power tools shall be equipped with controls requiring constant hand or finger pressure to operate the tools or shall be equipped with friction or other equivalent safety devices.

§ 77.403 Mobile equipment; falling object protective structures (FOPS).

(a) When necessary to protect the operator of the equipment, all rubber-tired or crawler-mounted self-propelled scrapers, front-end loaders, dozers, graders, loaders, and tractors, with or without attachments, that are used in surface coal mines or the surface work areas of underground coal mines shall be provided with substantial falling object protective structures (FOPS). FOPS which meet the requirements of the Society of Automotive Engineers (SAE) Standard J 231 shall be considered to be a "substantial" FOPS. An authorized representative of the Secretary may approve a FOPS which provides protection equivalent to SAE J 231.

(b) When necessary to protect the operator of the equipment, forklift or powered industrial trucks shall be provided with substantial FOPS. Such FOPS shall meet the requirements of the State of California, Division of Industrial Safety, General Safety Orders, Register 72, Number 6, February 8, 1972, Article 25,

Section 3655—"Overhead Guards for High-Lift Rider Trucks."

[39 FR 24007, June 28, 1974]

§ 77.403a Mobile equipment; rollover protective structures (ROPS).

(a) All rubber-tired or crawler-mounted self-propelled scrapers, front-end loaders, dozers, graders, loaders, and tractors, with or without attachments, that are used in surface coal mines or the surface work areas of underground coal mines shall be provided with roll-over protective structures (hereinafter referred to as ROPS) in accordance with the requirements of paragraphs (b) through (f) of this section, as applicable.

(b) *Mobile equipment manufactured on and after September 1, 1974.* All mobile equipment described in paragraph (a) of this section manufactured on and after September 1, 1974 shall be equipped with ROPS meeting the requirements of the Department of Labor specified in §§ 1926.1001 and 1926.1002 of Part 1926, Title 29, Code of Federal Regulations—Safety and Health Regulations for Construction.

(c) *Mobile equipment manufactured prior to September 1, 1974.* All mobile equipment described in paragraph (a) of this section manufactured prior to September 1, 1974 shall be equipped with ROPS meeting the requirements of paragraphs (d) through (f) of this section, as appropriate, no later than the dates specified in paragraphs (1), (2), and (3) of this paragraph (c), unless an earlier date is required by an authorized representative of the Secretary under paragraph (c) (4) of this section:

(1) Mobile equipment manufactured between July 1, 1971, and September 1, 1974, shall be equipped with ROPS no later than March 1, 1975.

(2) Mobile equipment manufactured between July 1, 1970, and June 30, 1971, shall be equipped with ROPS no later than July 1, 1975.

(3) Mobile equipment manufactured between July 1, 1969, and June 30, 1970, shall be equipped with ROPS no later than January 1, 1976.

(4) Irrespective of the time periods specified in paragraph (c) (1) through (3) of this section an authorized representative of the Secretary may require such mobile equipment to be equipped with ROPS at an earlier date when necessary to protect the operator of the equipment under the conditions in which the mobile equipment is, or will be op-

erated. The authorized representative of the Secretary shall in writing advise the operator that the equipment shall be equipped with a ROPS and shall fix a time within which the operator shall provide and install the ROPS. If such ROPS is not provided and installed within the time fixed a notice shall be issued to the operator pursuant to section 104 of the Act.

(5) Nothing in this § 77.403a shall preclude the issuance of a withdrawal order because of imminent danger.

(d) Except as provided in paragraph (e) of this section, mobile equipment described in paragraph (a) of this section, manufactured prior to September 1, 1974, shall be deemed in compliance with this section if the ROPS is installed in accordance with the recommendations of the ROPS manufacturer or designer. The coal mine operator shall exhibit certification from the ROPS manufacturer or designer in the form of a label attached to the equipment, indicating the manufacturer's or fabricator's name and address, the ROPS model number, if any, the machine make, model or series number that the structure is designed to fit, and compliance with the applicable specification listed in paragraph (c) (1) or (2) of this section, or he shall, upon request of the authorized representative of the Secretary, furnish certification from a registered professional engineer that:

(1) The ROPS complies with the Society of Automotive Engineers (SAE) Standard J 397, "Critical Zone—Characteristics and Dimensions for Operators of Construction and Industrial Machinery" or SAE J 397a, "Deflection Limiting Volume for Laboratory Evaluation of Rollover Protective Structures (ROPS) and Falling Object Protective Structures (FOPS) of Construction and Industrial Vehicles" and the following applicable SAE Standards:

(i) J 320a, "Minimum Performance Criteria for Rollover Protective Structure for Rubber-Tired Self-Propelled Scrapers" or J 320b, "Minimum Performance Criteria for Rollover Protective Structures for Prime Movers"; or

(ii) J 394, "Minimum Performance Criteria for Rollover Protective Structure for Rubber-Tired Front-End Loaders and Rubber-Tired Dozers" or J 394a, "Minimum Performance Criteria for Rollover Protective Structures for Wheeled Front-End Loaders and Wheeled Dozers"; or

(iii) J 395, "Minimum Performance Criteria for Rollover Protective Structure for Crawler Tractors and Crawler-Type Loaders" or J 395a, "Minimum Performance Criteria for Rollover Protective Structures for Track-Type Tractors and Track-Type Front-End Loaders"; or

(iv) J 396 or J 396a, "Minimum Performance Criteria for Rollover Protective Structures for Motor Graders"; or

(v) J 167, "Protective Frame with Overhead Protection—Test Procedures and Performance Requirements"; or

(vi) J 334a, "Protective Frame Test Procedures and Performance Requirements"; or

(2) The ROPS and supporting attachments will:

(i) Show satisfactory performance by actual test of a prototype involving a roll of 720° or more; or

(ii) Support not less than the weight of the vehicle applied as a uniformly distributed horizontal load at the top of the structure and perpendicular to a vertical plane through the longitudinal axis of the prime mover, and support two times the weight of the vehicle applied as a uniformly distributed vertical load to the top of the structure;¹ or

(iii) Support the following separately applied minimum loads:

(A) 125 percent of the weight of the vehicle applied as a uniformly distributed horizontal load at the top of the ROPS and perpendicular to a critical plane through the longitudinal axis of the prime mover; and

(B) A load of twice the weight of the vehicle applied as a uniformly distributed vertical load to the top of the ROPS after complying with subdivision (iii) (A) of this subparagraph. Stresses shall not exceed the ultimate strength. Steel used in the ROPS must have capability to perform at 0° F., or exhibit Charpy V-notch impact strength at 8 ft.-lb. at -20° F. with a standard Charpy V-notch Type A specimen and provide 20 percent elongation over two inches in a standard two inch gauge length on a 0.505 inch diameter tensile specimen. Bolts and nuts shall be SAE grade 8 (reference SAE J

¹ Paragraph (d) or section 77.403a is based on the ROPS criteria of the U.S. Army Corps of Engineers, Safety—General Safety Requirements EM 385-1-1, Change 1, No. 21, Para. 18.A.20 (March 27, 1972), except that subparagraph (2) (ii) of this paragraph (d) is substituted for Para. 18.A.20e(2) of the Corps requirements.

429d, J 429e, J 429f or J 429g and J 995, J 995a or J 995b).

(e) *Mobile equipment manufactured prior to September 1, 1974 meeting certain existing governmental requirements for ROPS.* Mobile equipment described in paragraph (a) of this section, manufactured prior to September 1, 1974 and already equipped with ROPS, shall be deemed in compliance with this section if it meets the ROPS requirements of the State of California, the U.S. Army Corps of Engineers, the Bureau of Reclamation of the U.S. Department of the Interior in effect on April 5, 1972, or the Occupational Safety and Health Administration, U.S. Department of Labor. The requirements in effect are:

(1) State of California: Construction Safety Orders 1591 (i), 1596, and Logging and Sawmill Safety Order 5243, issued by the Department of Industrial Relations pursuant to Division 5, Labor Code § 6312, State of California;

(2) U.S. Army Corps of Engineers: Safety—General Safety Requirements, EM-385-1-1 (March 1967);

(3) Bureau of Reclamation, U.S. Department of the Interior: Safety and Health Regulations for Construction, Part II (September 1971); and

(4) Occupational Safety and Health Administration, U.S. Department of Labor: Safety and Health Regulations for Construction, 29 C.F.R. 1926.1001 and 1926.1002.

(f) Field welding on ROPS shall be performed by welders who are certified by the coal mine operator or equipment distributor as being qualified in accordance with the American Welding Society Structural Welding Code AWS D1.1-73, or Military Standard MIL-STD 248, or the equivalent thereof.

(g) Seat belts required by § 77.1710(i) shall be worn by the operator of mobile equipment required to be equipped with ROPS by § 77.403a.

[39 FR 24007, June 28, 1974]

§ 77.403b Incorporation by reference.

In accordance with 5 U.S.C. 552(a), the publications to which references are made in §§ 77.403 and 77.403a and which have been prepared by organizations other than the Mining Enforcement and Safety Administration (MESA), are hereby incorporated by reference and made a part hereof. The incorporated publications are available at each Coal Mine Health and Safety District and Subdistrict Office of MESA. The U.S.

Army Corps of Engineers, Safety—General Safety Requirements and the Occupational Safety and Health Administration regulations are also available from the U.S. Government Printing Office, Washington, D.C. 20402. Bureau of Reclamation Safety and Health Regulations for Construction are available from the Bureau of Reclamation, Division of Safety, Engineering and Research Center, Denver, Colorado. SAE documents are available from the Society of Automotive Engineers, Inc., Two Pennsylvania Plaza, New York, N.Y. 10001. American Welding Society Structural Welding Code D1.1-73 is available from the American Welding Society, Inc., 2501 NW 7th Street, Miami, Florida 33125. Military Standard MIL-STD 248 is available from the U.S. Government Printing Office, Washington, D.C. 20202. [39 FR 24008, June 28, 1974]

§ 77.404 Machinery and equipment; operation and maintenance.

(a) Mobile and stationary machinery and equipment shall be maintained in safe operating condition and machinery or equipment in unsafe condition shall be removed from service immediately.

(b) Machinery and equipment shall be operated only by persons trained in the use of and authorized to operate such machinery or equipment.

(c) Repairs or maintenance shall not be performed on machinery until the power is off and the machinery is blocked against motion, except where machinery motion is necessary to make adjustments.

(d) Machinery shall not be lubricated while in motion where a hazard exists, unless equipped with extended fittings or cups.

§ 77.405 Performing work from a raised position; safeguards.

(a) Men shall not work on or from a piece of mobile equipment in a raised position until it has been blocked in place securely. This does not preclude the use of equipment specifically designed as elevated mobile work platforms.

(b) No work shall be performed under machinery or equipment that has been raised until such machinery or equipment has been securely blocked in position.

§ 77.406 Drive belts.

(a) Drive belts shall not be shifted while in motion unless the machines are provided with mechanical shifters.

(b) Belt dressing shall not be applied while belts are in motion except where it can be applied without endangering a person.

§ 77.407 Power-driven pulleys.

(a) Belts, chains, and ropes shall not be guided onto power-driven moving pulleys, sprockets, or drums with the hands except on slow moving equipment especially designed for hand feeding.

(b) Pulleys of conveyors shall not be cleaned manually while the conveyor is in motion.

§ 77.408 Welding operations.

Welding operations shall be shielded and the area shall be well-ventilated.

§ 77.409 Shovels, draglines, and tractors.

(a) Shovels, draglines, and tractors shall not be operated in the presence of any person exposed to a hazard from its operation and all such equipment shall be provided with an adequate warning device which shall be sounded by the operator prior to starting operation.

(b) Shovels and draglines shall be equipped with handrails along and around all walkways and platforms.

§ 77.410 Mobile equipment; automatic warning devices.

Mobile equipment, such as trucks, forklifts, front-end loaders, tractors and graders, shall be equipped with an adequate automatic warning device which shall give an audible alarm when such equipment is put in reverse.

§ 77.411 Compressed air and boilers; general.

All boilers and pressure vessels shall be constructed, installed, and maintained in accordance with the standards and specifications of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code.

§ 77.412 Compressed air systems.

(a) Compressors and compressed-air receivers shall be equipped with automatic pressure-relief valves, pressure gages, and drain valves.

(b) Repairs involving the pressure system of compressors, receivers, or compressed-air-powered equipment shall not be attempted until the pressure has been relieved from that part of the system to be repaired.

(c) At no time shall compressed air be directed toward a person. When compressed air is used, all necessary pre-

cautions shall be taken to protect persons from injury.

(d) Safety chains or suitable locking devices shall be used at connections to machines of high-pressure hose lines of 1-inch inside diameter or larger, and between high-pressure hose lines of 1-inch inside diameter or larger, where a connection failure would create a hazard.

§ 77.413 Boilers.

(a) Boilers shall be equipped with guarded, well-maintained water gages and pressure gages placed so that they can be observed easily. Water gages and pipe passages to the gages shall be kept clean and free of scale and rust.

(b) Boilers shall be equipped with automatic pressure-relief valves; valves shall be opened manually at least once a week to determine that they will function properly.

(c) Blowoff valves shall be piped outside the building and shall have outlets so located or protected that persons passing by, near, or under them will not be scalded.

(d) Boiler installations shall be provided with safety devices, acceptable to the Mining Enforcement and Safety Administration, to protect against hazards of flame outs, fuel interruptions, and low-water level.

(e) Boilers shall be inspected internally at least once a year by a licensed inspector and a certificate of inspection signed by the inspector shall be displayed in the vicinity of the boiler.

Subpart F—Electrical Equipment—General

§ 77.500 Electric power circuits and electric equipment; deenergization.

Power circuits and electric equipment shall be deenergized before work is done on such circuits and equipment, except when necessary for troubleshooting or testing.

§ 77.501 Electric distribution circuits and equipment; repair.

No electrical work shall be performed on electric distribution circuits or equipment, except by a qualified person or by a person trained to perform electrical work and to maintain electrical equipment under the direct supervision of a qualified person. Disconnecting devices shall be locked out and suitably tagged by the persons who perform such work, except that in cases where locking out is

not possible, such devices shall be opened and suitably tagged by such persons. Locks or tags shall be removed only by the persons who installed them or, if such persons are unavailable, by persons authorized by the operator or his agent.

§ 77.501-1 Qualified person.

A qualified person within the meaning of § 77.501 is an individual who meets the requirements of § 77.103.

§ 77.502 Electric equipment; examination, testing, and maintenance.

Electric equipment shall be frequently examined, tested, and properly maintained by a qualified person to assure safe operating conditions. When a potentially dangerous condition is found on electric equipment, such equipment shall be removed from service until such condition is corrected. A record of such examinations shall be kept.

§ 77.502-1 Qualified person.

A qualified person within the meaning of § 77.502 is an individual who meets the requirements of § 77.103.

§ 77.502-2 Electric equipment; frequency of examination and testing.

The examinations and tests required under the provision of this § 77.502 shall be conducted at least monthly.

§ 77.503 Electric conductors; capacity and insulation.

Electric conductors shall be sufficient in size and have adequate current carrying capacity and be of such construction that a rise in temperature resulting from normal operation will not damage the insulating materials.

§ 77.503-1 Electric conductors.

Electric conductors shall be sufficient in size to meet the minimum current carrying capacity provided for in the National Electric Code, 1968. All trailing cables shall meet the minimum requirements for ampacity provided in the standards of the Insulated Power Cable Engineers Association—National Electric Manufacturers Association in effect when such cables are purchased.

§ 77.504 Electrical connections or splices; suitability.

Electrical connections or splices in electric conductors shall be mechanically and electrically efficient, and suitable connectors shall be used. All electrical connections or splices in insulated wire

shall be reinsulated at least to the same degree of protection as the remainder of the wire.

§ 77.505 Cable fittings; suitability.

Cables shall enter metal frames of motors, splice boxes, and electric compartments only through proper fittings. When insulated wires, other than cables, pass through metal frames, the holes shall be substantially bushed with insulated bushings.

§ 77.506 Electric equipment and circuits; overload and short-circuit protection.

Automatic circuit-breaking devices or fuses of the correct type and capacity shall be installed so as to protect all electric equipment and circuits against short circuit and overloads.

§ 77.506-1 Electric equipment and circuits; overload and short circuit protection; minimum requirements.

Devices providing either short circuit protection or protection against overload shall conform to the minimum requirements for protection of electric circuits and equipment of the National Electric Code, 1968.

§ 77.507 Electric equipment; switches.

All electric equipment shall be provided with switches or other controls that are safely designed, constructed, and installed.

§ 77.508 Lightning arresters, ungrounded and exposed power conductors and telephone wires.

All ungrounded, exposed power conductors and telephone wires shall be equipped with suitable lightning arresters which are adequately installed and connected to a low resistance grounding medium.

§ 77.508-1 Lightning arresters; wires entering buildings.

Lightning arresters protecting exposed telephone wires entering buildings shall be provided at the point where each such telephone wire enters the building.

§ 77.509 Transformers; installation and guarding.

(a) Transformers shall be of the totally enclosed type, or shall be placed at least 8 feet above the ground, or installed in a transformer house, or surrounded by a substantial fence at least 6 feet high and at least 3 feet from any energized parts, casings, or wiring.

(b) Transformer stations shall be enclosed to prevent persons from unintentionally or inadvertently contacting energized parts.

(c) Transformer enclosures shall be kept locked against unauthorized entry.

§ 77.510 Resistors; location and guarding.

Resistors, heaters, and rheostats shall be located so as to minimize fire hazards and, where necessary, provided with guards to prevent personal contact.

§ 77.511 Danger signs at electrical installations.

Suitable danger signs shall be posted at all major electrical installations.

§ 77.512 Inspection and cover plates.

Inspection and cover plates on electrical equipment shall be kept in place at all times except during testing or repairs.

§ 77.513 Insulating mats at power switches.

Dry wooden platforms, insulating mats, or other electrically nonconductive material shall be kept in place at all switchboards and power-control switches where shock hazards exist. However, metal plates on which a person normally would stand and which are kept at the same potential as the grounded, metal, non-current-carrying parts of the power switches to be operated may be used.

§ 77.514 Switchboards; passageways and clearance.

Switchboards shall be installed to provide passageways or lanes of travel which permit access to the back of the switchboard from both ends for inspection, adjustment or repair. Openings permitting access to the rear of any switchboard shall be guarded, except where they are located in buildings which are kept locked.

§ 77.515 Bare signal or control wires; voltage.

The voltage on bare signal or control wires accessible to personal contact shall not exceed 40 volts.

§ 77.516 Electric wiring and equipment; installation and maintenance.

In addition to the requirements of § 77.503 and § 77.506, all wiring and electrical equipment installed after June 30, 1971, shall meet the requirements of the National Electric Code in effect at the time of installation.

Subpart G—Trailing Cables

§ 77.600 Trailing cables; short-circuit protection; disconnecting devices.

Short-circuit protection for trailing cables shall be provided by an automatic circuit breaker or other no less effective device, approved by the Secretary, of adequate current-interrupting capacity in each ungrounded conductor. Disconnecting devices used to disconnect power from trailing cables shall be plainly marked and identified and such devices shall be equipped or designed in such a manner that it can be determined by visual observation that the power is disconnected.

§ 77.601 Trailing cables or portable cables; temporary splices.

Temporary splices in trailing cables or portable cables shall be made in a workmanlike manner and shall be mechanically strong and well insulated. Trailing cables or portable cables with exposed wires or splices that heat or spark under load shall not be used.

§ 77.602 Permanent splicing of trailing cables.

When permanent splices in trailing cables are made, they shall be:

- (a) Mechanically strong with adequate electrical conductivity;
- (b) Effectively insulated and sealed so as to exclude moisture; and,
- (c) Vulcanized or otherwise made with suitable materials to provide good bonding to the outer jacket.

§ 77.603 Clamping of trailing cables to equipment.

Trailing cables shall be clamped to machines in a manner to protect the cables from damage and to prevent strain on the electrical connections.

§ 77.604 Protection of trailing cables.

Trailing cables shall be adequately protected to prevent damage by mobile equipment.

§ 77.605 Breaking trailing cable and power cable connections.

Trailing cable and power cable connections between cables and to power sources shall not be made or broken under load.

§ 77.606 Energized trailing cables; handling.

Energized medium- and high-voltage trailing cables shall be handled only by

persons wearing protective rubber gloves (see § 77.606-1) and, with such other protective devices as may be necessary and appropriate under the circumstances.

§ 77.606-1 Rubber gloves; minimum requirements.

(a) Rubber gloves (lineman's gloves) worn while handling high-voltage trailing cables shall be rated at least 20,000 volts and shall be used and tested in accordance with the provisions of §§ 77.704-6 through 77.704-8.

(b) Rubber gloves (wireman's gloves) worn while handling trailing cables energized by 660 to 1,000 volts shall be rated at least 1,000 volts and shall not be worn inside out or without protective leather gloves.

(c) Rubber gloves shall be inspected for defects before use on each shift and at least once thereafter during the shift when such rubber gloves are used for extended periods. All protective rubber gloves which contain defects shall be discarded and replaced prior to handling energized cables.

Subpart H—Grounding

§ 77.700 Grounding metallic sheaths, armors, and conduits enclosing power conductors.

Metallic sheaths, armors, and conduits enclosing power conductors shall be electrically continuous throughout and shall be grounded by methods approved by an authorized representative of the Secretary.

§ 77.700-1 Approved methods of grounding.

Metallic sheaths, armors, and conduits in resistance grounded systems, where the enclosed conductors are a part of the system, will be approved if a solid connection is made to the neutral conductor; in all other systems, the following methods of grounding will be approved:

(a) A solid connection to metal waterlines having low resistance to earth;

(b) A solid connection to a grounding conductor, other than the neutral conductor of a resistance grounded system, extending to a low-resistance ground field;

(c) Any other method of grounding, approved by an authorized representative of the Secretary, which ensures that there is no difference in potential between such metallic enclosures and the earth.

§ 77.701 Grounding metallic frames, casings, and other enclosures of electric equipment.

Metallic frames, casings, and other enclosures of electric equipment that can become "alive" through failure of insulation or by contact with energized parts shall be grounded by methods approved by an authorized representative of the Secretary.

§ 77.701-1 Approved methods of grounding of equipment receiving power from ungrounded alternating current power systems.

For purposes of grounding metallic frames, casings and other enclosures of equipment receiving power from ungrounded alternating current power systems, the following methods of grounding will be approved:

(a) A solid connection between the metallic frame; casing, or other metal enclosure and the grounded metallic sheath, armor, or conduit enclosing the power conductor feeding the electric equipment enclosed;

(b) A solid connection to metal waterlines having low resistance to earth;

(c) A solid connection to a grounding conductor extending to a low-resistance ground field; and,

(d) Any other method of grounding, approved by an authorized representative of the Secretary, which insures that there is no difference in potential between such metal enclosures and the earth.

§ 77.701-2 Approved methods of grounding metallic frames, casings, and other enclosures of electric equipment receiving power from a direct-current power system.

(a) The following methods of grounding metallic frames, casings, and other enclosures of electric equipment receiving power from a direct-current power system with one polarity grounded will be approved:

(1) A solid connection to the grounded power conductor of the system; and,

(2) Any other method, approved by an authorized representative of the Secretary, which insures that there is no difference in potential between such metal enclosures and the earth.

(b) A method of grounding of metallic frames, casings, and other enclosures of electric equipment receiving power from a direct-current power system other than a system with one polarity grounded,

will be approved by an authorized representative of the Secretary if the method insures that there is no difference in potential between such frames, casings, and other enclosures, and the earth.

§ 77.701-3 Grounding wires; capacity.

Where grounding wires are used to ground metallic sheaths, armors, conduits, frames, casings, and other metallic enclosures, such grounding wires will be approved if:

(a) Where the power conductor used is No. 6 A.W.G., or larger, the cross-sectional area of the grounding wire is at least one-half the cross-sectional area of the power conductor.

(b) Where the power conductor used is less than No. 6 A.W.G., the cross-sectional area of the grounding wire is equal to the cross-sectional area of the power conductor.

§ 77.701-4 Use of grounding connectors.

If ground wires are attached to grounded power conductors, separate clamps, suitable for such purpose, shall be used and installed to provide a solid connection.

§ 77.702 Protection other than grounding.

Methods other than grounding which provide no less effective protection may be permitted by the Secretary or his authorized representative. Such methods may not be used unless so approved.

§ 77.703 Grounding frames of stationary high-voltage equipment receiving power from ungrounded delta systems.

The frames of all stationary high-voltage equipment receiving power from ungrounded delta systems shall be grounded by methods approved by an authorized representative of the Secretary.

§ 77.703-1 Approved methods of grounding.

The methods of grounding stated in § 77.701-1 will be approved with respect to the grounding of frames of high-voltage equipment referred to in § 77.703.

§ 77.704 Work on high-voltage lines; deenergizing and grounding.

High-voltage lines shall be deenergized and grounded before work is performed on them, except that repairs may be permitted on energized high-voltage lines if (a) such repairs are made by a qualified

person in accordance with procedures and safeguards set forth in §§ 77.704-1 through 77.704-11 of this Subpart H as applicable, and (b) the operator has tested and properly maintained the protective devices necessary in making such repairs.

§ 77.704-1 Work on high-voltage lines.

(a) No high-voltage line shall be regarded as deenergized for the purpose of performing work on it, until it has been determined by a qualified person (as provided in § 77.103) that such high-voltage line has been deenergized and grounded. Such qualified person shall by visual observation (1) determine that the disconnecting devices on the high-voltage circuit are in open position, and (2) insure that each ungrounded conductor of the high-voltage circuit upon which work is to be done is properly connected to the system grounding medium. In the case of resistance grounded or solid wye-connected systems, the neutral wire is the system grounding medium. In the case of an ungrounded power system, either the steel armor or conduit enclosing the system or a surface grounding field is a system grounding medium;

(b) No work shall be performed on any high-voltage line which is supported by any pole or structure which also supports other high-voltage lines until: (1) All lines supported on the pole or structure are deenergized and grounded in accordance with all of the provisions of this § 77.704-1 which apply to the repair of deenergized surface high-voltage lines; or (2) the provisions of §§ 77.704-2 through 77.704-10 have been complied with, with respect to all energized lines, which are supported on the pole or structure.

(c) Work may be performed on energized surface high-voltage lines only in accordance with the provisions of §§ 77.704-2 through 77.704-10, inclusive.

§ 77.704-2 Repairs to energized high-voltage lines.

An energized high-voltage line may be repaired only when:

(a) The operator has determined that: (1) Such repairs cannot be scheduled during a period when the power circuit could be properly deenergized and grounded;

(2) Such repairs will be performed on power circuits with a phase-to-phase nominal voltage no greater than 15,000 volts;

(3) Such repairs on circuits with a phase-to-phase nominal voltage of 5,000 volts or more will be performed only with the use of live line tools; and,

(4) Weather conditions will not interfere with such repairs or expose those persons assigned to such work to an imminent danger; and,

(b) The operator has designated a person qualified under the provisions of § 77.104 as the person responsible for carrying out such repairs and such person, in order to ensure protection for himself and other qualified persons assigned to perform such repairs from the hazards of such repair, has prepared and filed with the operator:

(1) A general description of the nature and location of the damage or defect to be repaired;

(2) The general plan to be followed in making such repairs;

(3) A statement that a briefing of all qualified persons assigned to make such repairs was conducted informing them of the general plan, their individual assignments, and the dangers inherent in such assignments;

(4) A list of the proper protective equipment and clothing that will be provided; and

(5) Such other information as the person designated by the operator feels necessary to describe properly the means or methods to be employed in such repairs.

§ 77.704-3 Work on energized high-voltage surface lines; reporting.

Any operator designating and assigning qualified persons to perform repairs on energized high-voltage surface lines under the provisions of § 77.704-2 shall maintain a record of such repairs. Such record shall contain a notation of the time, date, location, and general nature of the repairs made together with a copy of the information filed with the operator by the qualified person designated as responsible for performing such repairs.

§ 77.704-4 Simultaneous repairs.

When two or more persons are working on an energized high-voltage surface line simultaneously, and any one of them is within reach of another, such persons shall not be allowed to work on different phases or on equipment with different potentials.

§ 77.704-5 Installation of protective equipment.

Before repair work on energized high-voltage surface lines is begun, protective equipment shall be used to cover all bare conductors, ground wires, guys, telephone lines, and other attachments in proximity to the area of planned repairs. Such protective equipment shall be installed from a safe position below the conductors or other apparatus being covered. Each rubber protective device employed in the making of repairs shall have a dielectric strength of 20,000 volts, or more.

§ 77.704-6 Protective clothing; use and inspection.

All persons performing work on energized high-voltage surface lines shall wear protective rubber lineman's gloves, sleeves, and climber guards if climbers are worn. Protective rubber gloves shall not be worn wrong side out or without protective leather gloves. Protective devices worn by a person assigned to perform repairs on high-voltage surface lines shall be worn continuously from the time he leaves the ground until he returns to the ground and, if such devices are employed for extended periods, such person shall visually inspect the equipment assigned him for defects before each use and, in no case, less than twice each day.

§ 77.704-7 Protective equipment; inspection.

Each person shall visually inspect protective equipment and clothing provided him in connection with work on high-voltage surface lines before using such equipment and clothing, and any equipment or clothing containing any defect or damage shall be discarded and replaced with proper protective equipment or clothing prior to the performance of any electrical work on such lines.

§ 77.704-8 Protective equipment; testing and storage.

(a) All rubber protective equipment used on work on energized high-voltage surface lines shall be electrically tested by the operator in accordance with ASTM standards, Part 28, published February 1968, and such testing shall be conducted in accordance with the following schedule:

(1) Rubber gloves, once each month;

(2) Rubber sleeves, once every 3 months;

(3) Rubber blankets, once every 6 months;

(4) Insulator hoods and line hose, once a year; and

(5) Other electric protective equipment, once a year.

(b) Rubber gloves shall not be stored wrong side out. Blankets shall be rolled when not in use, and line hose, and insulator hoods shall be stored in their natural position and shape.

§ 77.704-9 Operating disconnecting or cutout switches.

Disconnecting or cutout switches on energized high-voltage surface lines shall be operated only with insulated sticks, fuse tongs, or pullers which are adequately insulated and maintained to protect the operator from the voltage to which he is exposed. When such switches are operated from the ground, the person using such devices shall wear protective rubber lineman's gloves, except where such switches are bonded to a metal mat as provided in § 77.513.

§ 77.704-10 Tying into energized high-voltage surface circuits.

If the work of forming an additional circuit by tying into an energized high-voltage surface line is performed from the ground, any person performing such work must wear and employ all of the protective equipment and clothing required under the provisions of §§ 77.704-5 and 77.704-6. In addition, the insulated stick used by such person must have been designed for such purpose and must be adequately insulated and be maintained to protect such person from the voltage to which he is exposed.

§ 77.704-11 Use of grounded messenger wires; ungrounded systems.

Solely for purposes of grounding ungrounded high-voltage power systems, grounded messenger wires used to suspend the cables of such systems may be used as a grounding medium.

§ 77.705 Guy wires; grounding.

Guy wires from poles supporting high-voltage transmission lines shall be securely connected to the system ground or be provided with insulators installed near the pole end.

Subpart I—Surface High-Voltage Distribution

§ 77.800 High-voltage circuits; circuit breakers.

High-voltage circuits supplying power to portable or mobile equipment shall be protected by suitable circuit breakers of adequate interrupting capacity which are properly tested and maintained and equipped with devices to provide protection against under voltage, grounded phase, short circuit and overcurrent. High-voltage circuits supplying power to stationary equipment shall be protected against overloads by either a circuit breaker or fuses of the correct type and capacity.

§ 77.800-1 Testing, examination, and maintenance of circuit breakers; procedures.

(a) Circuit breakers and their auxiliary devices protecting high-voltage circuits to portable or mobile equipment shall be tested and examined at least once each month by a person qualified as provided in § 77.103.

(b) Tests shall include:

(1) Breaking continuity of the ground check conductor where ground check monitoring is used; and,

(2) Actuating any of the auxiliary protective relays.

(c) Examination shall include visual observation of all components of the circuit breaker and its auxiliary devices, and such repairs or adjustments as are indicated by such tests and examinations shall be carried out immediately.

§ 77.800-2 Testing, examination, and maintenance of circuit breakers; record.

The operator shall maintain a written record of each test, examination, repair, or adjustment of all circuit breakers protecting high-voltage circuits. Such record shall be kept in a book approved by the Secretary.

§ 77.801 Grounding resistors.

The grounding resistor, where required, shall be of the proper ohmic value to limit the voltage drop in the grounding circuit external to the resistor to not more than 100 volts under fault conditions. The grounding resistor shall be rated for maximum fault current continuously and insulated from ground for a voltage equal to the phase-to-phase voltage of the system.

§ 77.801—1 Grounding resistors; continuous current rating.

The ground fault current rating of grounding resistors shall meet the "extended time rating" set forth in American Institute of Electrical Engineers, Standard No. 32.

§ 77.802 Protection of high-voltage circuits; neutral grounding resistors; disconnecting devices.

High-voltage circuits supplying portable or mobile equipment shall contain either a direct or derived neutral which shall be grounded through a suitable resistor at the source transformers, and a grounding circuit, originating at the grounded side of the grounding resistor, shall extend along with the power conductors and serve as a grounding conductor for the frames of all high-voltage equipment supplied power from that circuit, except that the Secretary or his authorized representative may permit other high-voltage circuits to feed stationary electrical equipment, if, he finds that such exception will not pose a hazard to the miners. Disconnecting devices shall be installed and so equipped or designed in such a manner that it can be determined by visual observation that the power is disconnected.

§ 77.803 Fail safe ground check circuits on high-voltage resistance grounded systems.

On and after September 30, 1971, all high-voltage, resistance grounded systems shall include a fail safe ground check circuit or other no less effective device approved by the Secretary to monitor continuously the grounding circuit to assure continuity. The fail safe ground check circuit shall cause the circuit breaker to open when either the ground or ground check wire is broken.

§ 77.803—1 Fail safe ground check circuits; maximum voltage.

The maximum voltage used for ground check circuits under § 77.803 shall not exceed 96 volts.

§ 77.803—2 Ground check systems not employing pilot check wires; approval by the Secretary.

Ground check systems not employing pilot check wires shall be approved by the Secretary only if it is determined that the system includes a fail safe design which will cause the circuit inter-

rupter to open when ground continuity is broken.

§ 77.804 High-voltage trailing cables; minimum design requirements.

(a) High-voltage trailing cables used in resistance grounded systems shall be equipped with metallic shields around each power conductor with one or more ground conductors having a total cross-sectional area of not less than one-half the power conductor, and with an insulated conductor for the ground continuity check circuit. External ground check conductors may be used if they are not smaller than No. 8 (AWG) and have an insulation rated at least 600 volts.

(b) All such high-voltage trailing cables shall be adequate for the intended current and voltage. Splices made in such cables shall provide continuity of all components.

§ 77.805 Cable couplers and connection boxes; minimum design requirements.

(a) (1) Couplers that are used in medium- or high-voltage power circuits shall be of the three-phase type and enclosed in a full metallic shell, except that the Secretary may permit, under such guidelines as he may prescribe, no less effective couplers constructed of materials other than metal.

(2) Cable couplers shall be adequate for the intended current and voltage.

(3) Cable couplers with any metal exposed shall be grounded to the ground conductor in the cable.

(4) Couplers shall be constructed to cause the ground check continuity conductor to break first and the ground conductor last when being uncoupled when pilot check circuits are used.

(b) Cable connection boxes shall be of substantial construction and designed to guard all energized parts from personal contact.

§ 77.806 Connection of single-phase loads.

Single-phase loads, such as transformer primaries, shall be connected phase to phase in resistance grounded systems.

§ 77.807 Installation of high-voltage transmission cables.

High-voltage transmission cables shall be installed or placed so as to afford protection against damage. They shall be placed to prevent contact with low-voltage or communication circuits.

§ 77.807-1 High-voltage powerlines; clearances above ground.

High-voltage powerlines located above driveways, haulageways, and railroad tracks shall be installed to provide the minimum vertical clearance specified in National Electrical Safety Code: *Provided, however*, That in no event shall any high-voltage powerline be installed less than 15 feet above ground.

§ 77.807-2 Booms and masts; minimum distance from high-voltage lines.

The booms and masts of equipment operated on the surface of any coal mine shall not be operated within 10 feet of an energized overhead powerline. Where the voltage of overhead powerlines is 69,000 volts, or more, the minimum distance from the boom or mast shall be as follows:

| <i>Nominal power line voltage (in 1,000 volts)</i> | <i>Minimum distance (feet)</i> |
|--|--------------------------------|
| 60-114 ----- | 12 |
| 115-229 ----- | 15 |
| 230-344 ----- | 20 |
| 345-499 ----- | 25 |
| 500 or more ----- | 35 |

§ 77.807-3 Movement of equipment; minimum distance from high-voltage lines.

When any part of any equipment operated on the surface of any coal mine is required to pass under or by any energized high-voltage powerline and the clearance between such equipment and powerline is less than that specified in § 77.807-2 for booms and masts, such powerlines shall be deenergized or other precautions shall be taken.

§ 77.808 Disconnecting devices.

Disconnecting devices shall be installed at the beginning of each branch line in high-voltage circuits and they shall be equipped or designed in such a manner that it can be determined by visual observation that the circuit is deenergized when such devices are open.

§ 77.809 Identification of circuit breakers and disconnecting switches.

Circuit breakers and disconnecting switches shall be labeled to show which units they control, unless identification can be made readily by location.

§ 77.810 High-voltage equipment; grounding.

Frames, supporting structures, and enclosures of stationary, portable, or

mobile high-voltage equipment shall be effectively grounded.

§ 77.811 Movement of portable substations and transformers.

Portable substations and transformers shall be deenergized before they are moved from one location to another.

Subpart J—Low- and Medium-Voltage Alternating Current Circuits

§ 77.900 Low- and medium-voltage circuits serving portable or mobile three-phase alternating current equipment; circuit breakers.

Low- and medium-voltage circuits supplying power to portable or mobile three-phase alternating current equipment shall be protected by suitable circuit breakers of adequate interrupting capacity which are properly tested and maintained and equipped with devices to provide protection against undervoltage, grounded phase, short circuit, and over-current.

§ 77.900-1 Testing, examination, and maintenance of circuit breakers; procedures.

Circuit breakers protecting low- and medium-voltage circuits serving portable or mobile three-phase alternating current equipment and their auxiliary devices shall be tested and examined at least once each month by a person qualified as provided in § 77.103. In performing such tests, the circuit breaker auxiliaries or control circuits shall be actuated in any manner which causes the circuit breaker to open. All components of the circuit breaker and its auxiliary devices shall be visually examined and such repairs or adjustments as are indicated by such tests and examinations shall be carried out immediately.

§ 77.900-2 Testing, examination, and maintenance of circuit breakers; record.

The operator shall maintain a written record of each test, examination, repair or adjustment of all circuit breakers protecting low- and medium-voltage circuits serving three-phase alternating current equipment and such record shall be kept in a book approved by the Secretary.

§ 77.901 Protection of low- and medium-voltage three-phase circuits.

(a) Low- and medium-voltage circuits supplying power to portable or mo-

bile three-phase alternating equipment shall contain:

(1) Either a direct or derived neutral grounded through a suitable resistor at the power source;

(2) A grounding circuit originating at the grounded side of the grounding resistor which extends along with the power conductors and serves as a grounding conductor for the frames of all the electric equipment supplied power from the circuit.

(b) Grounding resistors, where required, shall be of an ohmic value which limits the ground fault current to no more than 25 amperes. Such grounding resistors shall be rated for maximum fault current continuously and provide insulation from ground for a voltage equal to the phase-to-phase voltage of the system.

(c) Low- and medium-voltage circuits supplying power to three-phase alternating current stationary electric equipment shall comply with the National Electric Code.

§ 77.901-1 Grounding resistor; continuous current rating.

The ground fault current rating of grounding resistors shall meet the "extended time rating" set forth in American Institute of Electrical Engineers Standard No. 32.

§ 77.902 Low- and medium-voltage ground check monitor circuits.

On and after September 30, 1971, three-phase low- and medium-voltage resistance grounded systems to portable and mobile equipment shall include a fail safe ground check circuit or other no less effective device approved by the Secretary to monitor continuously the grounding circuit to assure continuity. The fail safe ground check circuit shall cause the circuit breaker to open when either the ground or pilot check wire is broken. Cable couplers shall be constructed to cause the ground check continuity conductor to break first and the ground conductor last when being uncoupled when pilot check circuits are used.

§ 77.902-1 Fail safe ground check circuits; maximum voltage.

The maximum voltage used for ground check circuits under § 77.902 shall not exceed 40 volts.

§ 77.902-2 Approved ground check systems not employing pilot check wires.

Ground check systems not employing pilot check wires shall be approved by the Secretary only after it has been determined that the system includes a fail safe design causing the circuit breaker to open when ground continuity is broken.

§ 77.902-3 Attachment of ground conductors and ground check wires to equipment frames; use of separate connections.

In grounding the frames of stationary, portable, or mobile equipment receiving power from resistance grounded systems, separate connections shall be used.

§ 77.903 Disconnecting devices.

Disconnecting devices shall be installed in circuits supplying power to portable or mobile equipment and shall provide visual evidence that the power is disconnected.

§ 77.904 Identification of circuit breakers.

Circuit breakers shall be labeled to show which circuits they control unless identification can be made readily by location.

§ 77.905 Connection of single-phase loads.

Single-phase loads shall be connected phase-to-phase in resistance grounded systems.

§ 77.906 Trailing cables supplying power to low-voltage mobile equipment; ground wires and ground check wires.

On and after September 30, 1971, all trailing cables supplying power to portable or mobile equipment from low-voltage three-phase resistance grounded power systems shall contain one or more ground conductors having a cross-sectional area of not less than one-half the power conductor. Such trailing cables shall include an insulated conductor for the ground continuity check circuit except where a no less effective device has been approved by the Secretary to assure continuity. Splices made in low-voltage trailing cables shall provide continuity of all components.

Subpart K—Ground Control

§ 77.1000 Highwalls, pits and spoil banks; plans.

Each operator shall establish and follow a ground control plan for the safe

control of all highwalls, pits and spoil banks to be developed after June 30, 1971, which shall be consistent with prudent engineering design and will insure safe working conditions. The mining methods employed by the operator shall be selected to insure highwall and spoil bank stability.

§ 77.1000-1 Filing of plan.

The operator shall file a copy of such plan, and revisions thereof, with the Coal Mine Health and Safety District of Sub-district office for the District or Sub-district in which the mine is located, and shall identify the name and location of the mine; the Mining Enforcement and Safety Administration identification number if known; and the name and address of the mine operator.

§ 77.1001 Stripping; loose material.

Loose hazardous material shall be stripped for a safe distance from the top of pit or highwalls, and the loose unconsolidated material shall be sloped to the angle of repose, or barriers, baffle boards, screens, or other devices be provided that afford equivalent protection.

§ 77.1002 Box cuts; spoil material placement.

When box cuts are made, necessary precautions shall be taken to minimize the possibility of spoil material rolling into the pit.

§ 77.1003 Benches.

To insure safe operation, the width and height of benches shall be governed by the type of equipment to be used and the operation to be performed.

§ 77.1004 Ground control; inspection and maintenance; general.

(a) Highwalls, banks, benches, and terrain sloping into the working areas shall be examined after every rain, freeze, or thaw before men work in such areas, and such examination shall be made and recorded in accordance with § 77.1713.

(b) Overhanging highwalls and banks shall be taken down and other unsafe ground conditions shall be corrected promptly, or the area shall be posted.

§ 77.1005 Scaling highwalls; general.

(a) Hazardous areas shall be scaled before any other work is performed in the hazardous area. When scaling of highwalls is necessary to correct conditions that are hazardous to persons in

the area, a safe means shall be provided for performing such work.

(b) Whenever it becomes necessary for safety to remove hazardous material from highwalls by hand, the hazardous material shall be approached from a safe direction and the material removed from a safe location.

§ 77.1006 Highwalls; men working.

(a) Men, other than those necessary to correct unsafe conditions, shall not work near or under dangerous highwalls or banks.

(b) Except as provided in paragraph (c) of this section, men shall not work between equipment and the highwall or spoil bank where the equipment may hinder escape from falls or slides.

(c) Special safety precautions shall be taken when men are required to perform repair work between immobilized equipment and the highwall or spoil bank and such equipment may hinder escape from falls or slides.

§ 77.1007 Drilling; general.

(a) Equipment that is to be used during a shift shall be inspected each shift by a competent person. Equipment defects affecting safety shall be reported.

(b) Equipment defects affecting safety shall be corrected before the equipment is used.

§ 77.1008 Relocation of drills; safeguards.

(a) When a drill is being moved from one drilling area to another, drill steel, tools, and other equipment shall be secured and the mast placed in a safe position.

(b) When a drill helper is used his location shall be made known to the operator at all times when the drill is being moved.

§ 77.1009 Drill; operation.

(a) While in operation drills shall be attended at all times.

(b) Men shall not drill from positions that hinder their access to the control levers, or from insecure footing or staging, or from atop equipment not designed for this purpose.

(c) Men shall not be on a mast while the drill bit is in operation unless a safe platform is provided and safety belts are used.

(d) Drill crews and others shall stay clear of augers or drill stems that are in motion. Persons shall not pass under or step over a moving stem or auger.

(e) In the event of power failure, drill controls shall be placed in the neutral position until power is restored.

(f) When churn drills or vertical rotary drills are used, drillers shall not be permitted to work under suspended tools, and when collaring holes, inspecting, or during any operation in which tools are removed from the hole, all tools shall be lowered to the ground or platform.

§ 77.1010 Collaring holes.

(a) Starter steels shall be used when collaring holes with hand-held drills.

(b) Men shall not hold the drill steel while collaring holes, or rest their hands on the chuck or centralizer while drilling.

§ 77.1011 Drill holes; guarding.

Drill holes large enough to constitute a hazard shall be covered or guarded.

§ 77.1012 Jackhammers; operation; safeguards.

Men operating or working near jackhammers or jackleg drills, or other drilling machines shall position themselves so that they will not be struck or lose their balance if the drill steel breaks or sticks.

§ 77.1013 Air drills; safeguards.

Air shall be turned off and bled from the air hoses before hand-held air drills are moved from one working area to another.

Subpart L—Fire Protection

§ 77.1100 Fire protection; training and organization.

Firefighting facilities and equipment shall be provided commensurate with the potential fire hazards at each structure, enclosure and other facility (including custom coal preparation) at the mine and the employees at such facilities shall be instructed and trained annually in the use of such firefighting facilities and equipment.

§ 77.1101 Escape and evacuation; plan.

(a) Before September 30, 1971, each operator of a mine shall establish and keep current a specific escape and evacuation plan to be followed in the event of a fire.

(b) All employees shall be instructed on current escape and evacuation plans, fire alarm signals, and applicable procedures to be followed in case of fire.

(c) Plans for escape and evacuation shall include the designation and proper maintenance of adequate means for exit from all areas where persons are required to work or travel including buildings and equipment and in areas where persons normally congregate during the work shift.

[36 F.R. 9364, May 22, 1971, as amended at 36 F.R. 13143, July 15, 1971]

§ 77.1102 Warning signs; smoking and open flame.

Signs warning against smoking and open flames shall be posted so they can be readily seen in areas or places where fire or explosion hazards exist.

§ 77.1103 Flammable liquids; storage.

(a) Flammable liquids shall be stored in accordance with standards of the National Fire Protection Association. Small quantities of flammable liquids drawn from storage shall be kept in properly identified safety cans.

(b) Unburied flammable-liquid storage tanks shall be mounted securely on firm foundations. Outlet piping shall be provided with flexible connections or other special fittings to prevent adverse effects from tank settling.

(c) Fuel lines shall be equipped with valves to cut off fuel at the source and shall be located and maintained to minimize fire hazards.

(d) Areas surrounding flammable-liquid storage tanks and electric substations and transformers shall be kept free from grass (dry), weeds, underbrush, and other combustible materials such as trash, rubbish, leaves and paper, for at least 25 feet in all directions.

§ 77.1104 Accumulations of combustible materials.

Combustible materials, grease, lubricants, paints, or flammable liquids shall not be allowed to accumulate where they can create a fire hazard.

§ 77.1105 Internal combustion engines; fueling.

Internal combustion engines, except diesels, shall be shut off and stopped before being fueled.

§ 77.1106 Battery-charging stations; ventilation.

Battery-charging stations shall be located in well-ventilated areas. Battery-charging stations shall be equipped with reverse current protection where such

stations are connected directly to direct current power systems.

§ 77.1107 Belt conveyors.

Belt conveyors in locations where fire would create a hazard to personnel shall be provided with switches to stop the drive pulley automatically in the event of excessive slippage.

§ 77.1108 Firefighting equipment; requirements; general.

On and after September 30, 1971, each operator of a coal mine shall provide an adequate supply of firefighting equipment which is adapted to the size and suitable for use under the conditions present on the surface at the mine.

[36 F.R. 9364, May 22, 1971, as amended at 36 F.R. 13143, July 15, 1971]

§ 77.1108-1 Type and capacity of firefighting equipment.

Firefighting equipment required under this § 77.1108 shall meet the following minimum requirements:

(a) *Waterlines.* Waterlines shall be capable of delivering 50 gallons of water a minute at a nozzle pressure of 50 pounds per square inch. Where storage tanks are used as a source of water supply, the tanks shall be of 1,000-gallon capacity for each 1,000 tons of coal processed (average) per shift.

(b) *Fire extinguishers.* Fire extinguishers shall be:

(1) Of the appropriate type for the particular fire hazard involved;

(2) Adequate in number and size for the particular fire hazard involved;

(3) Replaced immediately with fully charged extinguishers after any discharge is made from an extinguisher; and

(4) Approved by the Underwriter's Laboratories, Inc., or the Factory Mutual Research Corp., or other competent testing agency acceptable to the Mining Enforcement and Safety Administration.

(c) *Fire hose.* Fire hose and couplings shall meet the requirements of the Underwriter's Laboratories, Inc., or Factory Mutual Research Corp.'s specifications. Cotton or cotton-polyester jacketed hose shall be treated in accordance with the U.S. Department of Agriculture Forest Service Specification 182 for mildew resistance. The water pressure at the hose nozzle shall not be excessively high so as to present a hazard to the nozzle operator.

§ 77.1109 Quantity and location of firefighting equipment.

Preparation plants, dryer plants, tipples, drawoff tunnels, shops, and other surface installations shall be equipped with the following firefighting equipment.

(a) Each structure presenting a fire hazard shall be provided with portable fire extinguishers commensurate with the potential fire hazard at the structure in accordance with the recommendations of the National Fire Protection Association.

(b) Preparation plants shall be equipped with waterlines, with outlet valves on each floor, and with sufficient fire hose to project a water stream to any point in the plant. However, where freezing conditions exist or water is not available, a 125-pound multipurpose dry powder extinguisher may be substituted for the purposes of this paragraph (b) for each 2,500 square feet of floor space in a wooden or other flammable structure, or for each 5,000 square feet of floor space in a metal, concrete-block, or other type of non-flammable construction.

(c) (1) Mobile equipment, including trucks, front-end loaders, bulldozers, portable welding units, and augers, shall be equipped with at least one portable fire extinguisher.

(2) Power shovels, draglines, and other large equipment shall be equipped with at least one portable fire extinguisher; however, additional fire extinguishers may be required by an authorized representative of the Secretary.

(3) Auxiliary equipment such as portable drills, sweepers, and scrapers, when operated more than 600 feet from equipment required to have portable fire extinguishers, shall be equipped with at least one fire extinguisher.

(d) Fire extinguishers shall be provided at permanent electrical installations commensurate with the potential fire hazard at such installation in accordance with the recommendations of the National Fire Protection Association.

(e) Two portable fire extinguishers, or the equivalent, shall be provided at each of the following combustible liquid storage installations:

(1) Near each above ground or unburied combustible liquid storage station; and,

(2) Near the transfer pump of each buried combustible liquid storage tank.

(f) Vehicles transporting explosives and blasting agents shall be equipped with fire protection as recommended in Code 495, section 20, National Fire Protection Association Handbook, 12th Edition, 1962.

§ 77.1110 Examination and maintenance of firefighting equipment.

Firefighting equipment shall be continuously maintained in a usable and operative condition. Fire extinguishers shall be examined at least once every 6 months and the date of such examination shall be recorded on a permanent tag attached to the extinguisher.

§ 77.1111 Welding, cutting, soldering; use of fire extinguisher.

One portable fire extinguisher shall be provided at each location where welding, cutting, or soldering with arc or flame is performed.

§ 77.1112 Welding, cutting, or soldering with arc or flame; safeguards.

(a) When welding, cutting, or soldering with arc or flame near combustible materials, suitable precautions shall be taken to insure that smoldering metal or sparks do not result in a fire.

(b) Before welding, cutting, or soldering is performed in areas likely to contain methane, an examination for methane shall be made by a qualified person with a device approved by the Secretary for detecting methane. Examinations for methane shall be made immediately before and periodically during welding, cutting, or soldering and such work shall not be permitted to commence or continue in air which contains 1.0 volume per centum or more of methane.

Subpart M—Maps

§ 77.1200 Mine map.

The operator shall maintain an accurate and up-to-date map of the mine, on a scale of not less than 100 nor more than 500 feet to the inch, at or near the mine, in an area chosen by the mine operator, with a duplicate copy on file at a separate and distinct location, to minimize the danger of destruction by fire or other hazard. The map shall show:

- (a) Name and address of the mine;
- (b) The property or boundary lines of the active areas of the mine;
- (c) Contour lines passing through whole number elevations of the coalbed being mined. The spacing of such lines shall not exceed 25-foot elevation levels,

except that a broader spacing of contour lines may be approved by the District Manager for steeply pitching coalbeds. Contour lines may be placed on overlays or tracings attached to mine maps.

(d) The general elevation of the coalbed or coalbeds being mined, and the general elevation of the surface;

(e) Either producing or abandoned oil and gas wells located on the mine property;

(f) The location and elevation of any body of water dammed or held back in any portion of the mine: *Provided, however*, Such bodies of water may be shown on overlays or tracings attached to the mine maps;

(g) All prospect drill holes that penetrate the coalbed or coalbeds being mined on the mine property;

(h) All auger and strip mined areas of the coalbed or coalbeds being mined on the mine property together with the line of maximum depth of holes drilled during auger mining operations.

(i) All worked out and abandoned areas;

(j) The location of railroad tracks and public highways leading to the mine, and mine buildings of a permanent nature with identifying names shown;

(k) Underground mine workings underlying and within 1,000 feet of the active areas of the mine;

(l) The location and description of at least two permanent base line points, and the location and description of at least two permanent elevation bench marks used in connection with establishing or referencing mine elevation surveys; and,

(m) The scale of the map.

§ 77.1201 Certification of mine maps.

Mine maps shall be made or certified by an engineer or surveyor registered by the State in which the mine is located.

§ 77.1202 Availability of mine map.

The mine map maintained in accordance with the provisions of § 77.1200 shall be available for inspection by the Secretary or his authorized representative.

Subpart N—Explosives and Blasting

§ 77.1300 Explosives and blasting.

(a) No explosives, blasting agent, detonator, or any other related blasting device or material shall be stored, transported, carried, handled, charged, fired, destroyed, or otherwise used, employed

or disposed of by any person at a coal mine except in accordance with the provisions of §§ 77.1301 through 77.1304, inclusive.

(b) The term "explosives" as used in this Subpart N includes blasting agents. The standards in this Subpart N in which the term "explosives" appears are applicable to blasting agents (as well as to other explosives) unless blasting agents are expressly excluded.

§ 77.1301 Explosives; magazines.

(a) Detonators and explosives other than blasting agents shall be stored in magazines.

(b) Detonators shall not be stored in the same magazine with explosives.

(c) Magazines other than box type shall be:

(1) Located in accordance with the current American Table of Distances for storage of explosives.

(2) Detached structures located away from powerlines, fuel storage areas, and other possible sources of fire.

(3) Constructed substantially of non-combustible material or covered with fire-resistant material.

(4) Reasonably bullet resistant.

(5) Electrically bonded and grounded if constructed of metal.

(6) Made of nonsparking materials on the inside, including floors.

(7) Provided with adequate and effectively screened ventilation openings near the floor and ceiling.

(8) Kept locked securely when unattended.

(9) Posted with suitable danger signs so located that a bullet passing through the face of a sign will not strike the magazine.

(10) Used exclusively for storage of explosives or detonators and kept free of all extraneous materials.

(11) Kept clean and dry in the interior, and in good repair.

(12) Unheated, unless heated in a manner that does not create a fire or explosion hazard.

(d) Box-type magazines used to store explosives or detonators in work areas shall be constructed with only nonsparking material inside and equipped with covers or doors and shall be located out of the line of blasts.

(e) Secondary and box-type magazines shall be suitably labeled.

(f) Detonator-storage magazines shall be separated by at least 25 feet from explosive-storage magazines.

(g) Cases or boxes containing explosives shall not be stored in magazines on their ends or sides nor stacked more than 6 feet high.

(h) Ammonium nitrate-fuel oil blasting agents shall be physically separated from other explosives, safety fuse, or detonating cord stored in the same magazine and in such a manner that oil does not contaminate the other explosives, safety fuse, or detonating cord.

§ 77.1302 Vehicles used to transport explosives.

(a) Vehicles used to transport explosives, other than blasting agents, shall have substantially constructed bodies, no sparking metal exposed in the cargo space, and shall be equipped with suitable sides and tail gates; explosives shall not be piled higher than the side or end.

(b) Vehicles containing explosives or detonators shall be maintained in good condition and shall be operated at a safe speed and in accordance with all safe operating practices.

(c) Vehicles containing explosives or detonators shall be posted with proper warning signs.

(d) Other materials or supplies shall not be placed on or in the cargo space of a conveyance containing explosives, detonating cord or detonators, except for safety fuse and except for properly secured nonsparking equipment used expressly in the handling of such explosives, detonating cord or detonators.

(e) Explosives and detonators shall be transported in separate vehicles unless separated by 4 inches of hardwood or the equivalent.

(f) Explosives or detonators shall be transported promptly without undue delays in transit.

(g) Explosives or detonators shall be transported at times and over routes that expose a minimum number of persons.

(h) Only the necessary attendants shall ride on or in vehicles containing explosives or detonators.

(i) Vehicles shall be attended, whenever practical and possible, while loaded with explosives or detonators.

(j) When vehicles containing explosives or detonators are parked, the brakes shall be set, the motive power shut off, and the vehicles shall be blocked securely against rolling.

(k) Vehicles containing explosives or detonators shall not be taken to a repair garage or shop for any purpose.

§ 77.1303 Explosives, handling and use.

(a) Persons who use or handle explosives or detonators shall be experienced men who understand the hazards involved; trainees shall do such work only under the supervision of and in the immediate presence of experienced men.

(b) Blasting operations shall be under the direct control of authorized persons.

(c) Substantial nonconductive closed containers shall be used to carry explosives, other than blasting agents to the blasting site.

(d) Damaged or deteriorated explosives or detonators shall be destroyed in a safe manner.

(e) Where electric blasting is to be performed, electric circuits to equipment in the immediate area to be blasted shall be deenergized before explosives or detonators are brought into the area; the power shall not be turned on again until after the shots are fired.

(f) Explosives shall be kept separated from detonators until charging is started.

(g) Areas in which charged holes are awaiting firing shall be guarded, or barricaded and posted, or flagged against unauthorized entry.

(h) Ample warning shall be given before blasts are fired. All persons shall be cleared and removed from the blasting area unless suitable blasting shelters are provided to protect men endangered by concussion or flyrock from blasting.

(i) Lead wires and blasting lines shall not be strung across power conductors, pipelines, railroad tracks, or within 20 feet of bare powerlines. They shall be protected from sources of static or other electrical contact.

(j) For the protection of underground workers, special precautions shall be taken when blasting in close proximity to underground operations, and no blasting shall be done that would be hazardous to persons working underground.

(k) Holes shall not be drilled where there is danger of intersecting a charged or misfired hole.

(l) Only wooden or other nonsparking implements shall be used to punch holes in an explosive cartridge.

(m) Tamping poles shall be blunt and squared at one end and made of wood, nonsparking material, or of special plastic acceptable to the Mining Enforcement and Safety Administration.

(n) Delay connectors for firing detonating cord shall be treated and handled

with the same safety precautions as blasting caps and electric detonators.

(o) Capped primers shall be made up at the time of charging and as close to the blasting site as conditions allow.

(p) A capped primer shall be prepared so that the detonator is contained securely and is completely embedded within the explosive cartridge.

(q) No tamping shall be done directly on a capped primer.

(r) Detonating cord shall not be used if it has been kinked, bent, or otherwise handled in such a manner that the train of detonation may be interrupted.

(s) Fuse shall not be used if it has been kinked, bent sharply, or handled roughly in such a manner that the train of deflagration may be interrupted.

(t) Blasting caps shall be crimped to fuses only with implements designed for that specific purpose.

(u) When firing from 1 to 15 blast-holes with safety fuse ignited individually using hand-held lighters, the fuses shall be of such lengths to provide the minimum burning time specified in the following table for a particular size round:

| <i>Number of holes in a round</i> | <i>Minimum burning time, minutes</i> |
|---------------------------------------|--|
| 1 ----- | 2 |
| 2-5 ----- | 2½ |
| 6-10 ----- | 3½ |
| 11-15 ----- | 5 |

In no case shall any 40-second-per-foot safety fuse less than 36 inches long or any 30-second-per-foot safety fuse less than 48 inches long be used.

(v) The burning rate of the safety fuse in use at any time shall be measured, posted in conspicuous locations, and brought to the attention of all men concerned with blasting.

(w) Electric detonators of different brands shall not be used in the same round.

(x) Adequate priming shall be employed to guard against misfires, increased toxic fumes, and poor performance.

(y) Except when being tested with a blasting galvanometer:

(1) Electric detonators shall be kept shunted until they are being connected to the blasting line or wired into a blasting round.

(2) Wired rounds shall be kept shunted until they are being connected to the blasting line.

(3) Blasting lines shall be kept shunted until immediately before blasting.

(z) Completely wired rounds shall be tested with a blasting galvanometer before connections are made to the blasting line.

(aa) Permanent blasting lines shall be properly supported, insulated, and kept in good repair.

(bb) At least a 5-foot airgap shall be provided between the blasting circuit and the power circuit.

(cc) When instantaneous blasting is performed, the double-trunkline or loop system shall be used in detonating-cord blasting.

(dd) When instantaneous blasting is performed, trunklines, in multiple-row blasts, shall make one or more complete loops, with crossties between loops at intervals of not over 200 feet.

(ee) All detonating cord knots shall be tight and all connections shall be kept at right angles to the trunklines.

(ff) Power sources shall be suitable for the number of electrical detonators to be fired and for the type of circuits used.

(gg) Electric circuits from the blasting switches to the blast area shall not be grounded.

(hh) Safety switches and blasting switches shall be labeled, encased in boxes, and arranged so that the covers of the boxes cannot be closed with the switches in the through-circuit or firing position.

(ii) Blasting switches shall be locked in the open position, except when closed to fire the blast. Lead wires shall not be connected to the blasting switch until the shot is ready to be fired.

(jj) The key or other control to an electrical firing device shall be entrusted only to the person designated to fire the round or rounds.

(kk) If branch circuits are used when blasts are fired from power circuits, safety switches located at safe distances from the blast areas shall be provided in addition to the main blasting switch.

(ll) Misfires shall be reported to the proper supervisor and shall be disposed of safely before any other work is performed in that blasting area.

(mm) When safety fuse has been used, men shall not return to misfired holes for at least 30 minutes.

(nn) When electric blasting caps have been used, men shall not return to misfired holes for at least 15 minutes.

(oo) If explosives are suspected of burning in a hole, all persons in the endangered area shall move to a safe

location and no one should return to the hole until the danger has passed, but in no case within 1 hour.

(pp) Blasted areas shall be examined for undetonated explosives after each blast and undetonated explosives found shall be disposed of safely.

(qq) Blasted areas shall not be reentered by any person after firing until such time as concentrations of smoke, dust, or fumes have been reduced to safe limits.

(rr) In secondary blasting, if more than one shot is to be fired at one time, blasting shall be done electrically or with detonating cord.

(ss) Unused explosives and detonators shall be moved to a safe location as soon as charging operations are completed.

(tt) When electric detonators are used, charging shall be stopped immediately when the presence of static electricity or stray currents is detected; the condition shall be remedied before charging is resumed.

(uu) When electric detonators are used, charging shall be suspended and men withdrawn to a safe location upon the approach of an electrical storm.

§ 77.1304 Blasting agents; special provisions.

(a) Sensitized ammonium nitrate blasting agents, and the components thereof prior to mixing, shall be mixed and stored in accordance with the recommendations in Bureau of Mines Information Circular 8179, "Safety Recommendations for Sensitized Ammonium Nitrate Blasting Agents," or subsequent revisions.

(b) Where pneumatic loading is employed, before any type of blasting operation using blasting agents is put into effect, an evaluation of the potential hazard of static electricity shall be made. Adequate steps, including the grounding and bonding of the conductive parts of pneumatic loading equipment, shall be taken to eliminate the hazard of static electricity before blasting agent use is commenced.

(c) Pneumatic loading equipment shall not be grounded to waterlines, air-lines, rails, or the permanent electrical grounding systems.

(d) Hoses used in connection with pneumatic loading machines shall be of the semiconductive type, having a total resistance low enough to permit the dissipation of static electricity and high enough to limit the flow of stray electric

currents to a safe level. Wire-countered hose shall not be used because of the potential hazard from stray electric currents.

Subpart O—Man Hoisting

§ 77.1400 Man hoists and elevators.

The standards set forth in this Subpart O, apply only to hoists and elevators, together with their appurtenances, that are used for hoisting men.

§ 77.1401 Automatic controls and brakes.

Hoists and elevators shall be equipped with overspeed, overwind, and automatic stop controls and with brakes capable of stopping the elevator when fully loaded.

§ 77.1402 Rated capacity.

Hoists and elevators shall have rated capacities consistent with the loads handled and the recommended safety factors of the ropes and cables used.

§ 77.1402-1 Ropes and cables; specifications.

The American National Standards Institute "Specifications for the Use of Wire Ropes for Mines," M 11.1-1960, or the latest revision thereof, shall be used as a guide in the use, selection, installation, and maintenance of wire ropes used for hoisting.

§ 77.1402-2 Maximum load; posting.

The operator shall designate the maximum number of men permitted to ride on each hoist or elevator at one time; this limit shall be posted on each elevator and on each landing.

§ 77.1403 Inspection and maintenance.

(a) Hoists and elevators shall be examined daily and such examinations shall include, but not be limited to, the following:

(1) A visual examination of the rope for wear, broken wires, and corrosion, especially at excessive strain points;

(2) An examination of the rope fastenings for defects;

(3) An examination of the elevator for loose, missing, or defective parts;

(4) An examination of sheaves for broken flanges, defective bearings, rope alignment, and proper lubrication; and

(5) An examination of the automatic controls and brakes required under § 77.1401.

(b) A report of the daily examinations shall be signed by the person making

such examination and the report shall be signed or countersigned by any of the persons listed in paragraph (d) of § 77.1713.

(c) Empty conveyances shall be operated at least one round trip before hoisting men after any repairs.

(d) Alterations or changes in a hoist or elevator which might affect its rated capacity shall be made only with the approval of the Coal Mine Health and Safety District Manager or Subdistrict Manager of the district in which the mine is located.

(e) The ropes and cables of hoists and elevators shall be kept well lubricated from end to end as recommended by the manufacturer.

Subpart P—Auger Mining

§ 77.1500 Auger mining; planning.

Auger mining shall be planned and conducted by the operator to insure against any hazard to underground workings located at or near such auger operations and all auger holes shall be located so as to prevent:

(a) The disruption of the ventilation system of any active underground mine;

(b) Inundation hazards from surface water entering any active underground mine;

(c) Damage to the roof and ribs of active underground workings; and

(d) Intersection of auger holes with underground mine workings known to contain dangerous quantities of impounded water.

§ 77.1501 Auger mining; inspections.

(a) The face of all highwalls, to a distance of 25 feet on both sides of each drilling site, shall be inspected by a certified person before any augering operation is begun, and at least once during each coal producing shift and all loose material shall be removed from the drilling site before persons are permitted to enter the drilling area. The results of all such inspections shall be recorded daily in a book approved by the Secretary.

(b) In addition, the face of all highwalls, to a distance of 25 feet on both sides of each drilling site, shall be inspected frequently by a certified person during any auger operation conducted either during or after a heavy rainfall or during any period of intermittent freezing and thawing and the results of such inspections shall be recorded as provided in paragraph (a) of this section.

(c) When an auger hole penetrates an abandoned or mined out area of an underground mine, tests for methane and oxygen deficiency shall be made at the collar of the hole by a qualified person using devices approved by the Secretary to determine if dangerous quantities of methane or oxygen-deficient air are present or being emitted. If such is found no further work shall be performed until the atmosphere has been made safe.

(d) Tests for oxygen deficiency shall be conducted with a permissible flame safety lamp or other means approved by the Secretary and all tests for methane shall be conducted with a methane detector approved by the Secretary.

(e) Internal combustion engines shall not be operated in the vicinity of any auger hole in which tests for methane or oxygen deficiency are being made.

§ 77.1502 Auger holes; restriction against entering.

No person shall be permitted to enter an auger hole except with the approval of the Coal Mine Health and Safety District Manager or Subdistrict Manager of the district in which the mine is located and under such conditions as may be prescribed by such managers.

§ 77.1503 Augering equipment; overhead protection.

(a) Auger machines which are exposed to highwall hazards, together with all those parts of any coal elevating conveyors where persons are required to work during augering operations, shall be covered with heavy gauge screen which does not obstruct the view of the highwall and is strong enough to prevent injuries to workmen from falling material.

(b) No work shall be done under any overhang and, when a crew is engaged in connecting or disconnecting auger sections under a highwall, at least one person shall be assigned to observe the highwall for possible movement.

§ 77.1504 Auger equipment; operation.

(a) Persons shall be kept clear of the auger train while it is in motion and shall not be permitted to pass under or over an auger train, except where adequate crossing facilities are provided.

(b) Persons shall be kept clear of auger sections being swung into position.

(c) No person, including the auger machine operator, shall, where practicable, be stationed in direct line with a borehole during augering operations.

(d) Operator of auger equipment shall not leave the controls of such equipment while the auger is in operation.

(e) Adequate illumination shall be provided for work areas after dark.

§ 77.1505 Auger holes; blocking.

Auger holes shall be blocked with highwall spoil or other suitable material before they are abandoned.

Subpart Q—Loading and Haulage

§ 77.1600 Loading and haulage; general.

(a) Only authorized persons shall be permitted on haulage roads and at loading or dumping locations.

(b) Traffic rules, signals, and warning signs shall be standardized at each mine and posted.

(c) Where side or overhead clearances on any haulage road or at any loading or dumping location at the mine are hazardous to mine workers, such areas shall be conspicuously marked and warning devices shall be installed when necessary to insure the safety of the workers.

§ 77.1601 Transportation of persons; restrictions.

No person shall be permitted to ride or be otherwise transported on or in the following equipment whether loaded or empty:

(a) Dippers, shovels, buckets, forks, and clamshells;

(b) The cargo space of dump trucks or haulage equipment used to transport coal or other material;

(c) Outside the cabs and beds of mobile equipment;

(d) Chain, belt, or bucket conveyors, except where such conveyors are specifically designed to transport persons; and

(e) Loaded buckets on aerial tramways.

§ 77.1602 Use of aerial tramways to transport persons.

Persons other than maintenance men shall not ride empty buckets on aerial tramways unless the following features are provided:

(a) Two independent brakes, each capable of holding the maximum load.

(b) Direct communication between terminals.

(c) Power drives with emergency power available in case of primary power failure.

(d) Buckets equipped with positive locks to prevent accidental tripping or dumping.

§ 77.1603 Trains and locomotives; authorized persons.

(a) Only authorized persons shall be permitted to ride on trains or locomotives and they shall ride in a safe position.

(b) Men shall not get on or off moving equipment, except that trainmen may get on or off of slowly moving trains.

§ 77.1604 Transportation of persons; overcrowding.

(a) No man-trip vehicle or other conveyance used to transport persons to and from work areas at surface coal mines shall be overcrowded and all persons shall ride in a safe position.

(b) Supplies, materials, and tools other than small handtools shall not be transported with men in man-trip vehicles unless such vehicles are specifically designed to make such transportation safe.

§ 77.1605 Loading and haulage equipment; installations.

(a) Cab windows shall be of safety glass or equivalent, in good condition and shall be kept clean.

(b) Mobile equipment shall be equipped with adequate brakes, and all trucks and front-end loaders shall also be equipped with parking brakes.

(c) Positive-action type brakes shall be provided on aerial tramways.

(d) Mobile equipment shall be provided with audible warning devices. Lights shall be provided on both ends when required.

(e) Guard nets or other suitable protection shall be provided where tramways pass over roadways, walkways, or buildings.

(f) Guards shall be installed to prevent swaying buckets from hitting towers.

(g) Aerial tramway cable connections shall be designed to offer minimum obstruction to the passage of wheels.

(h) Rocker-bottom or bottom-dump cars shall be equipped with positive locking devices, or other suitable devices.

(i) Ramps and dumps shall be of solid construction, of ample width, have ample clearance and headroom, and be kept reasonably free of spillage.

(j) Chute-loading installations shall be designed so that the men pulling

chutes are not required to be in a hazardous position during loading operations.

(k) Berms or guards shall be provided on the outer bank of elevated roadways.

(l) Berms, bumper blocks, safety hooks, or similar means shall be provided to prevent overtravel and overturning at dumping locations.

(m) Roadbeds, rails, joints, switches, frogs, and other elements on railroads shall be designed, installed, and maintained in a safe manner consistent with the speed and type of haulage.

(n) Where practicable, a minimum of 30 inches continuous clearance from the farthest projection of moving railroad equipment shall be provided on at least one side of the tracks; all places where it is not possible to provide 30-inch clearance shall be marked conspicuously.

(o) Track guardrails, lead rails, and frogs shall be protected or blocked so as to prevent a person's foot from becoming wedged.

(p) Positive-acting stop-blocks, derail devices, track skates, or other adequate means shall be installed wherever necessary to protect persons from runaway or moving railroad equipment.

(q) Switch throws shall be installed so as to provide adequate clearance for switchmen.

(r) Where necessary, bumper blocks or the equivalent shall be provided at all track dead ends.

§ 77.1606 Loading and haulage equipment; inspection and maintenance.

(a) Mobile loading and haulage equipment shall be inspected by a competent person before such equipment is placed in operation. Equipment defects affecting safety shall be recorded and reported to the mine operator.

(b) Carriers on aerial tramways, including loading and unloading mechanisms, shall be inspected each shift; brakes shall be inspected daily; ropes and supports shall be inspected as recommended by the manufacturer or as physical conditions warrant. Equipment defects affecting safety shall be reported to the mine operator.

(c) Equipment defects affecting safety shall be corrected before the equipment is used.

§ 77.1607 Loading and haulage equipment; operation.

(a) Vehicles shall follow at a safe distance; passing shall be limited to areas of adequate clearance and visibility.

(b) Mobile equipment operators shall have full control of the equipment while it is in motion.

(c) Equipment operating speeds shall be prudent and consistent with conditions of roadway, grades, clearance, visibility, traffic, and the type of equipment used.

(d) Cabs of mobile equipment shall be kept free of extraneous materials.

(e) Operators shall sit facing the direction of travel while operating equipment with dual controls.

(f) When an equipment operator is present, men shall notify him before getting on or off equipment.

(g) Equipment operators shall be certain, by signal or other means, that all persons are clear before starting or moving equipment.

(h) Where possible, aerial tramways shall not be started until the tramway operator has ascertained that everyone is in the clear.

(i) Dust control measures shall be taken where dust significantly reduces visibility of equipment operators.

(j) Dippers, buckets, loading booms, or heavy suspended loads shall not be swung over the cabs of haulage vehicles until the drivers are out of the cabs and in safe locations, unless the trucks are designed specifically to protect the drivers from falling material.

(k) Men shall not work or pass under the buckets or booms of loaders in operation.

(l) Tires shall be deflated before repairs on them are started and adequate means shall be provided to prevent wheel locking rims from creating a hazard during tire inflation.

(m) Electrically powered mobile equipment shall not be left unattended unless the master switch is in the off position, all operating controls are in the neutral position, and the brakes are set or other equivalent precautions are taken against rolling.

(n) Mobile equipment shall not be left unattended unless the brakes are set. The wheels shall be turned into a bank or berm, or shall be blocked, when such equipment is parked on a grade.

(o) Lights, flares, or other warning devices shall be posted when parked equipment creates a hazard to vehicular traffic.

(p) Dippers, buckets, scraper blades, and similar movable parts shall be secured or lowered to the ground when not in use.

(q) Shovel trailing cables shall not be moved with the shovel dipper unless cable slings or sleds are used.

(r) Equipment which is to be hauled shall be loaded and protected so as to prevent sliding or spillage.

(s) When moving between work areas, the equipment shall be secured in the travel position.

(t) Any load extending more than 4 feet beyond the rear of the vehicle body should be marked clearly with a red flag by day and a red light at night.

(u) Tow bars shall be used to tow heavy equipment and a safety chain shall be used in conjunction with each tow bar.

(v) Railroad cars shall be kept under control at all times by the car dropper. Cars shall be dropped at a safe rate and in a manner that will insure that the car dropper maintains a safe position while working and traveling around the cars.

(w) Railroad cars shall not be coupled or uncoupled manually from the inside of curves unless the railroad and cars are so designed to eliminate any hazard from coupling or uncoupling cars from inside of curves.

(x) Persons shall wear safety belts when dropping railroad cars.

(y) Railcars shall not be left on sidetracks unless ample clearance is provided for traffic on adjacent tracks.

(z) Parked railcars, unless held effectively by brakes, shall be blocked securely.

(aa) Railroad cars and all trucks shall be trimmed properly when they have been loaded higher than the confines of their cargo space.

(bb) When the entire length of a conveyor is visible from the starting switch, the operator shall visually check to make certain that all persons are in the clear before starting the conveyor. When the entire length of the conveyor is not visible from the starting switch, a positive audible or visible warning system shall be installed and operated to warn persons that the conveyor will be started.

(cc) Unguarded conveyors with walkways shall be equipped with emergency stop devices or cords along their full length.

(dd) Adequate backstops or brakes shall be installed on inclined-conveyor drive units to prevent conveyors from running in reverse if a hazard to personnel would be caused.

(ee) Aerial tram conveyor buckets shall not be overloaded, and feed shall be regulated to prevent spillage.

§ 77.1608 Dumping facilities.

(a) Dumping locations and haulage roads shall be kept reasonably free of water, debris, and spillage.

(b) Where the ground at a dumping place may fail to support the weight of a loaded dump truck, trucks shall be dumped a safe distance back from the edge of the bank.

(c) Adequate protection shall be provided at dumping locations where persons may be endangered by falling material.

(d) Grizzlies, grates, and other sizing devices at dump and transfer points shall be anchored securely in place.

(e) If truck spotters are used, they shall be well in the clear while trucks are backing into dumping position and dumping; lights shall be used at night to direct trucks.

Subpart R—Miscellaneous

§ 77.1700 Communications in work areas.

No employee shall be assigned, or allowed, or be required to perform work alone in any area where hazardous conditions exist that would endanger his safety unless he can communicate with others, can be heard, or can be seen.

§ 77.1701 Emergency communications; requirements.

(a) Each operator of a surface coal mine shall establish and maintain a communication system from the mine to the nearest point of medical assistance for use in an emergency.

(b) The emergency communication system required to be maintained under paragraph (a) of this section may be established by telephone or radio transmission or by any other means of prompt communication to any facility (for example, the local sheriff, the State highway patrol, or local hospital) which has available the means of communication with the person or persons providing emergency medical assistance or transportation in accordance with the provisions of paragraph (a) of this section.

§ 77.1702 Arrangements for emergency medical assistance and transportation for injured persons; reporting requirements; posting requirements.

(a) Each operator of a surface coal mine shall make arrangements with a

licensed physician, medical service, medical clinic, or hospital to provide 24-hour emergency medical assistance for any person injured at the mine.

(b) Each operator shall make arrangements with an ambulance service, or otherwise provide for 24-hour emergency transportation for any person injured at the mine.

(c) Each operator shall, on or before September 30, 1971, report to the Coal Mine Health and Safety District Manager for the district in which the mine is located the name, title and address of the physician, medical service, medical clinic, hospital, or ambulance service with whom arrangements have been made, or otherwise provided, in accordance with the provisions of paragraphs (a) and (b) of this section.

(d) Each operator shall, within 10 days after any change of the arrangements required to be reported under the provisions of this section, report such changes to the Coal Mine Health and Safety District Manager. If such changes involve a substitution of persons, the operator shall provide the name, title, and address of the person substituted together with the name and address of the medical service, medical clinic, hospital, or ambulance service with which such person or persons are associated.

(e) Each operator shall, immediately after making an arrangement required under the provisions of paragraphs (a) and (b) of this section, or immediately after any change, of such agreement, post at appropriate places at the mine the names, titles, addresses, and telephone numbers of all persons or services currently available under such arrangements to provide medical assistance and transportation at the mine.

[36 F.R. 9364, May 22, 1971, as amended at 36 F.R. 13143, July 15, 1971]

§ 77.1703 First aid training; supervisory employees.

On or before September 30, 1971, each operator of a surface coal mine shall conduct a first aid training course for selected supervisory employees at the mine, and report in writing to the District Manager the names and job titles of all supervisory employees so trained. Thereafter, each operator shall, within 60 days after the selection of a new supervisory employee to be trained, report in writing to the Coal Mine Health and Safety District Manager the name and job title of such employee and the

date on which such employee satisfactorily completed the first aid training course.

§ 77.1704 First aid training program; availability of instruction to all miners.

On or before December 30, 1971, each operator of a surface coal mine shall make available to all miners employed in the mine a course of instruction in first aid conducted by the operator or under the auspices of the operator, and such a course of instruction shall be made available to newly employed miners within 6 months after the date of employment.

§ 77.1705 First aid training program; retraining of supervisory employees; availability to all miners.

Beginning January 1, 1972, each operator of a surface coal mine shall conduct refresher first aid training programs each calendar year for all selected supervisory employees and make available refresher first aid training courses to all miners employed in the mine.

[36 F.R. 9364, May 22, 1971, as amended at 36 F.R. 13143, July 15, 1971]

§ 77.1706 First aid training program; minimum requirements.

(a) All first aid training programs required under the provisions of §§ 77.1703 and 77.1704 shall include 10 class hours of training in a course of instruction similar to that outlined in "First Aid, A Bureau of Mines Instruction Manual."

(b) Refresher first aid training programs required under the provisions of § 77.1705 shall include 5 class hours of refresher training in a course of instruction similar to that outlined in "First Aid, A Bureau of Mines Instruction Manual."

§ 77.1707 First aid equipment; location; minimum requirements.

(a) Each operator of a surface coal mine shall maintain a supply of the first aid equipment set forth in paragraph (b) of this section at or near each working place where coal is being mined, at each preparation plant and at shops and other surface installation where ten or more persons are regularly employed.

(b) The first aid equipment required to be maintained under the provisions of paragraph (a) of this section shall include at least the following:

- (1) One stretcher;

- (2) One broken-back board (if a splint-stretcher combination is used it will satisfy the requirements of both subparagraph (1) of this paragraph and this subparagraph (2));

- (3) Twenty-four triangular bandages (15 if a splint-stretcher combination is used);

- (4) Eight 4-inch bandage compresses;

- (5) Eight 2-inch bandage compresses;

- (6) Twelve 1-inch adhesive compresses;

- (7) An approved burn remedy;

- (8) Two cloth blankets;

- (9) One rubber blanket or equivalent substitute;

- (10) Two tourniquets;

- (11) One 1-ounce bottle of aromatic spirits of ammonia or 1 dozen ammonia ampules; and,

- (12) The necessary complements of arm and leg splints or two each inflatable plastic arm and leg splints.

(c) All first aid supplies required to be maintained under the provisions of paragraphs (a) and (b) of this section shall be stored in suitable, sanitary, dust tight, moisture proof containers and such supplies shall be accessible to the miners.

§ 77.1708 Safety program; instruction of persons employed at the mine.

On or before September 30, 1971, each operator of a surface coal mine shall establish and maintain a program of instruction with respect to the safety regulations and procedures to be followed at the mine and shall publish and distribute to each employee, and post in conspicuous places throughout the mine, all such safety regulations and procedures established in accordance with the provisions of this section.

[36 F.R. 9364, May 22, 1971, as amended at 36 F.R. 13143, July 15, 1971]

§ 77.1709 Safety training; inexperienced employees.

New employees shall be indoctrinated in safety rules and safe work procedures and inexperienced employees shall not be assigned to work duties until they have been trained thoroughly in safe work procedures related to the assigned work duties.

§ 77.1710 Protective clothing; requirements.

Each employee working in a surface coal mine or in the surface work areas of an underground coal mine shall be

required to wear protective clothing and devices as indicated below:

(a) Protective clothing or equipment and face-shields or goggles shall be worn when welding, cutting, or working with molten metal or when other hazards to the eyes exist.

(b) Suitable protective clothing to cover the entire body when handling corrosive or toxic substances or other materials which might cause injury to the skin.

(c) Protective gloves when handling materials or performing work which might cause injury to the hands; however, gloves shall not be worn where they would create a greater hazard by becoming entangled in the moving parts of equipment.

(d) A suitable hard hat or hard cap when in or around a mine or plant where falling objects may create a hazard. If a hard hat or hard cap is painted, non-metallic based paint shall be used.

(e) Suitable protective footwear.

(f) Snug-fitting clothing when working around moving machinery or equipment.

(g) Safety belts and lines where there is danger of falling; a second person shall tend the lifeline when bins, tanks, or other dangerous areas are entered.

(h) Lifejackets or belts where there is danger from falling into water.

(i) Seatbelts in a vehicle where there is a danger of overturning and where roll protection is provided.

[36 F.R. 9364, May 22, 1971, as amended at 36 FR 13143, July 15, 1971; 39 FR 7176, Feb. 25, 1974]

§ 77.1710-1 Distinctively colored hard hats or hard caps; identification for newly employed, inexperienced miners.

Hard hats or hard caps distinctively different in color from those worn by experienced miners shall be worn at all times by each newly employed, inexperienced miner when working in or around a mine or plant for at least one year from the date of his initial employment as a miner or until he has been qualified or certified as a miner by the State in which he is employed.

[39 FR 7176, Feb. 25, 1974]

§ 77.1711 Smoking prohibition.

No person shall smoke or use an open flame where such practice may cause a fire or explosion.

§ 77.1712 Reopening mines; notification; inspection prior to mining.

Prior to reopening any surface coal mine after it has been abandoned or declared inactive by the operator, the operator shall notify the Coal Mine Health and Safety District Manager for the district in which the mine is located, and an inspection of the entire mine shall be completed by an authorized representative of the Secretary before any mining operations in such mine are instituted.

§ 77.1713 Daily inspection of surface coal mine; certified person; reports of inspection.

(a) At least once during each working shift, or more often if necessary for safety, each active working area and each active surface installation shall be examined by a certified person designated by the operator to conduct such examinations for hazardous conditions and any hazardous conditions noted during such examinations shall be reported to the operator and shall be corrected by the operator.

(b) If any hazardous condition noted during an examination conducted in accordance with paragraph (a) of this section creates an imminent danger, the person conducting such examination shall notify the operator and the operator shall withdraw all persons from the area affected, except those persons referred to in section 104(d) of the Act, until the danger is abated.

(c) After each examination conducted in accordance with the provisions of paragraph (a) of this section, each certified person who conducted all or any part of the examination required shall enter with ink or indelible pencil in a book approved by the Secretary the date and a report of the condition of the mine or any area of the mine which he has inspected together with a report of the nature and location of any hazardous condition found to be present at the mine. The book in which such entries are made shall be kept in an area at the mine designated by the operator to minimize the danger of destruction by fire or other hazard.

(d) All examination reports recorded in accordance with the provisions of paragraph (c) of this section shall include a report of the action taken to abate hazardous conditions and shall be signed

or countersigned each day by at least one of the following persons:

- (1) The surface mine foreman;
 - (2) The assistant superintendent of the mine;
 - (3) The superintendent of the mine;
- or,
- (4) The person designated by the operator as responsible for health and safety at the mine.

Subpart S—Trolley Wires and Trolley Feeder Wires

§ 77.1800 Cutout switches.

Trolley wires and trolley feeder wires, shall be provided with cutout switches at intervals of not more than 2,000 feet and near the beginning of all branch lines.

§ 77.1801 Overcurrent protection.

Trolley wires and trolley feeder wires shall be provided with overcurrent protection.

§ 77.1801-1 Devices for overcurrent protection.

Automatic circuit interrupting devices that will deenergize the affected circuit upon occurrence of a short circuit at any point in the system will meet the requirements of § 77.1801.

§ 77.1802 Insulation of trolley wires, wires; guarding of trolley wires and trolley feeder wires, and bare signal trolley feeder wires.

Trolley wires, trolley feeder wires, and bare signal wires shall be adequately guarded:

- (a) At all points where men are required to work or pass regularly under the wires; and
- (b) At man-trip stations.

The Secretary or his authorized representative shall specify other conditions where trolley wires and trolley feeder wires shall be adequately protected to prevent contact by any person, or shall require the use of improved methods to prevent such contact. Temporary guards shall be provided where trackmen and other persons are required to work in proximity to trolley wires and trolley feeder wires.

Subpart T—Slope and Shaft Sinking

§ 77.1900 Slopes and Shafts; approval of plans.

(a) Each operator of a coal mine shall prepare and submit for approval by the Coal Mine Health and Safety District Manager for the district in which the

mine is located, a plan providing for the safety of workmen in each slope or shaft that is commenced or extended after June 30, 1971. The plan shall be consistent with prudent engineering design. The methods employed by the operator shall be selected to minimize the hazards to those employed in the initial or subsequent development of any such slope or shaft, and the plan shall include the following:

(1) The name and location of the mine, and the Mining Enforcement and Safety Administration mine identification number, if known;

(2) The name and address of the mine operator;

(3) A description of the construction work and methods to be used in the construction of the slope or shaft, and whether part or all of the work will be performed by a contractor and a description of that part of the work to be performed by a contractor.

(4) The elevation, depth and dimensions of the slope or shaft;

(5) The location and elevation of the coalbed;

(6) The general characteristics of the strata through which the slope or shaft will be developed;

(7) The type of equipment which the operator proposes to use when the work is to be performed by the operator. When work is to be performed by a contractor the operator shall, as soon as known to him, supplement the plan with a description of the type of equipment to be used by the contractor;

(8) The system of ventilation to be used; and

(9) Safeguards for the prevention of caving during excavation.

§ 77.1900-1 Compliance with approved slope and shaft sinking plans.

Upon approval by the Coal Mine Health and Safety District Manager of a slope or shaft sinking plan, the operator shall adopt and comply with such plan.

§ 77.1901 Preshift and onshift inspections; reports.

(a) Examinations of slope and shaft areas shall be made by a certified person for hazardous conditions, including tests for methane and oxygen deficiency:

(1) Within 90 minutes before each shift;

(2) At least once on any shift during which men are employed inside any slope or shaft during development; and

(3) Both before and after blasting.

(b) The surface area surrounding each slope and shaft shall be inspected by a certified person and all hazards in the vicinity shall be corrected before men are permitted to enter the excavation.

(c) All hazards found during any pre-shift or onshift inspection shall be corrected before men are allowed to enter, or continue to work in such slope or shaft. If hazardous conditions cannot be corrected, or excessive methane concentrations cannot be diluted, the excavation shall be vacated and no person shall be permitted to reenter the slope or shaft to continue excavation operations until the hazardous condition has been abated.

(d) No work shall be performed in any slope or shaft, no drilling equipment shall be started, and no electrical equipment shall be energized if the methane content in such slope or shaft is 1.0 volume per centum, or more.

(e) Nothing in this § 77.1901 shall prevent the specific assignment of men in the slope or shaft for purposes of abating excessive methane concentrations or any other hazardous condition.

(f) The results of all inspections conducted in accordance with the provisions of paragraph (a) of this section shall be recorded in a book approved by the Secretary.

§ 77.1901-1 Methane and oxygen deficiency tests; approved devices.

Tests for oxygen deficiency shall be made with a permissible flame safety lamp or other means approved by the Secretary, and tests for methane shall be made with a methane detector approved by the Secretary.

§ 77.1902 Drilling and mucking operations.

Diesel-powered equipment used in the drilling, mucking, or other excavation of any slope or shaft shall be permissible, and such equipment shall be operated in a permissible manner and shall be maintained in a permissible condition.

§ 77.1902-1 Permissible diesel-powered equipment.

Diesel-powered equipment which has been approved by the Bureau of Mines or the Mining Enforcement and Safety Administration under Part 36 of this chapter (Bureau of Mines Schedule 31) is permissible under the provisions of this section.

§ 77.1903 Hoists and hoisting; minimum requirements.

(a) Hoists employed in transporting men and material during drilling, mucking, or other excavating operations in any slope or shaft shall have rated capacities consistent with the loads to be handled and the recommended safety factors of the ropes used in such hoists.

(b) The American National Standards Institute, "Specifications For The Use Of Wire Ropes For Mines," M 11.1-1960, or the latest revision thereof, shall be used as a guide in the use, selection, installation, and maintenance of wire ropes used for hoisting.

(c) Each hoist employed in drilling, mucking, or other excavating operations shall be equipped with an accurate and reliable indicator of the position of the cage, platform, or bucket, which shall be installed in clear view of the hoist operator.

§ 77.1904 Communications between slope and shaft bottoms and hoist operators.

(a) Two independent means of signaling shall be provided between the hoistman and all points in a slope or shaft where men are required to work. At least one of these means shall be audible to the hoistman. Signal codes used in any communication system shall be posted conspicuously at each slope and shaft.

(b) Signaling systems used for communication between slopes and shafts and the hoistman shall be tested daily.

§ 77.1905 Hoist safeguards; general.

(a) Hoists used to transport persons shall be equipped with brakes capable of stopping and holding the cage, bucket, platform, or other device when fully loaded.

(b) When persons are transported by a hoist, a second person familiar with and qualified to stop the hoist shall be in attendance, except where the hoist is fully equipped with overspeed, overwind, and automatic stop devices.

§ 77.1906 Hoists; daily inspection.

(a) Hoists used to transport persons shall be inspected daily, and each such inspection shall include examination of the headgear (headframe, sheave wheels, etc.), ropes, connections, links and chains, and other facilities.

(b) Prior to each working shift, and before a hoist is returned to service after it has been out of normal service for any

reason, it shall be operated by the hoistman through one complete cycle of operation before any person is permitted to be transported.

(c) The results of all inspections conducted in accordance with this section shall be recorded in a book approved by the Secretary, and shall be signed by the person making the inspection and shall be signed or countersigned by any of the persons listed in paragraph (d) of § 77.1713.

§ 77.1907 Hoist construction; general.

(a) Hoisting ropes shall be equipped with a spelter-filled socket or a thimble with an adequate number of clamps properly spaced and installed along the rope.

(b) Cages, buckets, or slope cars when used for hoisting or lowering men shall be provided with two bridle chains or cables connected securely to the rope at least 3 feet above the socket or thimble and which are securely fastened to the cage, bucket or slope car.

(c) Where hooks are used to attach cages or buckets to the socket or thimble of a hoisting rope, they shall be self-closing.

(d) Hoisting ropes shall contain at least three full turns on the hoist drum when the rope is extended to its maximum working length. At least one full turn of the hoist rope shall be placed around the drum shaft or around the spoke of a free drum and both shall be fastened securely by means of clamps.

§ 77.1908 Hoist installations; use.

(a) Where men are transported by means of a hoist and the depth of the shaft exceeds 50 feet, the hoist rope shall be suspended from a substantial hoisting installation which shall be high enough to provide working clearance between the bottom of the sheave and the top of the cage or bucket.

(b) Where men are transported by means of a hoist and the depth of the shaft exceeds 100 feet, temporary shaft guides and guide attachments, or other no less effective means, shall be installed to prevent the cage, platform, or bucket from swinging.

(c) All guides and guide attachments, or other no less effective means, installed in accordance with paragraph (b) of this section shall be maintained to a depth of not less than 75 feet from the bottom of the shaft.

(d) Where crossheads are used, the cage, platform, or bucket shall not be hung more than 10 feet below the crosshead.

(e) Where men are required to embark or disembark from a cage, platform or bucket suspended over or within a shaft, a loading platform shall be installed to insure safe footing.

(f) During the development of each slope or shaft, either a ladder or independently powered auxiliary hoist shall be provided to permit men to escape quickly in the event of an emergency.

(g) No person shall be permitted to ride the rim of any bucket or on the top of a loaded bucket.

(h) The number of persons permitted to ride in cages, skips, or buckets shall be limited so as to prevent overcrowding.

(i) Persons shall not be permitted to ride on a cage, skip, or bucket with tools or materials, except when necessary to handle equipment while in transit. Materials shall be secured to prevent shifting while being hoisted.

(j) The speed of buckets transporting persons shall not exceed 500 feet per minute and not more than 200 feet per minute when within 100 feet of any stop.

(k) A notice of established speeds shall be posted in clear view of the hoistman.

(l) Conveyances being lowered in a shaft in which men are working shall be stopped at least 15 feet above such men and shall be lowered further only after the hoistman has received a signal that all men who may be endangered by the conveyance are in the clear.

(m) No skip or bucket shall be raised or lowered in a slope or shaft until it has been trimmed to prevent material from falling back down the slope or shaft.

(n) Measures shall be taken to prevent material from falling back into the shaft while buckets or other conveyances are being unloaded.

(o) Properly attached safety belts shall be worn by all persons required to work in or over any shaft where there is a drop of 10 or more feet, unless other acceptable means are provided to prevent such persons from falling into the shaft.

§ 77.1908-1 Hoist operation; qualified hoistman.

Hoists shall be under the control of and operated by a qualified hoistman when men are in a slope or shaft.

§ 77.1909 Explosives and blasting; use of permissible explosives and shot-firing units.

Except as provided in § 77.1909-1, only permissible explosives and permissible shot-firing units shall be used in sinking shafts and slopes.

§ 77.1909-1 Use of nonpermissible explosives and nonpermissible shot-firing units; approval by Health and Safety District Manager.

Where the Coal Mine Health and Safety District Manager has determined that the use of nonpermissible explosives and nonpermissible shot-firing units will not pose a hazard to any person during the development of a slope or shaft, he may, after written application by the operator, approve the use of such explosives and shot-firing units and issue a permit for the use of such explosives and devices setting forth the safeguards to be employed by the operator to protect the health and safety of any person exposed to such blasting.

§ 77.1910 Explosives and blasting; general.

(a) Light and power circuits shall be disconnected or removed from the blasting area before charging and blasting.

(b) All explosive materials, detonators, and any other related blasting material employed in the development of any slope or shaft shall be stored, transported, carried, charged, and fired in accordance with the provision of Subpart N, "Explosives and Blasting," of this Part 77. Except as provided in paragraph (c) of this section, all shots shall be fired from the surface.

(c) Where tests for methane have been conducted and methane has not been found and only permissible blasting units are being employed, shots may be fired from an upper level of the slope or shaft.

(d) Except as provided in paragraph (c) of this section, all men shall be removed from the slope or shaft prior to blasting.

(e) Blasting areas in slopes or shafts shall be covered with mats or other suitable material when the excavation is too shallow to retain blasted material.

(f) Where it is impracticable to prepare primers in the blasting area, primers may be prepared on the surface and carried into the shaft in specially constructed, insulated, covered containers.

(g) No other development operation shall be conducted in a shaft or at the face of a slope while drill holes are being charged and until after all shots have been fired.

(h) The sides of the slope or shaft between the overhead platform and the bottom where men are working shall be examined after each blast and loose material removed.

(i) Loose rock and other material shall be removed from timbers and platforms after each blast before men are lowered to the shaft bottom.

§ 77.1911 Ventilation of slopes and shafts.

(a) All slopes and shafts shall be ventilated by mechanical ventilation equipment during development. Such equipment shall be examined before each shift and the quantity of air in the slope or shaft measured daily by a certified person and the results of such examinations and tests recorded in a book approved by the Secretary.

(b) Ventilation fans shall be:

(1) Installed on the surface;

(2) Installed in fireproof housing and connected to the slope or shaft opening with fireproof air ducts;

(3) Designed to permit the reversal of the air current, and located in an area which will prevent a recirculation of air from the slope or shaft or air contamination from any other source;

(4) Equipped with an automatic signal device designed to give an alarm in the event the fan slows or stops which can be seen or heard by any person on duty in the vicinity of the fan, except where fans are constantly attended.

(5) Offset not less than 15 feet from the shaft; and

(6) Equipped with air ducts which are fire resistant and maintained so as to prevent excessive leakage of air;

(1) Flexible ducts shall be constructed to permit ventilation by either exhausting or blowing methods and when metal air ducts are used, they shall be grounded effectively to remove static and other electrical charges;

(ii) Ducts shall extend as close to the bottom as necessary to ventilate properly.

(c) A qualified person, designated by the operator, shall be assigned to maintain each ventilating system.

(d) The fan shall be operated continuously when men are below the surface. Any accidental stoppage or reduction in airflow shall be corrected

promptly; however, where repairs cannot be made immediately, development work below the surface shall be stopped and all the men not needed to make necessary repairs shall be removed to the surface.

§ 77.1912 Ladders and stairways.

(a) Substantial stairways or ladders shall be used during the construction of all shafts where no mechanical means are provided for men to travel.

(b) Landings at intervals of not more than 30 feet shall be installed.

(c) Shaft ladders shall project 3 feet above the collar of the shaft, and shall be placed at least 3 inches from the side of the shaft.

§ 77.1913 Fire-resistant wood.

Except for crossties, timbers, and other wood products which are permanently installed in slopes and shafts, shall be fire resistant.

§ 77.1914 Electrical equipment.

(a) Electric equipment employed below the collar of a slope or shaft during excavation shall be permissible and shall be maintained in a permissible condition.

(b) The insulation of all electric conductors employed below the collar of any slope or shaft during excavation shall be of the flame resistant type.

(c) Only lamps and portable flood lights approved by the Bureau of Mines or the Mining Enforcement and Safety Administration under Part 19 and Part 20 of this chapter (Bureau of Mines Schedules 6D and 10C) shall be employed below the collar of any slope or shaft.

§ 77.1915 Storage and handling of combustible materials.

(a) Compressed and liquefied gas, oil, gasoline, and other petroleum products shall not be stored within 100 feet of any slope or shaft opening.

(b) Other combustible material and supplies shall not be stored within 25 feet of any slope or shaft opening.

(c) Pyritic slates, bony coal, culm or other material capable of spontaneous combustion shall not be used for fill or as surfacing material within 100 feet of any slope or shaft opening.

(d) Areas surrounding the opening of each slope or shaft shall be constructed to insure the drainage of flammable liquids away from the slope or shaft in the event of spillage.

(e) Oily rags, waste, waste paper, and other combustible waste material dis-

posed of in the vicinity of any slope or shaft opening shall be stored in closed containers until removed from the area.

§ 77.1916 Welding, cutting, and soldering; fire protection.

(a) One portable fire extinguisher shall be provided where welding, cutting, or soldering with arc or flame is performed.

(b) Welding, cutting, or soldering with arc or flame within or in the vicinity of any slope or shaft, except where such operations are performed in fireproof enclosures, shall be done under the supervision of a qualified person who shall make a diligent search within or in the vicinity of the slope or shaft for fire during and after such operations.

(c) Before welding, cutting, or soldering is performed in any slope or shaft designed to penetrate into any coalbed below the surface, an examination for methane shall be made by a qualified person with a device approved by the Secretary for detecting methane. Examination for methane shall be made immediately before and periodically during welding, cutting, or soldering and such work shall not be permitted to commence or continue in air which contains 1.0 volume per centum or more of methane.

(d) Noncombustible barriers shall be installed below welding, cutting, or soldering operations in or over a shaft.

PART 80—NOTIFICATION, INVESTIGATION, REPORTS AND RECORDS OF ACCIDENTS

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80.32 Monthly Coal Employment and Production Report.

80.33 Place to file reports; initial supply; additional forms.

AUTHORITY: The provisions of this Part 80 issued under secs. 103(e), 111, 608, 83 Stat. 747; 30 U.S.C. 812.

SOURCE: The provisions of this Part 80 appear at 35 F.R. 19999, Dec. 31, 1970, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 38 FR 18667, July 13, 1973.

Subpart A—Definitions

§ 80.1 Definitions.

As used in this Part 80:

(a) "Coal mine" means an area of land and all structures, facilities, machinery, tools, equipment, shafts, slopes, tunnels, excavations, and other property, real or personal, placed upon, under, or above, the surface of such land by any person, used in, or to be used in, or resulting from, the work of extracting in such area bituminous coal, lignite, or anthracite from its natural deposits in the earth by any means or method, and the work of preparing the coal so extracted, and includes custom coal preparation facilities.

(b) "Accident" means (1) the death of, or any injury to, any person (whether or not time is lost); (2) a mine explosion, mine ignition, mine fire, or mine inundation; (3) an unintentional roof fall (except in abandoned panels or in areas which are inaccessible or unsafe for inspection); (4) any collapse of a highwall in an active working of a surface mine; (5) an unintentional or incomplete detonation of explosives, including blasting agents; (6) a coal outburst; (7) the entrapment of any person; (8) damage to shafts or ventilation facilities or to hoisting or haulage facilities; (9) an event at a mine which causes the death of, or bodily injury to, persons other than persons on the mine property; or (10) any other event that could have resulted in death or injury had any person been in the immediate area.

(c) "Injury" means any "fatal injury," "nonfatal injury," or "other injury" as defined in paragraphs (d), (e), and (g) of this § 80.1 or occupational illness suffered by a person which arises out of and in the course of his work.

(d) "Fatal injury" means any work injury resulting in death regardless of the time intervening between injury and death.

(e) "Nonfatal injury" means any work injury which does not result in death but which either results in any permanent impairment to the injured person or causes the injured person to lose one full day or more from work after the day of injury. As used in this definition "permanent impairment" means total incapacitation of the injured person for any gainful work, or total or partial loss of, or loss of use of, any member or function of the body.

(f) "Disabling injury" means either a nonfatal injury as defined in paragraph (e) of this section or a fatal injury.

(g) "Other injury" means a work injury other than a disabling injury which requires treatment by a physician, or hospitalization for observation, or assignment to another regularly established job, or restricts work or motion. However, "other injury" does not include any injury requiring only first aid treatment.

(h) "Occupational illness" means any abnormal condition or disorder, other than one resulting from an occupational injury, caused by exposure to environmental factors associated with employment. It includes acute and chronic illnesses or diseases which may be caused by inhalation, absorption, ingestion, or direct contact, and which fall within the listing under the heading "Occupational Illness" on Form No. 6-347.

[37 FR 5753, Mar. 21, 1972]

Subpart B—Notification of Accidents

§ 80.10 Scope.

Section 103(e) of the Federal Coal Mine Health and Safety Act of 1969 (30 U.S.C. 813(e)), requires that in the event of any accident occurring in a coal mine, the operator shall notify the Secretary of the Interior thereof and shall take appropriate measures to prevent the destruction of any evidence which would assist in investigating the cause or causes thereof. The regulations in this Subpart B provide for the immediate notification of the Mining Enforcement and Safety Administration, Department of the Interior, of the occurrence of any accident described in § 80.11, in order to afford the Administration an opportunity to conduct a prompt investigation. The submission of reports which are required by Subpart D of this part will constitute adequate notification of the Administration with respect to accidents other than those described in § 80.11.

§ 80.11 Notification by operator.

The operator of a coal mine shall, using the fastest available means of communication, immediately notify the District or Subdistrict Coal Mine Safety Office of the Mining Enforcement and Safety Administration of the District in which the mine is located of the occurrence of any of the following accidents:

- (a) A fatal injury;
- (b) A serious nonfatal injury that the operator or a medical officer believes could result in the death of the injured person;
- (c) A death occurring on mine property;
- (d) A mine fire not extinguished within 30 minutes;
- (e) A mine explosion;
- (f) An ignition of gas or dust or combination thereof;
- (g) A mine inundation;
- (h) A coal outburst of sufficient intensity that it appears likely that, had any persons been in the immediate area, death or injury could have occurred;
- (i) A fall of roof, face, or rib of sufficient magnitude to affect ventilation or the passage of men on active working sections and a fall of roof at or above the anchorage zone when roof bolts are used for control of roof;
- (j) Any collapse of a highwall in an active working of a surface mine;
- (k) An unintentional or incomplete detonation of explosives, including blasting agents;
- (l) The entrapment of any person;
- (m) Damage to shafts and ventilation facilities;
- (n) Damage to hoisting or haulage facilities used for the transportation of men, when such damage interferes with its use for the transportation of men; or
- (o) Any physical event at a mine which causes death to persons other than persons on the mine property.

§ 80.12 Investigation by Mining Enforcement and Safety Administration.

Following any notification received in accordance with § 80.11, the Coal Mine Health and Safety District or Subdistrict Manager shall determine whether an investigation of the accident will be conducted by the Mining Enforcement and Safety Administration. If he determines that an investigation will be conducted, he shall promptly advise the operator of the approximate date and time of

such investigation and instruct him, to the extent compatible with rescue and recovery work, to take appropriate measures to preserve any evidence which might assist in determining the cause or causes of the accident.

Subpart C—Operator's Investigation and Records of Accidents**§ 80.20 Scope.**

Section 111(a) of the Federal Coal Mine Health and Safety Act of 1969 (30 U.S.C. 821(a)), requires that all accidents shall be investigated by the operator or his agent to determine the cause and the means of preventing a recurrence, and that records of such accidents and investigations shall be kept, and the information made available to the Secretary or his representative, and the appropriate State agency. Section 111(a) of the Act also requires that such records shall be open for inspection by interested persons and that the records shall include man-hours worked and shall be reported for periods determined by the Secretary of the Interior. The regulations in this Subpart C prescribe the nature and the extent of the information to be included in such records, and the period and manner in which reports of accidents so recorded shall be submitted to the Secretary.

§ 80.21 Investigation.

The operator's investigation shall develop sufficient information to pinpoint in detail the initiating cause and all subsequent or following events which contributed to or resulted in the accident. Whenever possible working notes made during the course of the investigation should be retained as a part of the record.

§ 80.22 Written record.

(a) The written record of each investigation of an accident shall contain:

- (1) An identification of, and correlation with, the record or records of the accident, injury, or occupational illness reported and required to be maintained by § 80.31.
- (2) The date and hour upon which the accident occurred.
- (3) The date and hour the investigation was started.
- (4) The name of the person or persons who made the investigation.
- (5) The specific location of the accident and a description of the location.

(6) Names, occupation at the time of the accident, and pertinent occupational experience for all persons who received disabling injuries and other injuries.

(7) A narrative description of the accident, including all pertinent related events prior to the accident; measurements of any dimension or clearance; type of equipment or machinery; noise level, visibility, lighting (in general terms); any identifiable human behavioral factors contributing to the accident; or any other element contributing to or related to the accident.

(8) A description of the steps taken, or to be taken in the future to avoid a recurrence, including, where appropriate, suggestions for modification or improvement in operating rules and regulations, working rules and regulations, safety standards, modification of equipment, training of personnel, or any other changes needed to prevent recurrence of the accident.

(b) Additional records shall be kept as follows of all unintentional roof falls of a size that would restrict ventilation or the passage of men:

(1) A plot of the roof fall on a mine map.

(2) A rough sketch or sketches of suitable scale showing the dimensions of the fall, the type and location of the roof support used, the type and thickness of the strata above the coalbed, and a statement of the depth of overburden in the affected area. Abnormalities in the immediate roof structure also shall be located and described.

[35 FR 19999, Dec. 31, 1970, as amended at 37 FR 5753, Mar. 21, 1972]

§ 80.23 Maintenance of records.

The written records of investigation of accidents required by this Subpart C shall be maintained at the mine for a period of 5 years from the date of the accident and shall be open for inspection by interested persons. A copy of the written record of each investigation of an accident made under § 80.22 shall be furnished to the Mining Enforcement and Safety Administration upon request by a Coal Mine Health and Safety District Manager.

[37 FR 5753, Mar. 21, 1972]

§ 80.24 Reporting of accident, injury, occupational illness.

A report of the accident, injury, or occupational illness investigated as required by this Subpart C shall be made to

the Mining Enforcement and Safety Administration in the manner and at the times prescribed in Subpart D of this part.

[37 FR 5753, Mar. 21, 1972]

Subpart D—Operator's Reports to the Mining Enforcement and Safety Administration

§ 80.30 Scope.

Pursuant to section 111(b) of the Federal Coal Mine Health and Safety Act (30 U.S.C. 821(b)), the regulations in this Subpart D prescribe additional records of accidents to be maintained, the information to be recorded therein, and the time and manner in which information on accidents is to be reported to the Secretary of the Interior.

§ 80.31 Coal Accident, Injury, and Illness Report.

(a) The operator of a coal mine shall maintain at the mine office a Coal Accident, Injury, and Illness Report (Form 6-347) on which there shall be entered and recorded specified information with respect to each accident, and each resultant injury by date of occurrence, and each occupational illness by date of diagnosis or occurrence. The Coal Accident, Injury, and Illness Report is organized to facilitate the recording and completion of information for each occurrence. The operator's copy (white) shall be maintained at the mine for a period of 5 years from the date of occurrence or diagnosis, whichever is applicable, and shall be open for inspection by interested persons.

(b) The Coal Accident, Injury, and Illness Report shall consist of a set of three cards: An original (white) operator's copy, and two carbon copies (one pink and one green), which shall be maintained, filled in, and disposed of in accordance with the provisions of this Subpart D.

(c) Promptly after an accident or injury occurs, or an occupational illness occurs or is diagnosed, one set of cards for each accident, injury, or occupational illness shall be filled out by either the principal officer in charge of health and safety at the mine after consultation with the immediate supervisor of the injured or ill person or of the area of the mine where the accident, injury, or illness occurs, or by the immediate supervisor of the injured or ill person or of the area of the mine where the accident, injury, or illness occurs. A single

accident, injury, or illness shall be included and recorded on one set of cards. Where more than one person is injured in the same accident, or is affected simultaneously with the same occupational illness, a separate and additional set of cards shall be used and completed for each person injured or affected.

(d) Coal Accident, Injury, and Illness Reports shall be retained, completed and information recorded, disposed and distributed and mailed to the Mining Enforcement and Safety Administration as follows:

(1) Promptly after the occurrence of an accident, injury, or illness, the operator shall record the information required, and upon completion of the recording of the information shall retain the original (white) card for the operator's records and files.

(2) If an accident does not result in injury to any person, the operator, after recording the information required upon the original (white) card and the carbon copy (pink and green) cards, shall discard the pink card copy and promptly mail the properly filled in and completed green card copy to the Mining Enforcement and Safety Administration.

(3) If an occupational illness occurs, the operator shall record the required information and complete one set of cards for each illness. The operator shall—

(i) Enter the date of the initial diagnosis of the illness; or

(ii) Enter the date of the first day of absence of the employee in connection with which the illness was diagnosed if the absence occurs before the diagnosis is made; and

(iii) Proceed in accordance with subparagraphs (4), (5), and (6) of this paragraph.

(4) If an accident results in a personal injury or if an illness occurs or is diagnosed, the operator shall retain the pink and green cards for a period of time not to exceed 72 hours after the occurrence of the injury or illness, or diagnosis of an illness, pending the return to work of the person affected. Depending on whether the person affected does, or does not, return to work within the period of 72 hours the operator shall proceed in accordance with subparagraphs (5) or (6) of this paragraph.

(5) If the injured or ill person returns to his regular job within 72 hours following an accident, or occurrence or diagnosis of an occupational illness, the op-

erator shall enter the "Total number of lost work days," the "Number lost from regular job," the "Date returned to work," and other relevant data on the white and green cards, and promptly mail the green card to the Mining Enforcement and Safety Administration, and discard the pink card.

(6) If the injured or ill person has not returned to his regular job within 72 hours following an accident, or occurrence or diagnosis of an occupational illness, the operator shall leave blank the spaces designated "Total number of lost work days," "Number lost from regular job," "Date return to work," and also those spaces for other relevant but unknown data or information, and promptly upon the expiration of the period of 72 hours the operator shall mail the green card to the Mining Enforcement and Safety Administration. Thereafter, when the person returns to his regular job, the operator shall enter the total number of lost work days, the number of days lost from regular job, the date the person returned to work, and complete and record all other relevant data or information in the spaces provided on the white and pink cards, and mail the pink card to the Mining Enforcement and Safety Administration. [37 FR 5753, Mar. 21, 1972]

§ 80.32 Monthly Coal Employment and Production Report.

On or before the 15th day of each month, the operator of a coal mine in which one or more men are employed on any calendar day of the month shall file with the Mining Enforcement and Safety Administration a Monthly Coal Employment and Production Report (Form 6-348). Monthly Coal Employment and Production Reports shall be made by all mines for each month, or portion thereof, in which the mine is in operation even though the mine may be idle for all or a portion of the month. No report will be required from a mine which has been permanently closed or abandoned, except for the portion of a month during which the mine may have been in operation. [37 FR 5754, Mar. 21, 1972]

§ 80.33 Place to file reports; initial supply; additional forms.

All reports required by this Subpart D shall be mailed to the address printed on the green copy of Form 6-347, and on the copy of Form 6-348, and on envelopes to be supplied by the Mining En-

forcement and Safety Administration for the mailing of the pink copy of Form 6-347. An initial supply of the Coal Accident, Injury, and Illness Report (Form 6-347) and the Monthly Coal Employment and Production Report (Form 6-348) and preaddressed envelopes will be mailed to each operator. Additional report forms and envelopes may be obtained as needed, upon request, from the Coal Mine Health and Safety District or Subdistrict Offices of the Mining Enforcement and Safety Administration of the District or Subdistrict in which the mine is located.

[37 FR 5754, Mar. 21, 1972]

PART 81—PROCEDURES FOR IDENTIFICATION OF REPRESENTATIVES OF MINERS AT MINES

Sec.

- 81.1 Definitions.
- 81.2 Filing procedures.
- 81.3 Posting of certificate at mine.
- 81.4 Withdrawal of certificate.
- 81.5 Effect of filing of certificate.
- 81.6 Multiple representatives.

AUTHORITY: The provisions of this Part 81 issued under sections 5(f)(1), 101(c), 101(d), 101(k), 103(g), 103(h), 104(d)(3), 104(h)(1), 105(a), 107(b), 109(a)(4), 110(b)(1), 110(b)(2), 301(c), 301(d), 302(a), 305(b), 312(b), 505, and 508 of the Federal Coal Mine Health and Safety Act of 1969 (Public Law 91-173); 42 U.S.C. 2711.

SOURCE: The provisions of this Part 81 appear at 36 F.R. 21406, Nov. 9, 1971, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 38 FR 18668, July 13, 1973.

§ 81.1 Definitions.

As used in this Part 81:

(a) "Act" means the Federal Coal Mine Health and Safety Act of 1969.

(b) "Representative of the miners" means any person or organization which represents two or more miners at a coal mine for purpose of the Act.

§ 81.2 Filing procedures.

(a) Any person or organization which desires to be a representative of miners shall file with the Administrator, Mining Enforcement and Safety Administration, Department of the Interior, Washington, D.C. 20240, and serve upon the operator of the coal mine a notarized certificate setting forth:

(1) The name and mailing address of the person or organization.

(2) The name and address of the coal mine in which the miners represented

are working and the Mining Enforcement and Safety Administration identification number for the mine, if known.

(3) A statement that he is the representative of the miners at the mine for purposes of collective bargaining or that he has written authorization from two or more miners at the mine to represent them under the Act.

(4) A statement that a copy of the certificate was served upon the operator.

(b) Each certificate shall be kept by the Mining Enforcement and Safety Administration in an open file for public inspection. The Mining Enforcement and Safety Administration shall maintain a complete and current list of the names and mailing address of each representative of the miners and the mine in which the miners are working.

(c) The Mining Enforcement and Safety Administration may require a representative of the miners to submit evidence of representation, including authorization from the miners.

§ 81.3 Posting of certificate at mine.

Each certificate shall be permanently posted by the operator on the mine bulletin board until withdrawn under § 81.4.

§ 81.4 Withdrawal of certificate.

(a) A certificate shall be withdrawn by a representative of the miners who is no longer able to comply with the requirements of § 81.2. A certificate may be withdrawn by a representative of the miners at any time. Notice of withdrawal shall be given to the Administration, in writing, and a copy furnished to the operator by the representative of the miners.

(b) The Administration may strike a certificate from its files for noncompliance with these procedures.

§ 81.5 Effect of filing of certificate.

Representatives who file the certificate under this part shall be entitled to receive notice and exercise the rights of a representative of miners under the Act.

§ 81.6 Multiple representatives.

More than one representative of miners at a particular mine may file a certificate of representation. Where the presence of multiple representatives at an inspection, investigation or administrative proceeding may impair performance of the enforcement responsibilities of the Department of the Interior, the representatives may be required to designate a single representative.

PART 82—NOTIFICATION OF LEGAL IDENTITY

Subpart A—Definitions

Sec.

82.1 Definitions.

Subpart B—Notification of Legal Identity

82.10 Scope.

82.11 Notification by operator.

82.12 Changes; notification by operator.

82.13 Failure to notify.

Subpart C—Operator's Report to the Bureau of Mines

82.20 Legal Identity Report.

AUTHORITY: The provisions of this Part 82 issued under secs. 107(d), 111(b), and 508 of the Federal Coal Mine Health and Safety Act of 1969 (30 U.S.C. 817(d), 821(b), 957).

SOURCE: 37 FR 26309, Dec. 9, 1972, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 38 FR 18668, July 13, 1973.

Subpart A—Definitions

§ 82.1 Definitions.

As used in this part:

(a) "Operator" means any owner, lessee, or other person who operates controls, or supervises a coal mine.

(b) "Person" means any individual, partnership, association, corporation, firm, subsidiary of a corporation, or other organization.

(c) "Coal mine" means an area of land and all structures, facilities, machinery, tools, equipment, shafts, slopes, tunnels, excavations, and other property, real or personal, placed upon, under, or above the surface of such land by any person, used in, or to be used in, or resulting from, the work of extracting in such area bituminous coal, lignite, or anthracite from its natural deposits in the earth by any means or method, and the work of preparing the coal so extracted, and includes custom coal preparation facilities.

Subpart B—Notification of Legal Identity

§ 82.10 Scope.

Section 107(d) of the Federal Coal Mine Health and Safety Act of 1969 (30 U.S.C. 817(d)), requires each operator of a coal mine to file with the Secretary of the Interior the name and address of such mine, the name and address of the person who controls or operates the mine, and any revisions in such names

and addresses. Section 111(b) of the Act (30 U.S.C. 821(b)) requires the operator of a coal mine to provide such information as the Secretary of the Interior may reasonably require from time to time to enable the Secretary to perform his functions under the Act. The regulations in this Subpart B provide for the notification to the Mining Enforcement and Safety Administration of the legal identity of the operator of a coal mine and the reporting of all changes in the legal identity of the operator as they occur. The submission of the properly completed legal identity report required under Subpart C of this part will constitute adequate notification of legal identity to the Mining Enforcement and Safety Administration.

§ 82.11 Notification by operator.

(a) Not later than 30 days after the effective date of this part, the operator of a coal mine shall, in writing, notify the Coal Mine Health and Safety District Manager of the Mining Enforcement and Safety Administration in the district in which the mine is located of the legal identity of the operator in accordance with the applicable provisions of paragraphs (b), (c), (d), or (e) of this section.

(b) If the operator is a sole proprietorship, the operator shall state: (1) His full name and address; (2) the name of the mine or mines and the Federal mine identification number(s), if known; and, (3) the full name, address, and trade name, if any, of the proprietorship.

(c) If the operator is a partnership, the operator shall state: (1) The name and address of the mine or mines and the Federal mine identification number(s), if known; (2) the full name and address of all partners; and, (3) the trade name, if any, and the address of the partnership.

(d) If the operator is a corporation, the operator shall state: (1) The name and address of the mine or mines and the Federal mine identification number(s), if known; (2) the full name and address of the corporation and the State of incorporation; (3) the full name and address of each officer and director of the corporation; (4) whether such corporation is a domestic or foreign corporation in the State in which the mine or mines are located; (5) the full name and address of the registered or resident agent(s) for service of process pursuant to State law for each mine, if any; and,

(6) if the corporation is a subsidiary corporation, the operator shall state the full name, address, and State of incorporation of the parent corporation.

(e) If the operator is any business organization other than a sole proprietorship, partnership, or corporation, the operator shall state: (1) The legal identity of the organization; (2) the name of the mine or mines and the Federal mine identification number(s), if known; (3) the address of the organization; (4) the name and address of each individual who has an ownership interest in the organization; (5) the name and address of the responsible official(s) of the organization to act and the agent for service of process; and, (6) the name and address of the principal organization officials or members.

§ 82.12 Changes; notification by operator.

Within 30 days after the occurrence of any change in the information required by § 82.11, the operator of a coal mine shall, in writing, notify the Coal Mine Health and Safety District Manager of the Mining Enforcement and Safety Administration in the district in which the mine is located of such change.

§ 82.13 Failure to notify.

Failure of the operator to notify the Mining Enforcement and Safety Administration in writing of the legal identity of the operator or any changes thereof within the time required under this part will be considered to be a violation of section 107(d) of the Act and shall be subject to penalties as provided in section 109 of the Act.

Subpart C—Operator's Report to the Bureau of Mines

§ 82.20 Legal Identity Report.

Each operator of a coal mine shall file notification of the legal identity and every change thereof with the appropriate Coal Mine Health and Safety District Manager of the Mining Enforcement and Safety Administration by properly completing, mailing, or otherwise delivering Form 6-357 "Legal Identity Report" which shall be provided by the Mining Enforcement and Safety Administration for this purpose. If additional space is required, the operator may use the back of the form or a separate sheet or sheets.

[37 FR 26309, Dec. 9, 1972]

PART 90—PROCEDURES FOR TRANSFER OF MINERS WITH EVIDENCE OF PNEUMOCONIOSIS

Subpart A—General

- Sec.
90.1 Scope.
90.2 Definitions.

Subpart B—Notification to Miner

- 90.10 Notification by Director; contents.

Subpart C—Miner's Election of Option of Transfer

- 90.20 Election of option of transfer; notification to Mining Enforcement and Safety Administration.

Subpart D—Operator's Transfer of Miner

- 90.30 Notification of option of transfer.
90.31 Operator's transfer of miner; requirements.
90.32 Transfer of miner; time requirement.
90.33 Notification to District Manager.
90.34 Compensation of transferred miner.

Subpart E—Enforcement of Miner's Option of Transfer by Mining Enforcement and Safety Administration

- 90.40 Enforcement of option of transfer; notices and orders.

AUTHORITY: The provisions of this Part 90 are issued under sections 203 and 508 of the Federal Coal Mine Health and Safety Act of 1969 (Public Law 91-173); 42 U.S.C. 2711.

SOURCE: The provisions of this Part 90 appear at 36 FR 20601, Oct. 27, 1971, unless otherwise noted.

NOTE: Nomenclature changes to this part appear at 38 FR 18668, July 13, 1973.

Subpart A—General

§ 90.1 Scope.

Section 203(a) of the Federal Coal Mine Health and Safety Act of 1969 requires the operator of a coal mine to cooperate with the Secretary of Health, Education, and Welfare in making available to each miner working in a coal mine the opportunity to have chest roentgenograms. The films of such roentgenograms shall be read and classified in a manner prescribed by the Secretary of Health, Education, and Welfare, and the Secretary of the Interior shall submit the results of these roentgenograms to each miner and advise him of his rights under the Act related thereto. Section 203(b)(1) of the Act provides that prior to December 30, 1972, any miner who, in the judgment of the Secretary of Health, Education, and Welfare based upon such reading or other medical examinations, shows evidence of the development of pneumoconiosis shall be afforded the option of transferring from

his position to another position in any area of the mine, for such period or periods as may be necessary to prevent further development of such disease, where the concentration of respirable dust in the mine atmosphere is not more than 2.0 milligrams of dust per cubic meter of air. Effective December 30, 1972, section 203(b) (2) of the Act provides that such miner shall be afforded the option of transferring from his position to another position in any area of the mine, for such period or periods as may be necessary to prevent further development of pneumoconiosis, where the concentration of respirable dust in the mine atmosphere is not more than 1.0 milligrams of dust per cubic meter of air, or if such level is not attainable in such mine, to a position in such mine where the concentration of respirable dust is the lowest attainable below 2.0 milligrams per cubic meter of air. Section 203(b) (3) of the Act further provides that any miner so transferred shall receive compensation for such work at not less than the regular rate of pay received by him immediately prior to his transfer. The regulations in this Part 90 prescribe the manner by which the Administrator, Mining Enforcement and Safety Administration shall notify miners of the results of chest roentgenograms and advise them of related rights; the method by which eligible miners shall exercise their option of transfer of position; the method to be followed by operators in transferring such eligible miners; and the manner in which the Administrator, Mining Enforcement and Safety Administration shall enforce the option of transfer of position of eligible miners.

§ 90.2 Definitions.

As used in this Part 90:

(a) "Coal mine" means an area of land and all structures, facilities, machinery, tools, equipment, shafts, slopes, tunnels, excavations, and other property, real or personal, placed upon, under, or above the surface of such land by any person, used in, or to be used in, or resulting from, the work of extracting in such area bituminous coal, lignite, or anthracite from its natural deposits in the earth by any means or method, and the work of preparing the coal so extracted, and includes custom coal preparation facilities;

(b) "Administrator" means the Administrator, Mining Enforcement and Safety Administration, U.S. Department of the Interior.

(c) "Miner" means any individual working in a coal mine.

(d) "Operator" means any owner, lessee, or other person who operates, controls, or supervises a coal mine.

(e) "Option of transfer" means:

(1) Prior to December 30, 1972, the option afforded a miner, whose chest roentgenogram or other medical examination shows evidence of the development of pneumoconiosis, to transfer from his position to another position in any area of the mine, for such period or periods as may be necessary to prevent further development of pneumoconiosis, where the concentration of respirable dust in the mine atmosphere is not more than 2.0 mg./m.³ of air; however, if such miner is already working in a position where the concentration of respirable dust is not more than 2.0 mg./m.³ of air, he need not be transferred; and

(2) On and after December 30, 1972, the option afforded a miner, whose chest roentgenogram or other medical examination shows evidence of the development of pneumoconiosis, to transfer from his position to another position in any area of the mine, for such period or periods as may be necessary to prevent further development of such disease, where the concentration of respirable dust in the mine atmosphere is not more than 1.0 mg./m.³ of air, or if such level is not attainable in such mine, to a position in such mine where the concentration of respirable dust is the lowest attainable below 2.0 mg./m.³ of air; however, if such miner is already working in a position where the concentration of respirable dust is not more than 1.0 mg./m.³ of air, or if such level is not attainable in such mine, in a position where the concentration of respirable dust is the lowest attainable below 2.0 mg./m.³ of air, he need not be transferred.

(f) "Pneumoconiosis" means a chronic dust disease of the lung arising out of employment in a coal mine.

(g) "Respirable dust" means only dust particles 5 microns or less in size.

(h) "Secretary" means the Secretary of Health, Education, and Welfare.

[36 FR 20601, Oct. 27, 1971, as amended at 38 FR 18668, July 13, 1973]

Subpart B—Notification to Miner

§ 90.10 Notification by Director; contents.

(a) Upon the receipt of information from the Secretary that a miner has

been given a chest roentgenogram, and that such roentgenogram has been read and classified in the manner prescribed by the Secretary, the Administrator shall submit to such miner, by letter, the results of such roentgenogram and advise such miner of his rights related thereto. The Administrator shall include a copy of the information received from the Secretary.

(b) When a chest roentgenogram shows, in the judgment of the Secretary, evidence of the development of pneumoconiosis, the Administrator shall notify the affected miner that he has the option of transfer.

Subpart C—Miner's Election of Option of Transfer

§ 90.20 Election of option of transfer; notification to Mining Enforcement and Safety Administration.

Any miner notified by the Administrator that he has the option of transfer, if he elects to exercise such option, shall, in writing, notify the Mining Enforcement and Safety Administration of his election to exercise the option of transfer. A miner may fulfill this requirement by signing and dating a form, similar to Figure 1, which will be sent to him by the Administrator for this purpose. This notification shall be sent to the Chief, Health Division—Coal Mine Health and Safety, Mining Enforcement and Safety Administration, Department of the Interior, Washington, D.C. 20240. The miner shall not be required to furnish the operator a copy of the medical information received from the Secretary and provided to the miner by the Administrator.

Subpart D—Operator's Transfer of Miner

§ 90.30 Notification of option of transfer.

Upon receipt by the Mining Enforcement and Safety Administration, pursuant to § 90.20 of information from the miner that he elects to exercise the option of transfer, the Administrator shall send to the operator employing such miner a letter notifying the operator that the miner is afforded the option of transfer and that the miner has exercised the option of transfer. The Administrator shall send a copy of this letter of notification to the miner.

§ 90.31 Operator's transfer of miner; requirements.

(a) Except as provided in paragraph (b) of this section, an operator shall, upon receipt of a letter of notification from the Administrator in accordance with § 90.30, transfer the miner to such a position as is required by section 203(b) of the Federal Coal Mine Health and Safety Act of 1969, within the time prescribed in § 90.32.

(b) If, based upon the respirable dust sampling requirements of Part 70 of this chapter an operator ascertains that the miner who has exercised his option of transfer is already working in a position where the concentration of respirable dust in the mine atmosphere meets the requirements of section 203(b) of the Act, then the operator need not transfer such miner from such position.

§ 90.32 Transfer of miner; time requirement.

Except as provided in § 90.31(b) the operator shall transfer the miner who has exercised the option of transfer as soon as practicable, but no later than 45 days from the date of the letter of notification by the Administrator pursuant to § 90.31, or by such other date after the period of 45 days that the miner may indicate, in writing, to both the operator and the Administrator as being acceptable to the miner for such transfer.

§ 90.33 Notification to District Manager.

(a) The operator shall, when the transfer has been accomplished or when the operator has ascertained that the miner who has exercised his option of transfer is already working in a position where the concentration of respirable dust in the mine atmosphere meets the requirements of section 203(b) of the Act, immediately notify the District Manager of the Coal Mine Health and Safety District in which the mine is located, in writing, that he has complied with § 90.31. This notice shall include the name and Social Security number of the miner who has exercised his option of transfer; the name and identification number of the mine; the section identification number; where applicable, the date of transfer, the position from which such miner was transferred, and the position to which such miner was transferred; and, where applicable, certification by the operator that such miner is

already working in a position where the concentration of respirable dust in the mine atmosphere meets the requirements of section 203(b) of the Act.

(b) Upon receipt of certification by the operator that a miner is already working in a position where the concentration of respirable dust in the mine atmosphere meets the requirements of section 203(b) of the Act, the District Manager shall officially confirm such certification by reference to Mining Enforcement and Safety Administration dust sampling data, and shall notify the miner, by letter, that the operator need not transfer him to another position. However if Mining Enforcement and Safety Administration dust sampling data subsequently shows that the miner is working in a position where the concentration of respirable dust is in excess of the levels prescribed by section 203(b) of the Act, then the District Manager shall notify the operator and the miner that such miner must be transferred in accordance with this part.

§ 90.34 Compensation of transferred miner.

Any miner transferred in accordance with the provisions of this Part 90 shall receive compensation for his work at not less than the regular rate of pay received by him immediately prior to his transfer.

Subpart E—Enforcement of Miner's Option of Transfer by Mining Enforcement and Safety Administration

§ 90.40 Enforcement of option of transfer; notices and orders.

(a) If the notification prescribed in § 90.33 is not received from the operator within the time required by § 90.32, the District Manager of the Coal Mine Health and Safety District where the mine is located shall make or cause to be made an inspection and investigation to determine whether or not the transfer of the miner has been accomplished and whether there is compliance with section 203 of the Act.

(b) If the inspection and investigation shows noncompliance with section 203 of the Act, the District Manager shall make or cause to be made appropriate findings, notices, and orders under section 104 of the Act. In no case shall a reasonable time for abatement of a violation be more than 30 days from the date of the notice of violation.

FIGURE 1

EXERCISE OF OPTION TO TRANSFER

Chief Health Division,
Coal Mine Health and Safety,
Mining Enforcement and Safety Administration,
Department of the Interior,
Washington, D.C. 20240.

I have been notified by the Mining Enforcement and Safety Administration that I am eligible, under the provisions of the Federal Coal Mine Health and Safety Act of 1969, to transfer to an area of the mine as is required by section 203(b) of the Act, if I am not already working in such an area.

I elect to exercise my option to transfer.

(Signature of miner)

(Date signed)

Name and Address of Miner.
[36 F.R. 20602, Oct. 27, 1971; 36 F.R. 20696, Oct. 28, 1971]

PART 100—CIVIL PENALTIES FOR VIOLATIONS OF THE FEDERAL COAL MINE HEALTH AND SAFETY ACT OF 1969

- Sec.
- 100.1 Purpose.
- 100.2 Assessment of civil penalties; general.
- 100.3 Procedures for assessment of civil penalties; protest procedures.
- 100.4 Hearing procedures.
- 100.5 Formal penalty assessment.
- Appendix A—Guidelines for Assessment of Penalties.

AUTHORITY: The provisions of this Part 100 issued under secs. 109 and 508, Federal Coal Mine Health and Safety Act of 1969 (83 Stat. 742; Public Law 91-173); 42 U.S.C. 2711.

SOURCE: 37 FR 11862, June 15, 1972, unless otherwise noted.

NOTE: Effective April 24, 1973, the provisions of this part were suspended until further notice. See 38 FR 10085, April 24, 1973.

§ 100.1 Purpose.

The assessment of civil penalties under section 109 of the Federal Coal Mine Health and Safety Act of 1969 shall be made for the purpose of maintaining the health and safety of the miner and of insuring the maximum compliance effort on the part of the coal mining industry.

§ 100.2 Assessment of civil penalties; general.

- (a) Each proposed assessment shall be made after taking into consideration:
 - (1) The operator's history of previous

violations, (2) the appropriateness of the penalty to the size of the operator's business, (3) whether the operator was negligent, (4) the effect on the operator's ability to continue in business, (5) the gravity of the violation, and (6) the demonstrated good faith of the operator in attempting to achieve rapid compliance after notification of violation.

(b) The amount of the civil penalty proposed shall be within guidelines established by the Secretary (see Appendix A to this part) and revised periodically in the light of experience gained under the Act, except that a particular violation may warrant proposing a civil penalty in an amount more than or less than the range set forth in the guidelines.

§ 100.3 Procedures for assessment of civil penalties; protest procedures.

(a) Each Notice of Violation and Order of Withdrawal issued on or after March 30, 1970, will be reviewed by an Assessment Officer who is appointed by and responsible to the Director, Bureau of Mines, to determine the liability of the operator or miner for a civil penalty and the amount of penalty to be proposed.

(b) (1) Before any administrative proceeding to impose a civil penalty under section 109 of the Act is instituted, the Assessment Officer shall serve, by certified mail, a Proposed Order of Assessment upon the operator or miner charged.

(2) The Proposed Order of Assessment shall specify the Notice of Violation or Order of Withdrawal for which the liability of the operator or miner for a penalty has been determined and shall state the amount of the proposed civil penalty.

(c) In determining the amount of the proposed penalty the Assessment Officer will consider all relevant circumstances, including the operator's history of previous violations, the appropriateness of such penalty to the size of the operator's business, whether operator was negligent, the effect on the operator's ability to continue in business, the gravity of the violation and the demonstrated good faith of the operator in attempting to achieve rapid compliance after notification of violation.

(d) The Proposed Order of Assessment shall also advise the operator or miner charged that he has 20 days from the date of receipt of the Proposed Order of

Assessment to either protest the proposed assessment, either partly or in its entirety, or petition for hearing and formal adjudication.

(e) Where an operator or miner fails to either timely protest a proposed assessment or petition for hearing, he shall be deemed to have waived his right of protest and his right of formal adjudication with opportunity for hearing, and the Proposed Assessment Order shall become the final assessment order of the Secretary of the Interior.

(f) The protest to the Proposed Order of Assessment shall be in writing and shall state any facts, explanations, and arguments denying the charges of violation, or demonstrating any extenuating circumstances, error in the Proposed Order of Assessment or other reason why the penalty should not be imposed and may request the revision or modification of the proposed penalty.

(g) (1) The Assessment Officer may extend in writing the time within which the operator or miner has to protest the Proposed Order Assessment.

(2) Upon receipt of a protest, the Assessment Office may reconsider the proposed assessment and may redetermine any proposed civil penalty.

(3) The Assessment Officer, upon reconsideration, may amend or reissue the Proposed Order of Assessment.

(h) The operator or miner charged shall have 20 days from the date of receipt of an amended or reissued proposed order to accept the proposed order, or to reject such order in whole or in part and petition for hearing and formal adjudication. Unless the operator or miner charged files a timely petition for hearing and formal adjudication an amended or reissued proposed assessment order shall become the final assessment order of the Secretary.

§ 100.4 Hearing procedures.

An operator or miner who desires a hearing and formal adjudication shall file a petition for hearing with the Office of Hearings and Appeals in accordance with the procedures set forth in Title 43 Part 4 §§ 4.540 et seq. The address of the Office of Hearings and Appeals is 4015 Wilson Boulevard, Arlington, Va. 22203.

§ 100.5 Formal penalty assessment.

(a) In accordance with the procedural rules provided in Part 4, Title 43, Code

of Federal Regulations, a hearing examiner or the Board of Mine Operations Appeals (both in the Office of Hearings and Appeals) shall thereafter issue an order based on findings of fact and conclusions of law.

(b) In assessing a civil penalty against an operator or miner, a hearing examiner or the Board of Mine Operations Appeals shall determine de novo the amount of the civil penalty for each violation in any amount not to exceed in the case of an operator, \$10,000, and in the case of a miner, \$250.

(c) In determining the existence of a violation or assessing a civil penalty thereon, neither the hearing examiner nor the Board is bound by the provisions or guidelines in this part relating to the making of proposed assessments.

APPENDIX A

GUIDELINES FOR ASSESSMENT OF PENALTIES

| <i>Type of violations</i> | <i>Penalty range (in dollars)</i> |
|---|---------------------------------------|
| 1. Mine operators: | |
| A. Violations resulting in the issuance of imminent danger withdrawal orders..... | 5,000-10,000 |
| B. Violations resulting in the issuance of other withdrawal orders.... | 1,000-5,000 |
| C. Other violations..... | 25-1,000 |
| 2. Miners: Smoking or the carrying of smoking materials, matches, or lighters... | |
| | 25-250 |

NOTE: Consideration of all relevant circumstances in the case of a particular violation may warrant the Assessment Officer's proposing a civil penalty in an amount more than or less than the range set forth above.

CHAPTER II—GEOLOGICAL SURVEY, DEPARTMENT OF THE INTERIOR

- Part**
- 200 Forms and reports.
 - 211 Coal-mining operating regulations.
 - 216 Operating regulations governing the mining of coal in Alaska.
 - 221 Oil and gas operating regulations.
 - 222 Connally Act regulations.
 - 223 Approval of sales agreements or contracts covering the disposal of oil and gas lease products (not applicable to Indian or Naval Petroleum Reserve lands).
 - 225 Disposal of Government royalty oil.
 - 225a Disposal of outer continental shelf royalty oil.
 - 226 Unit or cooperative agreements.
 - 229 Regulations for obtaining Federal assistance in financing explorations for mineral reserves, excluding organic fuels, in the United States, its territories and possessions.
 - 231 Operating regulations for exploration, development, and production.
 - 241 Acquisition and leasing of water wells.
 - 250 Oil and gas and sulphur operations in the outer continental shelf.
 - 270 Geothermal resources operations on public, acquired, and withdrawn lands.
 - 271 Geothermal resources unit plan regulations (including suggested forms).
 - 290 Appeals procedures.

PART 200—FORMS AND REPORTS

§ 200.1 Forms and reports.

Under regulations, the following reports are required to be filed on the forms listed:

(a) *Coal.* (1) prospecting, production, royalty reports on coal prospecting permits on Forms 9-367, Alaska; 9-374, Billings, Montana; 9-374a, Denver, Colorado; 9-374b, Salt Lake City, Utah; 9-374c, Carlsbad, New Mexico. These forms require information each month relating to the amount of coal mined, amount disposed of and royalty thereon, work done and cost thereof, and results of prospecting. (See § 211.6 of this chapter.)

(2) Production and royalty reports on coal leases on Forms 9-373a, continental United States; 9-519, Alaska. These forms require information each calendar quarter relating to the amount of coal mined, amount sold, royalty, sales price, and receipts. (See § 211.6 of this chapter.)

(3) Production reports on coal licenses in continental United States and on mining permits, Alaska, on Form 9-370. This form requires information semi-annually relating to the amount of coal mined, amount disposed of, wages, operating costs, sales, and income. (See § 211.6 of this chapter.)

(4) Annual reports on coal leases on Form 9-372. This form requires information on the amount of coal mined, amount sold, amount produced from fee land connected with the lease, receipts, costs of improvements and other works placed on the leased land. (See § 211.6 of this chapter.)

(b) *Potassium and sodium.* (1) Production reports on potassium and sodium prospecting permits on form 9-128, Carlsbad, New Mexico; 9-128c, Salt Lake City, Utah; 9-128d, all other districts. These forms require information each calendar quarter relating to prospecting operations, including the nature thereof, extent, cost, and amount removed for experimentation and research. (See § 231.3(c) of this chapter.)

(2) Production and royalty reports on potassium and sodium leases on form 9-128a. This form requires information each month relating to the output from the leased land, the amount in storage, amount disposed of, unit and total value, and royalty thereon. (See § 231.3(c) of this chapter.)

(3) Annual production reports on potassium and sodium leases on form 9-128B. This form requires information relating to the output from the leased land, the amount in storage, amount disposed of and gross value thereof, total amount of products, and cost of production. (See § 231.3(c) of this chapter.)

(c) *Phosphate.* (1) Production and royalty reports on phosphate leases on form 9-368. This form requires information each calendar quarter relating to the amount of phosphate rock mined, its character and quality, amount in storage, products and byproducts disposed of, unit and gross value, and royalty. (See § 231.3(c) of this chapter.)

(2) Annual reports on phosphate leases on form 9-369. This form requires information on the output from leased land, the amount in storage, amount disposed of and gross value thereof, total amount of products, and cost of production. (See § 231.3(c) of this chapter.)

(d) *Silica sands.* Production and royalty reports on silica sand leases on form 9-1146. This form requires information each calendar quarter on the production from leased land, unit and gross value at point of shipment to market, and royalty. (See § 231.3(c) of this chapter.)

(e) *Oil shale and sulphur.* Production and royalty reports on the above-described potassium and sodium forms,

(f) *Logs of prospect bore holes drilled for coal, potassium, sodium, phosphate, silica sands, sulphurs, and oil shale on form 9-1147.* This form requires, not later than 15 days after the completion of each bore hole, a complete and accurate log and history, in chronological order, of all operations conducted on the bore hole. (See §§ 211.16 (a) and (b), and 231.3(c) of this chapter.) Form 9-331a, Sundry Notices and Reports on Wells (§ 211.58 of this chapter) shall be used in connection with form 9-1147.

(g) *Oil and gas.* (1) Log and history of well on oil and gas leases on form 9-330. This form requires complete information, in chronological order, of all operations conducted on the well. (See § 221.59 of this chapter.)

(2) Sundry notices and reports on wells on oil and gas lease on form 9-331A, Public lands; form 9-331B, Indian lands. These forms cover all notices of intention and all subsequent reports on individual wells except those for which special

forms are prescribed. (See § 221.58 of this chapter.)

(3) Monthly report of operations on oil and gas lease on form 9-329, Public lands; form 9-329A, Indian lands. These forms require complete information on all operations conducted on each well during each calendar month. (See § 221.60 of this chapter.)

(4) Daily report of gas-producing wells on oil and gas lease on form 9-352. This form requires the submission to the oil and gas supervisor daily of the readings of all meters showing production of natural gas and meter charts. (See § 221.61 of this chapter.)

(5) Statement of oil and gas runs and royalties on oil and gas lease on form 9-361, Public lands; form 9-361A, Indian lands. These forms require a monthly report of each run of oil, all sales, and royalty accruing therefrom. (See § 221.62 of this chapter.)

(6) Royalty and rental remittance on oil and gas lease on form 9-614A, Indian lands. This form is required to be submitted with each remittance of royalty or rental payments. (See § 221.63 of this chapter.)

(7) Royalty and rental remittance on oil and gas lease on form 11 ND Naval Petroleum Reserves. This form is required to be submitted with each remittance of royalty and rental payments on naval petroleum reserves. (See § 221.64 of this chapter.)

(R.S. 441, as amended, sec. 1, 20 Stat. 394; 5 U.S.C. 485, 48 U.S.C. 31) [11 F.R. 177A-212, Sept. 11, 1946]

PART 211—COAL-MINING OPERATING REGULATIONS¹

- Sec.**
- 211.1 Authority and scope of the regulations in this part.
- 211.2 Orderly and efficient development of publicly owned coal lands and deposits.
- 211.3 Definitions.
- 211.3a Jurisdiction.
- 211.4 Powers and duties of supervisor.

DUTIES AND OBLIGATIONS OF LESSEE

- 211.5 Observance of lease terms; lessee's liability for damage.
- 211.6 Production reports and other data.
- 211.7 Danger in mines to be reported.
- 211.8 Accidents to be reported to mining supervisor.

WEIGHING OR MEASURING COAL

- 211.15 Requirements.

¹ 38 FR 10001, Apr. 23, 1973.

GEOLOGIC AND BORE-HOLE REPORTS

- Sec.**
- 211.16 Requirements for reports and completion of drilling.
- APPROACHING OIL, GAS, OR WATER WELLS**
- 211.17 Precautions.
- SURFACE STRUCTURES; THEIR LOCATION, CONSTRUCTION, AND FIRE PROTECTION**
- 211.18 Building of combustible material within 75 feet of mine opening prohibited.
- DEVELOPMENT PLANS**
- 211.19 To be approved in advance of operations.
- 211.20 To be followed.
- MINING WHERE MORE THAN ONE BED OF COAL OCCURS**
- 211.21 Requirements.

DEVELOPING THROUGH ADJOINING MINES

- 211.22 Development on leased tract.
- 211.23 Connecting mine subject to regulations; sealing.

PROVISIONS FOR DISPOSAL OF WASTE

- 211.24 Requirements.

SURVEYS AND MAPS

- 211.25 Mine-office maps.
- 211.26 Maps made when lessee fails to furnish them.

MINING BY STRIPPING

- 211.27 Requirements and prohibitions.

PILLARS AND CROSSCUTS

- 211.48 Method of construction.
- 211.49 Advance workings.
- 211.50 Pillars left for support.
- 211.51 Barrier pillars.

APPROACHING ABANDONED WORKINGS AND SEALING ABANDONED AREAS

- 211.63 Drill holes in advance where approaching abandoned workings.
- 211.64 Sealing abandoned areas by fireproof stoppings.

AUTHORITY: The provisions of this Part 211 issued under sec. 32, 41 Stat. 450, sec. 10, 61 Stat. 915; 30 U.S.C. 189, 359.

SOURCE: The provisions of this Part 211 appear at 3 F.R. 515, Feb. 25, 1938, unless otherwise noted.

§ 211.1 Authority and scope of the regulations in this part.

(a) The regulations in this part have been issued pursuant to the authority vested in the Secretary of the Interior by section 32 of the act of February 25, 1920 (41 Stat. 450, 30 U.S.C. 189), and section 10 of the act of August 7, 1947 (61 Stat. 915, 30 U.S.C. 359). On and after July 1, 1944, the administration of the regula-

tions in this part, save and except for those provisions dealing with inspections for the safety and welfare of miners engaged in mining operations on land covered by coal leases, licenses and permits shall be vested in the Geological Survey, Department of the Interior.

(b) Effective July 1, 1944, the function of making inspections for the safety and welfare of miners under the regulations in this part providing for such inspections shall be vested in the Bureau of Mines, Department of the Interior.

(c) The enforcement of the regulations in this part will remain the function of the Geological Survey.

[9 F.R. 7746, June 12, 1944]

§ 211.2 Orderly and efficient development of publicly owned coal lands and deposits.

The purpose of supervision is to assure the orderly and efficient development of publicly owned coal lands and coal deposits, without waste or avoidable loss of coal or damage to coal-bearing formations; to promote the safety, health, and welfare of workmen involved; to obtain a proper record and accounting of all coal produced; to determine rent and royalty liability; and to maintain a record of rent and royalty payments.

§ 211.3 Definitions.

The following expressions wherever used in the regulations in this part shall have the meaning here indicated:

(a) *Mining Supervisor*.—The Area Mining Supervisor, Conservation Division of the Geological Survey; a representative of the Secretary, subject to the direction and supervisory authority of the Director, the Chief, Conservation Division, Geological Survey, and the appropriate Regional Conservation Manager, Conservation Division, Geological Survey, authorized and empowered to regulate operations and to perform other duties prescribed in the regulations in this part, or any subordinate acting under his direction.

(b) *Secretary*.—The Secretary of the Interior.

(c) *Director*.—The Director of the Geological Survey, Washington, D.C.

(d) *Lessee*. Any person or persons, partnership, association, firm, corporation, municipality, or State which has made application for or to which has been issued a coal-mining lease, permit, or license under the act of February 25,

1920 (41 Stat. 437; 30 U.S.C. 201-209), and amendments thereto, or under the act of August 7, 1947. (61 Stat. 913; 30 U.S.C. 351-359)

(e) *Leased land or tract*. Any land or coal deposit owned by the United States and under lease, permit, license, or application for lease, permit, or license, in accordance with the act of February 25, 1920, or the act of August 7, 1947, for the purpose of mining coal therefrom.

(f) *Coal*. Coal of all ranks from lignite to anthracite.

(g) *Mine*. An underground excavation and all parts of the property of a mining plant either on the surface or underground that contribute directly or indirectly to the mining and preparation of coal.

(h) *Stripping operation*. The term "stripping operation" or "strip pit" shall mean a mining excavation or development by means of a surface pit or quarry in which the surface or cover over the coal bed is first removed and the coal itself is then excavated.

(i) *Slope*. An inclined entry in a dipping coal bed or an inclined tunnel to a coal bed.

(j) *Shaft*. A mine opening, the axis of which is approximately vertical, extending from the surface to develop one or more coal deposits.

(k) *Panel*. A unit area in a system of mining by which the mine is divided into areas isolated or surrounded by solid pillars of coal into which a pair of entries are driven for the development of rooms and the extraction of pillars.

(l) *Working place*. Any underground place where the men are assigned to mine or load coal or rock by hand or mechanically.

(m) *Rock dusting*. The distribution or application underground of fine non-combustible dust in such a manner as to prevent, check, control, or extinguish coal-dust explosions.

(n) *Wet coal dust*. Coal dust in a mine shall be considered wet only when the fines contain sufficient water to permit molding by hand pressure.

(o) *Gas*. Used in the sense employed by coal miners to mean "fire damp," or flammable or explosive gas, usually methane. When such gas is mixed with air in certain proportions the mixture is explosive.

(p) *Gassy mine*. A mine shall be deemed "gassy" if so determined by appropriate State authority, or if a meth-

ane cap can be obtained with an approved safety lamp in any working place or places on any 3 days within a period of 30 days, or if the return air from any split contains 0.25 percent or more of flammable gas.

(q) *Black damp*. The excess of nitrogen and carbon dioxide in an oxygen-deficient atmosphere.

(r) *Permissible*. Applied to explosives, safety lamps, electric machinery, rescue apparatus, and other devices, means, apparatus, and materials officially listed as "permissible" by the United States Bureau of Mines and approved as having met its requirements for the respective specified uses.

(s) *Fan*. A revolving machine placed on the surface and used to create a positive air current in a mine.

(t) *Booster fan*. A revolving machine placed underground for increased circulation in the specific airway in which it is placed.

(u) *Auxiliary fan*. A revolving machine used to force air through tubing or ducts for the ventilation of a specific working place or places.

[3 FR 515, Feb. 25, 1938, as amended at 38 FR 10001, Apr. 23, 1973]

§ 211.3a Jurisdiction.

Subject to the supervisory authority of the Secretary and the Director, operations for the discovery, testing, development, mining, or preparation of coal, handling and measurement of production, determination and collection of rental and royalty, and in general, all operations conducted on a lease by or on behalf of a lessee are subject to the regulations in this part, and are under the jurisdiction of the Mining Supervisor for any area as delineated by the Director. In the exercise of this jurisdiction, the Mining Supervisor shall be subject to the direction and supervisory authority of the Chief, Conservation Division, Geological Survey, and the appropriate Regional Conservation Manager, Conservation Division, Geological Survey, each of whom may exercise the jurisdiction of the Mining Supervisor.

[38 FR 10001, Apr. 23, 1973]

§ 211.4 Powers and duties of supervisor.

It shall be the duty of the mining supervisor:

(a) *Inspectional supervision*. To visit from time to time leased lands where coal mining or prospecting operations

are being conducted or contemplated; and to inspect and supervise such operations and plants connected therewith in order to prevent injury to life, wastage of coal, damage to or from wells drilled through the coal beds, and damage or threatened damage to property or to equipment from fire, oil, gas, or water, or otherwise, and in order to insure that operations are being conducted and that the welfare of the miners is being provided for in accordance with the acts and the regulations in this part.

(b) *Ascertain and report damage to coal deposits; report wastage of coal; make recommendations to the Secretary*. To ascertain and report the nature and amount of damages, if any, to the leased premises or to adjacent property belonging to the Government; to report the amount and value of any coal avoidably lost or wasted; and to make recommendations to the Secretary of the Interior on the action to be taken for insuring compliance with the provisions of the lease and the regulations in this part.

(c) *Production and royalty reports; sealing of mines*. To examine the mines, mine maps, records, and books of the lessee and determine the amount of coal mined from government coal land; to make a report to the Secretary of the Interior each quarter as to lands held under leases and permits and semi-annually as to lands held under licenses showing the production and the accrued royalties and rentals; and to place seals at the entrance of leased lands upon the order of the Secretary when the lessee is delinquent in royalty and rental payments.

(d) *Wells or prospect holes through coal beds*. To prescribe or approve the methods of protection from wells or prospect holes drilled for any purpose through the coal measures and mines on leased lands and on coal lands subject to lease, with a view to the prevention of leakage of oil, gas, water, or other fluid substances that might endanger the lives of employees, and to prescribe or approve methods of obtaining the ultimate extraction, so far as practicable, of coal in the vicinity of such wells.

(e) *Abandonment of mine or of unmined portions of mine; survey at lessee's expense*. To specify in writing under what conditions a mine or panel or other section of a mine, from which the coal has or has not been extracted may be

abandoned by the lessee, and how a section of a mine so abandoned should be sealed off or otherwise separated from the other parts of the mine, and to cause a survey of operations on leased lands to be made at the lessee's expense upon failure of the lessee to provide accurate maps as required.

(f) *Placing seals on leased lands.* If the operating regulations in this part or the State mining laws are not being complied with, and in the opinion of the mining supervisor, the mine or the lives of workmen are in jeopardy, such supervisor may give notice in writing to stop operations on all or a part of the leased land and may apply Department of the interior seals to the haulage tracks or across the entrance to the strip pit, mine, or section of the mine affected. Should any such notice or seal be violated, the district mining supervisor shall recommend the penalty to be imposed upon the lessee.

(g) *Orders to insure compliance with regulations not in conflict with State laws; appeal, delay in execution of order or notice.*—The mining supervisor may issue such orders and notices in writing as may be appropriate to insure compliance with the regulations in this part, and may order the discontinuance or modification of any operation or method that is causing or likely to cause any endangerment of life or property or is in violation of the provisions of the lease or regulations: *Provided*, That such orders are not in conflict with the laws of the State in which the leased land is situated: *And further provided*, That if any such order or notice issued under the regulations in this part does not contain a statement that immediate danger of loss of life or property is involved, and if the lessee appeals therefrom as provided in part 290 of this chapter, execution of said order or notice may be delayed pending final disposition of the appeal.

[3 FR 515, Feb. 25, 1938, as amended at 11 FR 1615, Feb. 14, 1946; 38 FR 10001, Apr. 23, 1973]

DUTIES AND OBLIGATIONS OF LESSEE

§ 211.5 Observance of lease terms; lessee's liability for damage.

The lessee shall observe and carry out the terms of the act of February 25, 1920 (41 Stat. 437), as amended (30 U.S.C. 181-263), his lease, the regulations in this part, and the orders and written

notices of the Mining Supervisor issued in accordance with the regulations and terms of the lease that are not in conflict with the laws of the State in which the leased land is situated: *Provided*, That if any order or notice does not specify that immediate action must be taken for the protection of life or property, an appeal may be taken as provided in part 290 of this chapter. Upon failure of the lessee to take appropriate action to protect the deposits from damage or threatened damage by fire, water, oil, gas, or subsidence, and upon failure of the lessee properly to protect the property upon abandonment or cancellation of the lease, the lessee shall be liable for the expense of labor and supplies used by the Mining Supervisor for the protection of the property.

[38 FR 10001, Apr. 23, 1973]

§ 211.6 Production reports and other data.

(a) *Records to be kept by lessees.* Lessees shall keep a correct record of coal produced in such manner that the records readily can be checked, and shall report accurately, on a mine-run basis, within 30 days after the expiration of the period covered by the report, all coal mined from the leased land during each calendar quarter and furnish such other data as may be required on the form provided for quarterly reports; and on the anniversary of the lease shall report the yearly production and such other data as may be required on the form provided for annual reports.

(b) *Records to be kept by permittees and licensees.* Permittees and licensees shall keep a correct record of coal produced in such manner that the records can be checked readily. Permittees shall report monthly, and licensees semi-annually unless otherwise authorized or directed in writing by the district mining supervisor, all coal mined from the land held under permit or license, giving the amount of coal mined and the amount disposed of during the period covered by the report, a description of the work done, the cost of the work, the results of prospecting, and such other information as may be requested.

(c) *Financial statement by accountant; eligibility.* The lessee shall cause and audit of his books and accounts pertaining to the leased land to be made annually within 30 days after the expiration of the lease year or at such times as he may be directed by the district mining

supervisor, to whom he shall furnish, free of cost, a copy of said audit. The eligibility of the accountant making such audit shall be subject to approval by the Secretary of the Interior.

[11 F.R. 1615, Feb. 14, 1946]

§ 211.7 Danger in mines to be reported.

The lessee shall report promptly to the mining supervisor by telephone or telegraph the occurrence in or about the leased land of fatal accidents, serious outbursts of gas, explosions, inundations, fires, extensive squeezes, collapses of roof, or other serious conditions causing or threatening the loss of life or property.

[3 FR 515, Feb. 25, 1938, as amended at 38 FR 10001, Apr. 23, 1973]

§ 211.8 Accidents to be reported to mining supervisor.

The lessee shall report promptly in writing to the mining supervisor each accident that results in the loss of more than one shift for the injured person, giving the date of the accident, the name, age, and occupation of the injured person, the actual work being performed when the injury occurred, the cause and nature or result of the injury, the probable length of disability, and the name and location of the mine, with outline sketches or maps when pertinent. Copies of reports to the State inspector or industrial commission and outline sketches or maps will fulfill the requirements of this section.

[3 FR 515, Feb. 25, 1938, as amended at 38 FR 10001, Apr. 23, 1973]

WEIGHING OR MEASURING COAL

§ 211.15 Requirements.

(a) *Posting records.* All coal mined shall be accurately weighed or measured, truly accounted for, and recorded by the lessee, including a record of all sales of coal and of coal disposed of otherwise. If the miners are paid either by weight or by measurement, a record of correct daily weights or biweekly measurements shall be posted or displayed in a conspicuous place. Test weights shall be kept at the scales, so that the accuracy of the scales can be tested at any time.

(b) *Weighman to make affidavit for faithful discharge of duties.* The weighman or person appointed to weigh or measure the coal where the miners are paid upon the basis of his figures shall be required before entering upon his duties to subscribe to an affidavit, before

a person duly authorized to administer oaths, that he will keep a true record of the coal so weighed or measured and credit each miner accordingly; such affidavit shall be posted at his place of duty.

(c) *Bone or other impurities may be deducted.* Nothing contained herein shall be construed to prevent the lessee from separately weighing and deducting the amount of bone coal or other impurities, loaded by a miner with the coal, from the weight of the coal accredited to the miner.

(d) *Allowance for waste material.* If rock or bone is removed from the coal after weighing, an allowance for such waste material may be authorized by the mining supervisor, provided the cleaning is done with a minimum loss of coal.

(e) *Basis of royalty computation.* If deductions are allowed for impurities in the coal under paragraph (c) or (d) of this section, under no circumstances shall the royalty be based on less than the weight credited to the miners, plus that loaded by day labor, nor shall it be based on less than the shipping weight, plus coal stored, coal used on the premises, and coal otherwise accounted for.

(f) *Penalty for light-weighing coal.* If a lessee records or reports less than the true weight of the coal mined, he shall be subject to a penalty, at the option of the Secretary, of double the amount of royalty on the shortage or the full value of the shortage. Repetition of the showing of a shortage in weight after warning shall be sufficient cause for cancellation of the lease.

GEOLOGIC AND BORE-HOLE REPORTS

§ 211.16 Requirements for reports and completion of drilling.

(a) *Projected plans.* The lessee shall submit detailed reports upon completion or suspension of any prospect bore hole, prospecting operation, or geologic investigation. The report on each bore hole shall give the location, altitude, and log, including the occurrences of water. In surface prospecting the location and occurrences of coal shall be shown on a map, and copies of geologic reports on the lands leased shall be furnished by the lessee.

(b) *Bore holes to be cemented and filled.* All bore holes made to prospect formations shall upon completion be fully and promptly filled with a mud fluid or cement or filled otherwise, as prescribed by the mining supervisor. While holes are being drilled they shall be

properly cased and cemented to prevent migration of oil, gas, or water to the coal-bearing beds, and after serving their purpose they shall be abandoned as prescribed for prospect holes.

[3 FR 515, Feb. 25, 1938, as amended at 38 FR 10001, Apr. 23, 1973]

APPROACHING OIL, GAS, OR WATER WELLS

§ 211.17 Precautions.

When mining operations approach wells or bore holes that may liberate oil, gas, water, or other fluid substances, the lessee shall present his plans for mining the coal in proximity to such holes to the mining supervisor and obtain his approval before proceeding with the work planned. The plans shall provide that the coal be extracted as completely as practicable with safety and in such manner that the well will not be damaged, and that precautions be taken against the sudden liberation of a body of oil, gas, water, or other fluid. The mine ventilation shall be so arranged that any gaseous substance liberated shall enter the return air current and not be circulated through the active workings of the mine. In approaching such holes, the instructions in § 211.63 shall be followed.

SURFACE STRUCTURES; THEIR LOCATION, CONSTRUCTION, AND FIRE PROTECTION

§ 211.18 Building of combustible material within 75 feet of mine opening prohibited.

A lessee employing more than 10 men underground shall not construct or maintain on the surface any structure of combustible material within 75 feet of any opening, nor permit such a structure to be connected to any noncombustible building within that distance except as follows:

(a) *Headframe construction and fire doors.* An open timber framework or headframe of timber may be constructed over a shaft, slope, drift, or tunnel. The posts and rafters of any such structure may be of wood if the covering or lining is made of fireproof material, but under no circumstances shall wood flooring be used except in tipples, trestles, and storage bins. Fire doors shall be erected at effective points where smoke or fire from outside sources may endanger men working underground.

(b) *Flammable material at mine opening.* Flammable material shall not be stored or placed within 75 feet of any mine opening except while such material is being sent into or removed from

the mine and except for a day's supply of oil for lubricating machinery in the surface structure.

(c) *Fireproofing hoist and power plant buildings.* At mines in which more than 50 men are employed underground on any shift, the building or buildings containing the hoisting engine and power plant shall not have floors, ceilings, and side walls or roofs constructed of combustible material, but wood may be used for roof trusses, purlins, and rafters, and for side-wall studs or frames if covered on both sides with noncombustible material.

DEVELOPMENT PLANS

§ 211.19 To be approved in advance of operations.

After necessary prospecting has been done on any lease and before permanent operating shafts have been sunk or slopes, drifts, or tunnels driven, the lessee shall prepare and submit to the mining supervisor for approval a preliminary plan, together with vertical sections to indicate, so far as known, the position, dip, and thickness of each coal bed. The plan shall be on a scale of not more than 500 feet to the inch and shall shown in outline the principal prospect and proposed entries, airways, shafts, and structures, including fan or fans, and the proposed method of underground development and ventilation, with a description thereof.

[3 FR 515, Feb. 25, 1938, as amended at 38 FR 10001, Apr. 23, 1973]

§ 211.20 To be followed.

The lessee shall develop and mine the coal in accordance with plans approved in advance, so far as natural conditions permit; and, if conditions necessitating radical changes are encountered, he shall immediately submit modified plans, accompanied by an explanation, to the mining supervisor for approval.

[3 FR 515, Feb. 25, 1938, as amended at 38 FR 10001, Apr. 23, 1973]

MINING WHERE MORE THAN ONE BED OF COAL OCCURS

§ 211.21 Requirements.

(a) *Coal pillars in lower beds are to be left until coal in upper beds is extracted.* Where practicable, by reason of either commercial or mining conditions, the available coal in the upper beds shall be worked out before the coal in the lower beds is mined; otherwise, the workings in

the upper coal bed shall be kept in advance of the workings in each lower bed. The decision as to practicability rests with the mining supervisor. Where more than one bed of coal is known to exist in the leased lands, the lessee shall not draw or remove the pillars in any lower bed before mining the available coal in each known upper bed of such thickness that it can be mined under the then existing commercial conditions, either alone or in combination with thicker beds. The mining supervisor shall decide whether or not the workings or conditions for subsequent mining in any or all of the upper beds will be seriously injured by the extraction of the pillars in the lower workings.

(b) *Pillars to be arranged vertically under or over pillars in another bed.* Where mining operations are in progress in a bed that lies either below or above another bed in which mining has been or is being carried on, the lessee shall, if the room-and-pillar system is employed, superimpose the pillars in the respective beds. Modifications of this provision may be necessary in steeply dipping beds and may be approved by the mining supervisor where conditions make them advisable.

DEVELOPING THROUGH ADJOINING MINES

§ 211.22 Development on leased tract.

A lessee may develop a mine on his leased tract from an adjoining mine not on the public domain, or from adjacent leased lands, under the following conditions:

(a) *Mine not on public domain to conform to regulations.* The mine that is not on the public domain shall conform to all sections in the regulations in this part that relate to the safety of the mines and employees.

(b) *Connections between mines.* The only connections between the mine not on public domain and the mine on public domain shall be the main haulageways, the ventilationways, and the escapeways. Substantial concrete frames and fire-proof doors that may be closed in an emergency and opened from either side shall be installed in each such connection. Unnecessary connections through the boundary pillars shall not be made until both mines are about to be exhausted and abandoned. The mining supervisor may waive such of the requirements in this section when, in his judgment, such waiving does not affect

adversely the safety of the employees or entail loss of coal.

(c) *Inspection of Adjacent mines.* Free access for inspection of said connecting mine not on the public domain shall be given at all hours to the mining supervisor or other representative of the Secretary of the Interior.

[3 FR 515, Feb. 25, 1938, as amended at 38 FR 10001, Apr. 23, 1973]

§ 211.23 Connecting mine subject to regulations; sealing.

If a lessee operating on a lease through a mine not on public domain does not maintain the mine in accordance with the operating regulations, operations on the leased land may be ordered stopped or Departmental seals applied by the mining supervisor, and the operations on leased lands shall be stopped.

[3 FR 515, Feb. 25, 1938, as amended at 38 FR 10001, Apr. 23, 1973]

PROVISIONS FOR DISPOSAL OF WASTE

§ 211.24 Requirements.

(a) *Slack and refuse to be so disposed of as not to be a nuisance.* The lessee shall dispose of waste, slack, refuse, and water from a mine and waste and sludge of any washery in such a manner as not to cause private or public damage or inconvenience, be a nuisance, or obstruct any stream, right-of-way, or other means of transportation or travel.

(b) *Separately storing slack and waste.* All waste containing practically no coal shall be deposited separately and apart from coal for which no immediate market exists and from waste containing coal in such quantity that it may be later separated from the waste by washing or other means.

(c) *Royalty on slack coal.* Royalty on slack coal accrues when the coal is mined and is due and payable on the next payment date thereafter.

SURVEYS AND MAPS

§ 211.25 Mine-office maps.

(a) *Surveys to be made and maps extended every 6 months; surveys to be made before abandoning any section of a mine.* Accurate surveys of new workings shall be made at least every 6 months and a map prepared thereof on a scale of 50 feet, 100 feet, or 200 feet to the inch. The mine-office maps of the workings in each coal bed shall be extended to show the advancement of all the mine workings and all other changes of a permanent

character that have taken place during the period between successive surveys. Before any mine or section of a mine is abandoned, closed, or becomes inaccessible, a survey of such mine or section shall be made and recorded on the map.

(b) *Map legend.* In addition to the information required by the lease, maps shall bear the name of the mine, the name of the lessee, and the serial number assigned by the district land office, and shall show the true north or meridian, the public survey land lines with indication of corners found, the distance and direction from the mine opening to a land corner, the boundary barrier pillars, the scale to which the map is drawn, and an explanatory legend.

(c) *Surface buildings and bore holes to be shown on mine map.* The surface map shall show in outline the location of all structures or buildings and the surface location and depth of each bore hole, appropriately numbered. The map shall also show the altitude at the surface, the altitude and section of each coal bed penetrated by boring, and any other pertinent information, including the angle and direction of prospect drilling where not vertical.

(d) *Coal sections, stoppings, ventilation, etc., to be shown on map.* The mine map shall show at each face the date of extension and at each entry face the coal sections and altitude, also the location of all pillars and the parts of pillars not extracted in pillar work; the position of all fire walls, dams, main pumps, fire pipe lines, permanent ventilating stoppings, doors, overcasts, undercasts, and regulators; the direction of the ventilating current in the various parts of the mine at the time of making latest surveys; fire areas; known bodies of standing water either in or above the workings of the mine; areas containing flammable gas; areas affected by squeezes.

(e) *Profiles of steeply dipping beds; vertical view of workings in bed dipping more than 45°.* Where the dip of the coal bed or beds exceeds 45°, profiles or vertical cross sections parallel with the approximate average direction of the dip and not more than 1,000 feet apart shall be made on the same scale as the mine maps, with appropriately marked reference points, and a vertical view of the mine workings shall be prepared on the same scale as the general mine map to show the mine workings in that bed on a vertical plane parallel with the average

strike of the bed or beds, with appropriately marked reference points.

(f) *Blueprints to be furnished annually, or semiannually on request.* Blueprints or reproductions in duplicate of the maps and drawings prescribed in the preceding paragraphs and such other maps as may be required shall be submitted to the mining supervisor annually without his special request, or semiannually on request.

[3 FR 515, Feb. 25, 1938, as amended at 38 FR 10001, Apr. 23, 1973]

§ 211.26 Maps made when lessee fails to furnish them.

(a) *Liability of lessee for expense of survey.* In the event of the failure of the lessee to furnish the maps required, the mining supervisor shall employ a competent mine surveyor to make a survey and maps of the mine, and the cost thereof shall be charged to and promptly paid by the lessee.

(b) *Incorrect maps.* If any map submitted by a lessee is believed to be incorrect, the mining supervisor may cause a survey to be made, and if the survey shows the map submitted by the lessee to be substantially incorrect in whole or in part, the cost of making the survey and preparing the map shall be charged to and promptly paid by the lessee.

[3 FR 515, Feb. 25, 1938, as amended at 38 FR 10001, Apr. 23, 1973]

MINING BY STRIPPING

§ 211.27 Requirements and prohibitions.

(a) *Drainage of stripping operations.* No strip pit will be permitted on the outcrop of any dipping coal bed until the workable coal at lower altitude in that bed and underlying beds has been extracted, unless there is free natural or artificial drainage from the pit that will prevent seepage underground down the dip.

(b) *Fire prevention.* Accumulations of slack coal or combustible waste that may, if fired, endanger the coal deposit shall not be permitted at or near coal or carbonaceous material in place.

(c) *Overhanging banks.* Overhanging banks or ledges must be shot down promptly to eliminate danger to employees from falling rock or dirt.

(d) *Coal face to be covered in strip pits.* Upon completion or indefinite suspension of mining operations in all or any part of a strip pit, the face of the

coal shall be covered with noncombustible material that will effectively prevent the coal bed from becoming ignited.

(e) *Underground workings from strip pits prohibited.* The driving of underground working places from the face of a strip pit for the purpose of getting cheap coal is contrary to conservation principles and is prohibited.

PILLARS AND CROSSCUTS

§ 211.48 Method of construction.

(a) *Pillar thickness between intake and return airways.* The lessee shall separate intake and return airways and any adjacent parallel entries or rooms by not less than 50 feet of coal in place, except when a thinner pillar is permitted by written consent of the mining supervisor, who may also in his discretion require a greater thickness than 50 feet.

(b) *Crosscut or break-through intervals.* The distance apart of crosscuts or break-throughs between parallel entries or rooms shall be not greater than the maximum allowed by the regulations of the State in which the leased land is situated and shall be not more than 100 feet except in entries or tunnels where special arrangements are made to carry an adequate ventilating current to the face of each entry or tunnel, the adequacy of such arrangements to be approved by the mining supervisor. Rooms shall not be turned ahead of the last crosscut nearest the face, nor shall branch entries be started ahead of the last crosscut, except when approved by the mining supervisor to obtain a circuit of air, a second means of egress, or a space for the laying of switches.

(c) *Face not to be advanced more than 30 feet beyond crosscut.* A face shall not be driven more than 30 feet beyond the inby rib of the crosscut until said crosscut is connected to an adjoining airway, and if, in the opinion of the mining supervisor, adequate ventilation does not reach the face, such changes as he may direct shall be made in the ventilation.

(d) *Room neck maximum width and length.* Room necks shall not be wider than 9 feet for the first 18 feet, unless the lessee is given permission in writing by the mining supervisor to make the room necks wider and shorter.

(e) *Chain pillars and stumps.* The coal in chain pillars and room stumps and panel boundary pillars provided under paragraphs (b), (c), and (d) of this section shall be left standing until in

the proper course of mining operations the time shall arrive for their removal, after or during the extraction of the room pillars in the adjacent workings.

(f) *Crosscuts to be made at face of rooms and entries before abandonment.* Before abandoning any room, entry, slope, or drift, a crosscut shall be driven and connection made with the adjoining room, entry, slope, or drift at the face thereof, in order to give a boundary airway around workings.

[3 FR 515, Feb. 25, 1938, as amended at 38 FR 10001, Apr. 23, 1973]

§ 211.49 Advance workings.

(a) *Limits for removing coal.* Where the room and pillar or other system of mining requires advance workings in the sold coal, including entries, rooms, and crosscuts or break-throughs, the lessee, except with the written consent of the mining supervisor, shall not extract by such advance workings or first-mining more than 60 percent of the total area of the coal bed within any particular tract or panel entered by said advance workings where the cover is less than 500 feet; nor more than 50 percent where the cover is more than 500 feet and less than 1,000 feet; nor more than 40 percent where the cover is more than 1,000 feet and less than 1,500 feet; nor more than 30 percent where the cover is more than 1,500 feet and less than 2,000 feet; nor more than 20 percent where the cover is more than 2,000 feet. A greater percentage may be required to be left where unfavorable roof or floor conditions exist or where the coal bed is or may be affected by mining elsewhere.

(b) *Size of pillars.* The size of pillars shall be in proportion to the thickness of the coal bed, and all pillars shall be systematically mined and removed as rapidly as proper mining will permit.

(c) *Basis for computing percentage of tract mined.* The percentages of the total area mined and unmined in a tract on advance mining shall be figured on the basis of the area and not on the basis of the calculated tonnage mined. The total area of the tract under consideration is to be comprised within lines bounding the faces of advance workings within the tract, excluding the area from which pillars have been systematically removed.

§ 211.50 Pillars left for support.

(a) *Shaft entry and slope pillars.* A pillar proportionate in size to the depth

below the surface and the thickness of coal being excavated shall be left in each coal bed for the support of each shaft, main slope, or egress.

(b) *Shaft pillar size.* Shaft pillars shall be not less in radius than one-half the thickness of cover over the pillar. A pillar, not less in width at any point than one-fourth the thickness of cover above it, shall be left on each side of the center line of each main slope or entry. Pillars around shafts shall be not less than 100 feet in radius, and those on each side of slopes shall not be less than 100 feet in width except by written consent of the mining supervisor.

(c) *Openings in shaft and slope pillars.* Shaft and slope landings, sidings, and entries for haulage, ventilation, manways, and shops may be excavated in a pillar provided the area of such places does not exceed 15 percent of the area of the pillar and that no rooms or other openings are made therein for the sole purpose of obtaining quick production.

[3 FR 515, Feb. 25, 1938, as amended at 38 FR 10001, Apr. 23, 1973]

§ 211.51 Barrier pillars.

(a) *Mining restrictions.* The lessee shall not, without the prior consent of the mining supervisor, mine any coal, drive any underground workings, or drill any lateral bore holes within 50 feet of any of the outside boundary lines of the leased lands, nor within and greater distance of said boundary lines that the mining supervisor may prescribe. Payment not exceeding \$1 a ton or the full value of the coal mined may be required for coal mined within such distances of the boundary without the written consent of the mining supervisor.

(b) *Lessee may be required to mine barrier pillars on adjacent lands.* If the coal on public domain beyond any barrier pillar has been worked out and the water level beyond the pillar is below the lessee's adjacent operations the lessee shall, on the written demand of the mining supervisor, mine out and remove all available coal in such barrier, both in the lands covered by the lease and in the adjoining premises, if it can be mined without hardship to the lessee.

(c) *If coal-mining rights in adjoining premises privately owned.* If the coal-mining rights in adjoining premises are privately owned, an agreement may be made with the owner for the extraction of the coal in the boundary pillars.

(d) *Mining isolated blocks of coal not on leased lands.* Narrow strips of coal between leased lands and the outcrop on public lands and small blocks of coal adjacent to leased lands that would otherwise be isolated or lost may be mined under the provisions specified in paragraph (b) and (c) of this section.

[3 FR 515, Feb. 25, 1938, as amended at 38 FR 10001, Apr. 23, 1973]

APPROACHING ABANDONED WORKINGS AND SEALING ABANDONED AREAS

§ 211.63 Drill holes in advance where approaching abandoned workings.

In any working place within 100 feet of supposedly dangerous proximity to an abandoned mine or an abandoned section of a mine not known to be free of dangerous quantities of flammable or noxious gases or water, at least two drill holes shall be maintained not less than 20 feet in advance of the face. Such working place shall not be more than 10 feet wide. On each side thereof drill holes not more than 8 feet apart shall be drilled to a depth of 20 feet at an angle of 45° with the line of the place. In addition to said drill holes, brattice shall be carried within 12 feet of the face at all times. Gas from an abandoned mine or any abandoned part of a mine may be tapped only when all employees not engaged at such work are out of the mine, and such tapping shall be done under the immediate instructions and directions of the mine foreman by workmen equipped with permissible safety lamps.

§ 211.64 Sealing abandoned areas by fireproof stoppings.

All worked out areas or areas abandoned permanently or temporarily that can not be so ventilated as to prevent the accumulation of explosive and noxious gases or that can not be inspected daily by duly authorized mine officials, and all unused openings into adjacent mines shall be sealed off by fireproof stoppings constructed of strong concrete or masonry of solid, substantial character built to withstand a pressure of 50 pounds to the square inch on each side. If well constructed with good clean sand and gravel and hitched into the floor and side walls, the thickness should be not less than 1 inch for each foot of maximum span; a minimum thickness of 12 inches is required. When workings are sealed, a pipe with locked valve shall be so placed as to extend through the

stopping, for the purpose of testing the gases behind the stopping, such tests to be made only by the foremen or mine examiners.

PART 216—OPERATING REGULATIONS GOVERNING THE MINING OF COAL IN ALASKA¹

- Sec.
 216.1 Prior regulations made applicable.
 216.2 Production and royalty reports; sealing of mines.
 216.3 Orders to insure compliance with regulations not in conflict with laws of the State of Alaska; appeal.
 216.4 Basis of royalty computations.
 216.5 Room neck maximum width and length.
 216.11 Waiver of provisions.

AUTHORITY: The provisions of this Part 216 issued under sec. 17, 38 Stat. 745; 48 U.S.C. 451.

SOURCE: The provisions of this Part 216 appear at 9 F.R. 6853, June 21, 1944, unless otherwise noted.

§ 216.1 Prior regulations made applicable.

With the exception of §§ 211.4 (c) and (g), 211.5(e), 211.24(c), 211.48(d), 211.77, 211.79(c), 211.82(a), 21.83(b), 211.86(a), 211.87, 211.88, and 211.90(a), which shall not be deemed applicable for the purpose of this part, Part 211 of this chapter is made applicable to and shall govern the methods of mining coal from leased, licensed, and permitted lands on the public domain in the State of Alaska.

[9 F.R. 9883, Aug. 15, 1944]

§ 216.2 Production and royalty reports; sealing of mines.

The mining supervisor shall examine the mines, mine maps, records, and books of lessees and determine the amount of coal mined from Government coal land; shall report the Secretary of the Interior quarterly the production and the accrued royalties and rentals; and shall place seals at the entrance of leased lands on orders of the Secretary when a lessee is delinquent in royalty and rental payments.

[9 CFR 6853, June 21, 1944, as amended at 38 FR 10002, Apr. 23, 1973]

§ 216.3 Orders to insure compliance with regulations not in conflict with laws of the State of Alaska; appeal.

The mining supervisor may issue such orders and notices in writing as may be

appropriate to insure compliance with the regulations in this part, and may order the discontinuance or modification of any operation or method that is causing or is likely to cause any endangerment of life or property or is in violation of the provision of the lease or regulations: *Provided*, That such orders are not in conflict with the laws of the State of Alaska: *And further provided*, That if any such order or notice does not contain a statement that immediate danger of loss of life or property is involved, and if the lessee appeals therefrom as provided in part 290 of this chapter, execution of said order or notice may be delayed pending final disposition of the appeal.

[38 FR 10002, Apr. 23, 1973]

§ 216.4 Basis of royalty computations.

Royalty shall be paid on all coal shipped or removed from leased lands or manufactured into coke, briquets, or other products of coal, or consumed on the premises.

§ 216.5 Room neck maximum width and length.

Room necks shall not be wider than 9 feet for the first 18 feet, unless the lessee is given permission in writing by the mining supervisor to modify these dimensions.

[9 FR 6853, June 21, 1944, as amended at 38 FR 10001, Apr. 23, 1973]

§ 216.11 Waiver of provisions.

Any waiver of the provisions of the regulations in this part by the mining supervisor shall be in writing.

[9 FR 6853, June 21, 1944, as amended at 38 FR 10001, Apr. 23, 1973]

PART 221—OIL AND GAS OPERATING REGULATIONS¹

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- 221.3 Jurisdiction.
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 221.6 Reports and recommendations.
 221.7 Reports and notices.
 221.8 Required samples, tests, and surveys.
 221.9 Damage to mineral deposits, directional drilling, lease obligations, well abandonment.
 221.10 Well potentials and premissible flow.

¹ 38 FR 10001, Apr. 23, 1973.

¹ 38 FR 10002, Apr. 23, 1973.

- Sec.
 221.11 Well-spacing and well-casing; technical assistance to lessees.
 221.12 Production records; rentals, royalties, and payments; drainage and waste.
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MEASUREMENT OF PRODUCTION AND COMPUTATION OF ROYALTIES

- 221.43 Measurement of oil.
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 221.45 Determination of gasoline content of natural gas.
 221.46 Quantity basis for computing royalties on natural gasoline, butane, propane, and other liquid hydrocarbon substances extracted from gas.

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 221.48 Royalty rates on oil; flat-rate leases.
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 221.50 Royalty on gas.
 221.51 Royalty on casing-head or natural gasoline, butane, propane, or other liquid hydrocarbon substances extracted from gas.
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PROCEDURE IN CASE OF DEFAULT BY LESSEE

- 221.53 Shutting down operations; lease cancellations.
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- 221.57 General requirements.
 221.58 Sundry notices and reports on wells (Form 9-331A Public; Form 9-331B Indian).
 221.59 Log and history of well (Form 9-330).
 221.60 Monthly report of operations (Form 9-329 Public; Form 9-329A Indian).
 221.61 Daily report of gas-producing wells (Form 9-352).
 221.62 Statement of oil and gas runs and royalties (Form 9-361 Public; Form 9-361A Indian).
 221.63 Royalty and rental remittance (Form 9-614A Indian).
 221.64 Royalty and rental remittance (Form 11ND Naval Petroleum Reserves).
 221.65 Special forms or reports.
 221.66 Appeals.
 221.67 Effective date; repeal of prior regulations.

AUTHORITY: The provisions of this Part 221 issued under sec. 3, 26 Stat. 795, secs. 18, 14, 27, 28, 32, 41 Stat. 426, 442, as amended, 448, as amended, 449, as amended, 450 sec. 7, 42 Stat. 1450, 43 Stat. 244, sec. 6, 46 Stat. 374, sec. 39, 47 Stat. 798, as amended, sec. 40, 48 Stat. 977, sec. 3, 49 Stat. 679, 50 Stat. 842, as amended, sec. 4, 52 Stat. 348, sec. 10, 61 Stat. 915; 25 U.S.C. 397, 356, 30 U.S.C. 223, 184, 185, 189, 236, 25 U.S.C. 398, 30 U.S.C. 306, 209, 229a, 236a, 2211, 25 U.S.C. 396d, 30 U.S.C. 359.

SOURCE: The provisions of this Part 221 appear at 7 F.R. 4132, June 2, 1942, unless otherwise noted.

INTRODUCTION; DEFINITIONS

§ 221.1 Introduction.

The regulations in this part will govern the development and production of deposits of oil, gas, and casing-head or natural gasoline, including propane, butane and other hydrocarbons, and fluids, and lands containing such deposits owned or controlled by the United States, and under jurisdiction of the Secretary by law or administrative arrangement. The regulations in this part shall be administered under the Director of the Geological Survey, except that as to lands within naval petroleum reserves they shall be administered under such official as the Secretary of the Navy shall designate.

§ 221.2 Definitions.

The following terms as used in the regulations in this part shall have the meanings here given:

(a) *Secretary.* The Secretary of the Interior, except where lands in naval petroleum reserves are involved, and in that case the Secretary of the Navy.

(b) *Director.*—The Director of the Geological Survey, Washington, D.C., having direction of the enforcement of the regulations in this part.

(c) *Supervisor.*—The Area Oil and Gas Supervisor, Conservation Division of the Geological Survey; a representative of the Secretary, subject to the direction and supervisory authority of the Director, the Chief, Conservation Division, Geological Survey, and the appropriate Regional Conservation Manager, Conservation Division, Geological Survey, authorized and empowered to supervise and direct oil and gas operations and to perform other duties prescribed in the regulations in this part, or any subordinate acting under his direction.

(d) *Officer in charge.* The supervisor or such other officer as the Secretary may designate to supervise technical operations for the development and production of oil and gas on restricted Indian lands. Over such lands the officer so designated shall exercise the authority and power and perform the duties of supervisor as provided in the regulations in this part.

(e) *Superintendent.* The superintendent of an Indian agency, or other officer authorized to act in matters of record, law, and collections with respect to

oil or gas leases for restricted Indian lands.

(f) *Lease.* An agreement which in consideration of covenants to be observed, grants to a lessee the exclusive right and privilege of developing and producing oil or gas deposits owned by the lessor subject to the regulations in this part.

(g) *Leased lands, leasehold.* Lands and deposits covered by a lease as defined in paragraph (f) of this section.

(h) *Producing lease.* A producing lease is one including land on which there is a producible well, either active or shut in, or land determined by the supervisor to be subject to subsurface drainage.

(i) *Lessor.* The party to a lease who holds title to the leased lands.

(j) *Lessee.* The party authorized by a lease, or approved assignment thereof, to develop and produce oil or gas on the leased lands in accordance with the regulations in this part, including all parties holding such authority by or through him.

(k) *Register.* A representative of the Bureau of Land Management in charge of a District Land Office.

(l) *Operator.* The individual, partnership, firm, or corporation that has control or management of operations on the leased land or a portion thereof. The operator may be a lessee, designated agent of the lessee, or holder of rights under an approved operating agreement.

(m) *Designated operator or agent.* The local representative of the lessee or of the operator; may be the holder of operating rights under an approved operating agreement.

(n) *Waste of oil or gas.* Waste of oil or gas, in addition to its ordinary meaning, shall mean the physical waste of oil or gas, and waste, loss, or dissipation of reservoir energy existent in any deposit containing oil or gas and necessary or useful in obtaining the maximum recovery from such deposit.

(1) Physical waste of oil or gas shall be deemed to include the loss or destruction of oil or gas after recovery thereof such as to prevent proper utilization and beneficial use thereof, and the loss of oil or gas prior to recovery thereof by isolation or entrapment, by migration, by premature release of natural gas

from solution in oil, or in any other manner such as to render impracticable the recovery of such oil or gas.

(2) Waste of reservoir energy shall be deemed to include the failure reasonably to maintain such energy by artificial means and also the dissipation of gas energy, hydrostatic energy, or other natural reservoir energy, at any time at a rate or in a manner which would constitute improvident use of the energy available or result in loss thereof without reasonably adequate recovery of oil.

(o) *Gas*. Any fluid, either combustible or noncombustible, which is produced in a natural state from the earth and which maintains a gaseous or rarefied state at ordinary temperature and pressure conditions.

(p) *Oil, crude oil*. Any liquid hydrocarbon substance which occurs naturally in the earth, including drip gasoline or other natural condensates recovered from gas, without resort to manufacturing process.

[7 FR 4132, June 2, 1942, as amended by [38 FR 10001, Apr. 23, 1973] .

JURISDICTION AND FUNCTIONS OF SUPERVISOR

§ 221.3 Jurisdiction.

Subject to the supervisory authority of the Secretary and the Director, drilling and producing operations, handling and gaging of oil, and the measurement of gas or other products, determination of royalty liability, receipt and delivery to those entitled thereto of royalty accruing to the lessor and paid in amount of production, determination of amount and manner of payment of damages assessed under authority of the regulations in this part for defaults or noncompliance with duties by the lessee and, in general, all operations subject to the regulations in this part are under the jurisdiction of the supervisor for any area as delineated by the Director. As to producing leases of Indian lands, the officer in charge, and as to lands within naval petroleum reserves, the supervisor shall determine rental liability, record rentals, royalties, and other payments, and maintain lease accounts. Upon request, the supervisor will advise any person concerning the regulations in this part, and will furnish technical information and advice relative to oil

and gas development and operation on lands subject hereto. In the exercise of his jurisdiction, the supervisor shall be subject to the direction and supervisory authority of the Chief, Conservation Division, Geological Survey and the appropriate Regional Conservation Manager, Conservation Division, Geological Survey, each of whom may exercise the jurisdiction of the supervisor.

[38 FR 10001, Apr. 23, 1973]

§ 221.4 General functions.

The supervisor is hereby authorized to require compliance with least terms, with the regulations in this part, and all other applicable regulations, and with applicable law to the end that all operations shall conform to the best practice and shall be conducted in such manner as to protect the deposits of the leased lands and result in the maximum ultimate recovery of oil, gas, or other products with minimum waste. Inasmuch as conditions in one area may vary widely from conditions in another area, the regulations in this part are general, and detailed procedure hereunder in any particular area is subject to the judgment and discretion of the supervisor, and to any real plan of development that may be adopted pursuant to law. The supervisor may require satisfactory evidence that a lease is in good standing, that the lessee or operator is authorized to conduct operations, and that an acceptable bond has been filed before permitting operations on the leased land.

§ 221.5 Supervision of operations.

The supervisor shall inspect and supervise operations under the regulations in this part; prevent waste, damage to formations or deposits containing oil, gas, or water or to coal measures or other mineral deposits, and injury to life or property; and shall issue instructions necessary, in his judgment, to accomplish these purposes.

§ 221.6 Reports and recommendations.

The supervisor shall make reports to his superior administrative officer as to the general condition of leased lands, and the manner in which operations are being conducted and departmental orders are being obeyed, and submit from time to time information and recommendations for safeguarding and protecting surface

property and underlying mineral-bearing formations.

§ 221.7 Reports and notices.

The supervisor shall prescribe the manner and form in which records of all operations, reports, and notices shall be made by lessees and operators.

§ 221.8 Required samples, tests, and surveys.

When deemed necessary or advisable, the supervisor is authorized to require that adequate samples be taken and tests or surveys be made in acceptable manner without cost to the lessor to determine the identity and character of formations; the presence or waste of oil, gas, water, or reservoir energy; the quantity and quality of oil, gas, or water; the amount and direction of deviation of any well from the vertical; formation, casing, tubing, or other pressures; and whether operations are being conducted with due regard to the interests of the lessor.

§ 221.9 Damage to mineral deposits, directional drilling, lease obligations, well abandonment.

The supervisor shall require correction, in a manner to be prescribed or approved by him, of any condition which is causing or is likely to cause damage to any formation containing oil, gas, or water or to coal measures or other mineral deposits, or which is dangerous to life or property or wasteful of oil, gas, or water; require substantially vertical drilling when necessary to protect interests in other properties; demand drilling in accordance with the terms of the lease or of the regulations in this part; and require plugging and abandonment of any well or wells no longer used or useful in accordance with such plan as may be approved or prescribed by him, and, upon failure to secure compliance with such requirement, perform the work at the expense of the lessee, expending available public funds, and submit such report as may be needed to furnish a basis for appropriate action to obtain reimbursement.

§ 221.10 Well potentials and permissible flow.

The supervisor is authorized to fix the percentage of the potential capacity of any oil or gas well that may be utilized

or the permissible production of any such well when, in his opinion, such action is necessary to protect the interests of the lessor, or to conform with proration rules established for the field; and to specify the time and method for determining the potential capacity of such wells.

§ 221.11 Well-spacing and well-casing; technical assistance to lessees.

The supervisor shall approve well-spacing and well-casing programs determined to be necessary for the proper development of the leases and assist and advise lessees in the planning and conduct of tests and experiments for the purpose of increasing the efficiency of operations.

§ 221.12 Production records; rentals, royalties, and payments; drainage and waste.

The supervisor shall compile and maintain records of production and prices and determine royalties accrued, estimate drainage and compute losses to the lessor resulting therefrom, and estimate the amount and value of oil, gas, and other products wasted. The supervisor shall render monthly to the lessee, or his agent, statements, showing the amount of oil, gas, casing-head or natural gasoline, propane, butane, or other hydrocarbons produced or sold and the amount or value of production accruing to the lessor as royalty from each lease; the loss by drainage or waste and the compensation due to the lessor as reimbursement; and, except as to any disposal of gas that shall have been determined by the Secretary of the Interior to be sanctioned by the laws of the United States and of the State in which it occurs, the amount and full value, computed at a price of not less than 5 cents per 1,000 cubic feet, of all gas wasted by blowing, release, escape into the air, or otherwise. Also, as to producing leases of Indian lands and lands within naval petroleum reserves, the supervisor shall determine rental liability, record rental, royalty, and other payments, and maintain lease accounts.

§ 221.13 Division orders, run tickets, sales agreement or contracts.

The supervisor is authorized to approve, subject to such conditions as he shall prescribe, division orders or tem-

porary purchase agreements granting to transportation agencies or purchasers authority to receive products from leased lands in accordance with Government rules and regulations; sign run tickets or other receipts for royalty oil or gas delivered to a representative of the lessor or to the lessor's account; and approve sales agreements and contracts, subject to any conditions, modification, or revocation that may be prescribed on review thereof by the Director.

CROSS REFERENCE: For regulations relating to approval of sales agreements or contracts, see Part 223 of this chapter.

§ 221.14 Suspension of operations and production.

On receipt of an application for suspension of operations or production or for relief from any drilling or producing requirement under a lease, the supervisor shall forward such application, with a report and recommendation, to the appropriate official and, pending action thereon, grant such temporary approval as he may deem warranted in the premises, or reject such application, subject to the right of appeal as provided in part 290 of this chapter.

[7 FR 4132, June 2, 1942, as amended at 38 FR 10001, Apr. 23, 1973]

§ 221.15 Beginning or resumption of drilling or producing operations.

Where drilling or producing operations have been suspended on a lease, the supervisor may approve in writing notice by the lessee of intention to begin or resume such operations: *Provided*, That whenever it appears from facts adduced by or furnished to him that the interests of the lessor require additional drilling or producing operations, the supervisor may require by notice in writing the beginning or resumption of such operations.

§ 221.16 Enforcement.

The supervisor shall enforce the regulations in this part, and his orders issued pursuant thereto by action provided for in §§ 221.53 and 221.54 whenever, in his judgment, such action is necessary or advisable.

§ 221.17 Appeals action.

The supervisor shall receive and promptly render his decision on any matter presented for reconsideration under the regulations in this part and shall receive and promptly transmit for

review all appeals filed pursuant to part 290 of this chapter.

[38 FR 10001, Apr. 23, 1973]

REQUIREMENTS FOR ALL LESSEES (INCLUDING DESIGNATED OPERATORS)

§ 221.18 Lease terms, regulations, instructions of supervisor, waste, damage, safety, and bond.

The lessee shall comply with the terms of the lease, and of the regulations in this part and any amendments thereof, and with the written instructions of the supervisor, shall take all reasonable precautions to prevent waste, damage to formations or deposits containing oil, gas, or water or to coal measures or other mineral deposits, and injury to life or property, and before drilling or other operations are started, shall have submitted a satisfactory bond.

§ 221.19 Designated operator (or agent).

(a) In all cases where operations on a lease are not conducted by the record owner, but are to be conducted under authority of an operating agreement, an unapproved assignment, or other arrangement, a "designation of operator" shall be submitted to the supervisor, in a manner and form approved by the supervisor, prior to commencement of operations. If the designation of operator form cannot be obtained from the lessee without undue inconvenience to the operator, the supervisor in his discretion may accept in lieu thereof a valid operating agreement approved by the Secretary. A designation of operator will be accepted as authority of operator or his local representative to fulfill the obligations of the lessee and to sign, as operator, any papers or reports required under the regulations in this part. It will rest in the discretion of the supervisor to determine how a local representative of the operator empowered to act in whole or in part in his stead shall be identified.

(b) If the designated operator shall at any time be incapacitated for duty or absent from his designated address, the operator or the lessee shall designate in writing a substitute to serve in his stead, and, in the absence of such operator or of notice of the appointment of a substitute, any employee of the lessee who is on the leased lands or the contractor or other person in charge of operations will be considered the agent of the lessee for the service of orders or notices and:

service in person or by ordinary mail upon any such employee, contractor, or other person will be deemed service upon the operator and the lessee. All changes of address and any termination of the operator's authority shall be immediately reported, in writing, to the supervisor or his representative. In case of such termination or of controversy between the lessee and the designated operator, the operator, if in possession of the leasehold will be required to protect the interests of the lessor.

§ 221.20 Well-location restrictions.

(a) The lessee shall not drill any well within 200 feet of any of the outer boundaries of the leased lands except where necessary to protect those lands against wells on land the title to which is not held by the lessor, and then only on consent first had in writing from the supervisor: *Provided*, That for good cause shown in any particular case, and where not prohibited by law, a lessee may be relieved of such restrictions on written consent of the supervisor. The lessee shall not drill any well within 200 feet of the boundary of any legal subdivision without first submitting adequate reasons therefor and obtaining consent in writing from the supervisor, such consent to be subject to such conditions as may be prescribed by said official.

(b) Lessees of Indian lands shall not drill any well within 200 feet of any house or barn standing on the leased lands without the lessor's written consent, approved by the officer in charge and the superintendent.

§ 221.21 Well-spacing and well-casing program, well operations, required offsets, diligence, compensation in lieu of drilling.

(a) When required by the supervisor, the lessee shall submit an acceptable well-spacing and well-casing program for the lease or area. Such program must be approved by the supervisor and may be modified from time to time as conditions warrant, with the consent and approval of the supervisor.

(b) The lessee shall not begin to drill, redrill, repair, deepen, plug back, shoot, or plug and abandon any well, make water shut-off or formation test, alter the casing or liner, stimulate production by vacuum, acid, gas, air, water injection, or any other method, change the method of recovering production, or use any formation or well for gas storage or water

disposal without first notifying the supervisor of his plan and intention and receiving written approval prior to commencing the contemplated work. The approval by the supervisor of a drilling plan does not constitute a determination or opinion that the lessee will be entitled to an extension of his lease under any extension provisions of the public-land or acquired lands mineral leasing laws if he carries out his plan.

(c) The lessee shall drill diligently and produce continuously from such wells as are necessary to protect the lessor from loss of royalty by reason of drainage, or, in lieu thereof, with the consent of the supervisor, he must pay a sum estimated to reimburse the lessor for such loss of royalty, the sum to be computed monthly by the supervisor.

(d) The lessee, whenever drilling or producing operations are suspended for 24 hours or more, shall close the mouth of the well with a suitable plug or other fittings acceptable to the supervisor.

[7 F.R. 4132, June 2, 1942, as amended at 31 F.R. 6415, Apr. 28, 1966]

§ 221.22 Well designations, property boundaries, markers for abandoned wells.

The lessee shall mark each and every derrick or well in a conspicuous place with his name or the name of the operator, the serial number of the lease or the name of the lessor if on Indian land, and the number and location of the well, and shall take all necessary means and precautions to preserve these markings. All abandoned wells shall be marked with a permanent monument, on which shall be shown the number and location of the well, unless this requirement is waived in writing by the supervisor. This monument shall consist of a piece of pipe not less than 4 inches in diameter and not less than 10 feet in length, of which 4 feet shall be above the general ground level, the remainder being embedded in cement. The top of the pipe must be closed with a screw cap, cement plug, or by other approved means.

§ 221.23 Well records and reports, plats and maps, samples, tests, and surveys.

(a) The lessee shall keep on the leased lands or at his headquarters in the field, or otherwise conveniently available to the supervisor, accurate and complete records of the drilling, redrilling, deepening, repairing, plugging, or abandoning of all wells and of all other well

operations, and of all alterations to casing. These records shall show all the formations penetrated, the content and character of oil, gas, or water in each formation, and the kind, weight, size, and landed depth of casing used in drilling each well on the leased lands, and any other information obtained in the course of well operations.

(b) Within 15 days after the completion of any well and within 15 days after the completion of any further operations on it, the lessee shall transmit to the supervisor copies of these records on forms furnished by the supervisor. (For reports to be made by all lessees or their designated operators, see §§ 221.57 to 221.65.)

(c) The lessee shall take such samples and make such tests and surveys as may be required by the supervisor with a view to determining conditions in the well and obtaining information concerning materials (formations) drilled and shall furnish such characteristic samples of each formation or substance, or reports thereon, as may be requested by the supervisor. The lessee shall gage the production of oil, gas, and water from individual wells continuously or at reasonably frequent intervals to the satisfaction of the supervisor.

(d) The lessee shall also submit in duplicate such other reports and records of operations as may be required and in the manner and form prescribed by the supervisor.

(e) Upon request and in the manner and form prescribed by the supervisor the lessee shall furnish a copy of the daily drilling report, a plat showing the location, designation, and status of all wells on the leased lands, together with such other pertinent information as the supervisor may require.

§ 221.24 Precautions necessary in areas where high pressure are likely to exist.

When drilling in "wildcat" territory, or in any field where high pressures are likely to exist, the lessee shall take all necessary precautions for keeping the well under control at all times and shall provide at the time the well is started the proper high-pressure fittings and equipment; under such conditions the conductor string of casing must be cemented throughout its length, unless other procedure is authorized or prescribed by the supervisor, and all strings of casing must be securely anchored.

§ 221.25 Cable tool drilling precautions.

When drilling with cable tools, the lessee shall provide at least one properly prepared slush pit, into which must be deposited mud and cuttings from clay or shale free of sand that will be suitable for the mudding of a well. When necessary or required, the lessee shall provide a second pit for sand pumpings and other materials obtained from the well during the process of drilling that are not suitable for mudding.

§ 221.26 Rotary tool drilling precautions.

When drilling with rotary tools, the lessee shall provide, when required by the supervisor, an auxiliary mud pit or tank of suitable capacity and maintain therein a supply of mud having the proper characteristics for emergency use in case of blowouts or lost circulation.

§ 221.27 Vertical drilling.

The lessee shall drill substantially vertical wells, material deviation from the vertical being permitted only on written approval of the supervisor and where interests in other properties will not be unfairly affected.

§ 221.28 Water shut-offs; formation tests.

(a) By approved methods, the lessee shall shut off and exclude all water from any oil- or gas-bearing stratum to the satisfaction of the supervisor, and to determine the effectiveness of such operations, the lessee shall make a casing and a water shut-off test before suspending drilling operations or drilling into the oil or gas sand and completing the well.

(b) The lessee shall test for commercial productivity all formations that give evidence of carrying oil or gas, the test to be made to the satisfaction of and in a manner approved in advance by the supervisor. Unless otherwise specifically approved by the supervisor, formation tests shall be made at the time the formations are penetrated and in the absence of excessive back pressure from a column of water or mud fluid. Records of such tests shall be furnished in duplicate.

§ 221.29 Protection of upper productive strata.

The lessee shall not deepen an oil or gas well for the purpose of producing oil or gas from a lower stratum until all

upper productive strata are protected to the satisfaction of the supervisor.

§ 221.30 Open flows and control of "wild" wells.

The lessee shall take reasonable precautions to prevent any oil, gas, or water well from blowing open, or "wild", and shall take immediate steps and exercise due diligence to bring under control any such well or burning oil or gas well.

§ 221.31 Emulsion and dehydration.

The lessee shall complete and maintain his wells in such mechanical condition and operate them in such manner as to prevent, as far as possible, the formation of emulsion, or so-called B. S., and the infiltration of water. If the formation of emulsion, or B. S., or the infiltration of water, cannot be prevented or if all or any part of the product is unmarketable by reason thereof or on account of any impurity or foreign substance, the lessee shall put into marketable condition, if commercially feasible, all products produced from the leased land and pay royalty thereon without recourse to the lessor for deductions on account of costs of treatment or of costs of shipping. To avoid excessive losses from evaporation, oil shall not be heated to temperatures above the minimum required to put the oil into marketable condition. If excessive temperatures are required to break down an emulsion, then other means of dehydration must be utilized. Under such circumstances the supervisor must be consulted, and his approval obtained.

§ 221.32 Pollution and surface damage.

The lessee shall not pollute streams or damage the surface or pollute the underground water of the leased or other land. If useless liquid products of wells cannot be treated or destroyed or if the volume of such products is too great for disposal by usual methods without damage, the supervisor must be consulted, and the useless liquids disposed of by some method approved by him.

§ 221.33 Gaging and storing oil.

All production run from leased lands shall be gaged or measured according to methods approved by the supervisor. The lessee shall provide tanks located on the leasehold, unless otherwise approved by the supervisor, suitable for containing and measuring accurately all crude oil produced from the wells and shall furnish to the supervisor at least two ac-

ceptable positive copies of 100 percent-capacity tank tables. Meters for measuring oil must be first approved by the supervisor, and tests of their accuracy shall be made when directed by that official. The lessee shall not, except during an emergency and except by special permission of the supervisor, confirmed in writing, permit oil to be stored or retained in earthen reservoirs or in any other receptacle in which there may be undue waste of oil.

§ 221.34 Well abandonment.

(a) The lessee shall promptly plug and abandon or condition as a water well any well on the leased land that is not used or useful for the purposes of the lease, but no productive well shall be abandoned until its lack of capacity for further profitable production of oil or gas has been demonstrated to the satisfaction of the supervisor. Before abandoning a well the lessee shall submit to the supervisor a statement of reasons for abandonment and his detailed plans for carrying on the necessary work, together with duplicate copies of the log, if it has not already been submitted. A well may be abandoned only after receipt of written approval by the supervisor, in which the manner and method of abandonment shall be approved or prescribed. Equipment shall be removed and premises at the well-site shall be properly conditioned immediately after plugging operations are completed on any well.

(b) In case the lessee of lands of the United States strikes water while drilling, instead of oil or gas, and the water is of sufficient quantity and suitable quality to be valuable and usable at a reasonable cost, the Secretary may take over the well as provided in section 40 of the Mineral Leasing Act approved June 16, 1934, 48 Stat. 977, 30 U.S.C. 299a. If a satisfactory agreement is reached, the lessee may condition the well for a water well in lieu of plugging and abandonment.

(c) Drilling equipment shall not be removed from any suspended drilling well without first securing the written consent of the supervisor.

§ 221.35 Waste prevention; beneficial use.

The lessee is obligated to prevent the waste of oil or gas and to avoid physical waste of gas the lessee shall consume it beneficially or market it or return it to the productive formation. If waste of oil or gas occurs the lessee shall pay

the lessor the full value of all gas wasted by blowing, release, escape, or otherwise at a price not less than 5 cents for each 1,000 cubic feet, unless, on application by the lessee, such waste of gas under the particular circumstances involved shall be determined by the Secretary to be sanctioned by the laws of the United States and of the State in which it occurs. The production of oil and gas shall be restricted to such amount as can be put to beneficial use with adequate realization of values, and in order to avoid excessive production of either oil or gas, when required by the Secretary, shall be limited by the market demand for gas or by the market demand for oil.

§ 221.36 Accidents and fires.

The lessee shall take all reasonable precautions to prevent accidents and fires, shall notify the supervisor within 24 hours of all accidents or fires on the leased land, and shall submit a full report thereon within 15 days.

§ 221.37 Workmanlike operations.

The lessee shall carry on all operations and maintain the property at all times in a safe and workmanlike manner, having due regard for the preservation and the conservation of the property and for the health and safety of employees. The lessee shall take reasonable steps to prevent and shall remove accumulations of oil or other materials deemed to be fire hazards from the vicinity of well locations and lease tanks, and shall remove from the property or store in orderly manner all scrap or other materials not in use.

§ 221.38 Sales contracts; division orders.

The lessee shall file with the supervisor triplicate (quadruplicate for production of restricted Indian lands or naval petroleum reserves) executed copies of all contracts for the disposition of all products of the leased land except that portion used for purposes of production on the leased land or unavoidably lost, and he shall not sell or otherwise dispose of said products except in accordance with a sales contract, division order, or other arrangement first approved, as provided in § 221.13.

§ 221.39 Relief from operating, royalty, and rental requirements.

Applications for any modification authorized by law of the operating requirements of a lease for lands of the United

States shall be filed in triplicate (quintuplicate for applications involving leases for lands within the naval petroleum reserves) with the supervisor, and shall include a full statement of the circumstances that render such modification necessary or proper. Applications for any modification authorized by law of the royalty or rental requirements of a lease for lands of the United States shall be filed in triplicate in the office of the supervisor.

CROSS REFERENCE: For regulations of the Bureau of Land Management relating to royalty and rental relief, and suspension of operations and production, see 43 CFR Parts 3100 to 3104.

[13 F.R. 9496, Dec. 31, 1948]

§ 221.40 Royalty and rental payments.

(a) When due in money, the lessee shall tender all payments of rental and royalty by check or draft on a solvent bank, or by money order drawn to the order of the appropriate receiving officer, in accordance with statements rendered by the supervisor pursuant to § 221.12, or in the case of public-land leases in accordance with instructions of the Bureau of Land Management.

(b) If the lessor elects to take royalty in oil or gas, unless otherwise agreed upon, such royalty shall be delivered on the leasehold, by the lessee to the order of and without cost to the lessor, as instructed by the supervisor. Upon the lessor's request, storage for royalty oil for 30 days after the end of the calendar month in which the royalty accrues, shall be furnished free of charge. Storage shall be provided on the leased lands or at a place mutually agreed upon by the supervisor and the lessee.

§ 221.41 Surface rights on Indian lands.

Lessees of Indian land shall have only such surface rights as are specifically granted in the lease, but additional rights may be exercised under written agreement with the owner, such agreement to be subject to the prior approval of the superintendent of the Indian agency having jurisdiction. On demand of the supervisor, pipe lines on Indian land shall be buried below plow depth.

§ 221.42 Costs or damages.

The lessee shall pay all costs or damages assessed under the provisions of the regulations in this part.

CROSS REFERENCE: For other liabilities of the lessee in case of default, see also §§ 221.53 to 221.58.

MEASUREMENT OF PRODUCTION AND
COMPUTATION OF ROYALTIES

§ 221.43 Measurement of oil.

The volume of production shall be computed in terms of barrels of clean oil of 42 standard United States gallons of 231 cubic inches each, on the basis of meter measurements (meter must be approved by supervisor), or tank measurements of oil-level differences, made and recorded to the nearest quarter inch of 100-percent-capacity tables, or with such greater accuracy as shall be required by the supervisor, and subject to the following corrections.

(a) *Correction for impurities.* The percentage of impurities (water, sand, and other foreign substances not constituting a natural component part of the oil) shall be determined to the satisfaction of the supervisor, and the observed gross volume of oil shall be corrected to exclude the entire volume of such impurities.

(b) *Temperature correction.* The observed volume of oil corrected for impurities shall be further corrected to the standard volume at 60° F. in accordance with table 2 of Circular C-410 of the National Bureau of Standards (March 4, 1936), or any revisions thereof and any supplements thereto, or any close approximation thereof approved by the supervisor.

(c) *Gravity determination.* The gravity of the oil at 60° F. shall be determined in accordance with table 1 of Circular C-410 of the National Bureau of Standards (March 4, 1936), or any revisions thereof and any supplements thereto.

(d) *Lease production, pipe-line runs.* For the convenience of the lessor and lessee, monthly statements of production and royalty shall be based in general on production recorded in pipe-line runs or other shipments. When shipments are infrequent or do not approximate actual production, the supervisor may require statements of production and royalty to be made on such other basis as he may prescribe, gains, or losses in volume of storage being taken into account when appropriate. Evidence of all shipments of oil shall be furnished by pipe-line or other run tickets signed by representatives of the lessee and of the purchaser who have witnessed the measurements reported and the determinations of gravity, temperature, and the percentage of impurities contained

in the oil. Signed run tickets shall be filed with the supervisor within 5 days after the oil has been run.

§ 221.44 Measurement of gas.

Gas of all kinds (except gas used for purposes of production on the leasehold or unavoidably lost) is subject to royalty, and all gas shall be measured by meter (preferably of the orifice-meter type) unless otherwise agreed to by the supervisor. All gas meters must be approved by the supervisor and installed at the expense of the lessee at such places as may be agreed to by the supervisor. For computing the volume of all gas produced, sold, or subject to royalty, the standard of pressure shall be 10 ounces above an atmospheric pressure of 14.4 pounds to the square inch, regardless of the atmospheric pressure at the point of measurement, and the standard of temperature shall be 60° F. All measurements of gas shall be adjusted by computation to these standards, regardless of the pressure and temperature at which the gas was actually measured, unless otherwise authorized in writing by the supervisor.

§ 221.45 Determination of gasoline content of natural gas.

Tests to determine the gasoline content of gas delivered to plants manufacturing gasoline are required to check plant efficiency and to obtain an equitable basis for allocating the gasoline output of any plant to the several sources from which the gas treated is derived. The gasoline content of the gas delivered to each gasoline plant treating gas from leased lands shall be determined periodically by field tests, as required by the supervisor, to be made at the place and by the methods approved by him and under his supervision.

§ 221.46 Quantity basis for computing royalties on natural gasoline, butane, propane, and other liquid hydrocarbon substances extracted from gas.

The primary quantity basis for computing monthly royalties on casing-head or natural gasoline, butane, propane, or other liquid hydrocarbon substances extracted from gas is the monthly net output of the plant at which the substances are manufactured, "net output" being defined as the quantity of each such substance that the plant produces for sale.

(a) If the net output of a plant is derived from the gas obtained from only

one leasehold, the quantity of gasoline or other liquid hydrocarbon substances of which computations of royalty for the lease are based is the net output of the plant.

(b) If the net gasoline output of a plant is derived from gas obtained from several leaseholds producing gas of uniform gasoline content, the proportion of net output of gasoline allocable to each lease as a basis for computing royalty will be determined by dividing the amount of gas delivered to the plant from each leasehold by the total amount of gas delivered to the plant from all leaseholds.

(c) If the net gasoline output of a plant is derived from gas obtained from several leaseholds producing gas of diverse gasoline content, the proportion of net output of gasoline allocable to each leasehold as a basis for computing royalty will be determined by multiplying the amount of gas delivered to the plant from the leaseholds by the gasoline content of the gas and dividing the arithmetical product thus obtained by the sum of the similar arithmetical products separately obtained for all leaseholds from which gas is delivered to the plant.

(d) If the net output of butane, propane, or other liquid hydrocarbon substances of a plant is derived from gas obtained from several leaseholds, the proportion of net output of such substances allocable to each leasehold as a basis for computing royalty will be determined by substituting the butane, propane, or other liquid hydrocarbon content for the gasoline content and following the method outlined in paragraph (b) or (c) of this section, whichever is applicable: *Provided*, That when in the judgment of the supervisor it is impracticable to test gas to determine the content of butane, propane, or other liquid hydrocarbon substances, the gasoline content will be used in determining the proportion of the net output of such substances allocable to each leasehold.

(e) The supervisor is authorized, whenever in his judgment neither method prescribed in paragraph (b) and (c) of this section is practicable, to estimate the production of natural gasoline, butane, propane, or other liquid hydrocarbon substances from any leasehold from (1) the quantity of gas produced from the leasehold and transmitted to the extraction plant, (2) the gasoline, butane, propane, or other liquid hydrocarbon content of such gas as determined

by test, and (3) a factor based on plant efficiency or recovery and so determined as to insure full protection of the royalty interest of the lessor.

§ 221.47 Value basis for computing royalties.

The value of production, for the purpose of computing royalty shall be the estimated reasonable value of the product as determined by the supervisor, due consideration being given to the highest price paid for a part or for a majority of production of like quality in the same field, to the price received by the lessee, to posted prices and to other relevant matters. Under no circumstances shall the value of production of any of said substances for the purposes of computing royalty be deemed to be less than the gross proceeds accruing to the lessee from the sale thereof or less than the value computed on such reasonable unit value as shall have been determined by the Secretary. In the absence of good reason to the contrary, value computed on the basis of the highest price per barrel, thousand cubic feet, or gallon paid or offered at the time of production in a fair and open market for the major portion of like-quality oil, gas, or other products produced and sold from the field or area where the leased lands are situated will be considered to be a reasonable value.

§ 221.48 Royalty rates on oil; flat-rate leases.

The royalty on crude oil shall be the percentage (established by the terms of the lease) of the value or amount of the crude oil produced from the leased lands.

§ 221.49 Royalty rates on oil; sliding- and step-scale leases (public land only).

Sliding- and step-scale royalties are based on the average daily production per well. The supervisor shall specify which wells on a leasehold are commercially productive, including in that category all wells, whether produced or not, for which the annual value of permissible production would be greater than the estimated reasonable annual lifting cost, but only wells which yield a commercial volume of production during at least part of the month shall be considered in ascertaining the average daily production per well. The average daily production per well for a lease is computed on the basis of a 28-, 29-, 30-, or 31-day month (as the case may be), the number of wells

on the leasehold counted as producing and the gross production from the leasehold. (Tables for computing royalty on the sliding-scale and on the step-scale basis may be obtained upon application to the supervisor.) The supervisor will determine which commercially productive wells shall be considered each month as producing wells for the purpose of computing royalty in accordance with the following rules, and in his discretion may count as producing any commercially productive well shut-in for conservation purposes:

(a) For a previously producing leasehold, count as producing for every day of the month each previously producing well that produced 15 days or more during the month, and disregard wells that produced less than 15 days during the month.

(b) Wells approved by the supervisor as input wells shall be counted as producing wells for the entire month if so used 15 days or more during the month and shall be disregarded if so used less than 15 days during the month.

(c) When the initial production of a leasehold is made during the calendar month, compute royalty on the basis of producing well-days.

(d) When a new well is completed for production on a previously producing leasehold and produces for 10 days or more during the calendar month in which it is brought in, count such new wells as producing every day of the month, in arriving at the number of producing well-days. Do not count any new well that produces for less than 10 days during the calendar month.

(e) Consider "head wells" that make their best production by intermittent pumping or flowing as producing every day of the month, provided they are regularly operated in this manner, with approval of the supervisor.

(f) For previously producing leaseholds on which no wells produced for 15 days or more, compute royalty on a basis of actual producing well-days.

(g) For previously producing leaseholds on which no wells were producing during the calendar month but from which oil was shipped, compute royalty at the same royalty percentage as that of the last preceding calendar month in which production and shipments were normal.

(h) Rules for special cases not subject to definition, such as those arising from averaging the production from two dis-

tinct sands or horizons when the production of one sand or horizon is relatively insignificant compared to that of the other, shall be made by the supervisor as need arises.

(i) (1) In the following summary of operations on a typical leasehold for the month of June, the wells considered for the purpose of computing royalty on the entire production of the property for the months are indicated.

| Well No. | Record | Count (marked X) |
|----------|--|------------------|
| 1 | Produced full time for 30 days..... | X |
| 2 | Produced for 26 days; down 4 days for repairs..... | X |
| 3 | Produced for 28 days; down June 5, 12 hours, rods; June 14, 6 hours, engine down; June 25, 24 hours; June 26, 24 hours, pulling rods and tubing..... | X |
| 4 | Produced for 12 days; down June 13 to 30..... | |
| 5 | Produced for 8 hours every other day (head well)..... | X |
| 6 | Idle producer (not operated)..... | |
| 7 | New well, completed June 17; produced for 14 days..... | X |
| 8 | New well, completed June 22; produced for 9 days..... | |

(2) In this example there are eight wells on the leasehold, but wells 4, 6, and 8 are not counted in computing royalties. Wells 1, 2, 3, 5, and 7 are counted as producing for 30 days. The average production per well per day is determined by dividing the total production of the leasehold for the month (including the oil produced by wells 4 and 8) by 5, the number of wells counted as producing, and dividing the quotient thus obtained by the number of days in the month.

§ 221.50 Royalty on gas.

The royalty on gas shall be the percentage established by the terms of the lease of the value or amount of the gas produced.

(a) Royalty accrues on dry gas, whether produced as such or as residue gas after the extraction of gasoline.

(b) If the lessee derives revenue on gas from two or more products, a royalty normally will be collected on all such products.

(c) For the purpose of computing royalty the value of wet gas shall be either the gross proceeds accruing to the lessee from the sale thereof or the aggregate value determined by the Secretary of all commodities, including residue gas, obtained therefrom, whichever is greater.

§ 221.51 Royalty on casing-head or natural gasoline, butane, propane, or other liquid hydrocarbon substances extracted from gas.

A royalty as provided in the lease shall be paid on the value of one-third (or the lessee's portion if greater than one-third) of all casing-head or natural gasoline, butane, propane, or other liquid hydrocarbon substances extracted from the gas produced from the leasehold. The value of the remainder is an allowance for the cost of manufacture, and no royalty thereon is required. The value shall be so determined that the minimum royalty accruing to the lessor shall be the percentage established by the lease of the amount or value of all extracted hydrocarbon substances accruing to the lessee under an arrangement, by contract or otherwise, for extraction and sale that has been approved by the supervisor:

(a) When a minimum price established by the Secretary is used in determining the value of natural gasoline accruing to the lessee, the volume of such gasoline may be corrected when deemed necessary by the supervisor to such standard and by such method as may be approved by the supervisor, in order that volumetric differences between natural gasolines of various specifications may be equitably adjusted.

(b) The present policy is to allow the use of a reasonable amount of dry gas for operation of the gasoline plant, the amount allowed being determined or approved by the supervisor, but no allowance shall be made for boosting residue gas, or other expenses incidental to marketing.

§ 221.52 Royalty on drip gasoline or other natural condensate.

The royalty on all drip gasoline, or other natural condensate recovered from gas produced from the leased lands without resort to manufacturing process shall be the same percentage as provided in the lease for other oil, except that such substance, if processed in a casing-head gasoline plant shall be treated for royalty purposes as though it were gasoline.

PROCEDURE IN CASE OF DEFAULT BY LESSEE

§ 221.53 Shutting down operations; lease cancellations.

The supervisor has authority to shut down any operation and place under seal any property or equipment for failure to comply with the oil and gas op-

erating regulations in this part or orders issued under this part, to enter upon any leasehold and perform any operation that the lessee fails to perform when ordered so to do in writing, and to recommend cancellation of the lease and forfeiture under the bond for noncompliance with the applicable law, lease terms, and regulations.

§ 221.54 Liquidated damages.

Administrative costs arising out of certain defaults or violations of orders requiring the performance of certain duties by lessees, as set forth in the regulations in this part constitute loss or damage to the United States the amount of which is difficult or impracticable of ascertainment. Therefore, the following amounts shall be deemed to cover such loss or damage and shall be payable upon receipt of notice from the oil and gas supervisor of such loss or damage: *Provided*, That as to paragraph (f) of this section the specified loss or damage shall be applicable to each week or fraction thereof during which the violation continues and as to paragraph (h) of this section the specified loss or damage shall be applicable to each day or fraction thereof during which the violation continues:

(a) For failure to perform any operation ordered in writing by the supervisor, if said operation is thereafter performed by or through the supervisor, the actual cost of performance thereof and an additional 25 percent to compensate the Government for administrative costs.

(b) For failure to maintain inviolate any seal placed upon any property or equipment by the supervisor, \$50 for each such violation.

(c) For failure to file notice of intention and to obtain approval before starting to drill, or for failure to file notice and obtain approval before making any changes in the originally approved notice of intention, \$25 for each violation.

(d) For failure to file notice and to obtain approval before repairing, redrilling, deepening, plugging-back, plugging, or abandoning any well, in pulling or altering casing, stimulating production by vacuum, acid, or shot, or gas, air, or water injection, or using any well or formation for gas storage or water disposal, \$25 for each violation.

(e) For failure to mark wells or derricks, \$10 for each violation.

(f) For failure to install required high-pressure fittings and equipment, to

cement conductor string, or to anchor properly all strings of casing, \$50 for each violation.

(g) For failure to construct and maintain in proper condition slush or mud pits, \$10 for each violation.

(h) For failure to comply with § 221.32, \$25 for each violation.

(i) For failure to file sales contracts or division orders as required by lease terms, \$25 for each violation, and for failure to submit pipe-line run tickets, or other proper evidence of disposal as required by these regulations, \$10 for each violation.

(j) For failure to file the following reports within the time specified in the regulations in this part, or within such other time designated in writing by the supervisor, \$10 for each violation:

(1) Log of well, subsequent report of drilling, re-drilling, deepening, plugging-back, plugging and abandonment, making water shut-off or formation test, stimulating production by acid or shot.

(2) Lessee's Monthly Report of Operations. Daily Report of Gas-Producing Wells, when required. Lessee's Statement of Oil and Gas Runs and Royalties.

(3) Special forms or reports as required by the supervisor.

§ 221.55 Payment of damages.

(a) Payment or request for payment for any of the damages assessed for administrative costs under the regulations in this part shall not relieve the lessee from compliance with the provisions of the regulations in this part, or for liability for waste or any other damage. A waiver of any particular cause for the payment of damages shall not be construed as precluding the assessment of damages for any other cause herein specified or for the same cause occurring at any other time.

(b) Damages shall be paid in the manner and as directed by the supervisor.

§ 221.56 Damages to Indian property.

Damage to lands, crops, buildings, and other improvements on Indian land shall be assessed by the superintendent and payments for such damages shall be made to the superintendent.

REPORTS TO BE MADE BY ALL LESSEES (INCLUDING OPERATORS)

§ 221.57 General requirements.

Information required to be submitted in accordance with the regulations in this part shall be furnished in the manner

and form prescribed in the regulations in this part or as directed by the supervisor. Prescribed standard forms in general use are described in §§ 221.58–221.64. Copies of such forms can be obtained from the supervisor and must be filled out completely and filed punctually with that official. Failure of the lessee to submit the information and reports required herein constitutes noncompliance with the terms of the regulations in this part and is cause for the assessment of specific damages as prescribed by the regulations in this part and the cancellation of the lease.

§ 221.58 Sundry notices and reports on wells (Form 9–331A Public; Form 9–331B Indian).

Forms 9–331A and 9–331B cover all notices of intention and all subsequent reports pertaining to individual wells except those for which special blanks are provided. The forms may be used for any of the purposes listed thereon, or a special heading may be inserted in the blank to adapt it for use for similar purposes. Any written notice of intention to do work or to change plans previously approved must be filed in triplicate, unless otherwise directed, and must reach the supervisor and receive his approval before the work is begun. The lessee is responsible for receipt of the notice by the supervisor in ample time for proper consideration and action. If, in case of emergency, and notice is given orally or by wire, and approval is obtained, the transaction shall be confirmed in writing as a matter of record. The following paragraphs illustrate some of the uses to which Forms 9–331A and 9–331B may be put and indicate the requirements with respect to each use.

(a) *Notice of intention to drill.* The notice of intention to drill a well must be filed with the supervisor and approval received before the work is begun. This notice must give the location, in feet, and direction from the nearest lines of established public survey; the altitude of the ground and derrick floor above sea level and how obtained; and the geologic name of the surface formation. Under the heading "Details of Work", the proposed drilling and casing plan should be outlined in detail. Essential information includes type of tools, proposed depth to which the well will be drilled, estimated depths to the top of important markers, estimated depths at which water, oil, gas, and mineral beds are expected, the pro-

posed casing record, including the size and weight of casing, the depth at which each string is to be set, and the amount of cement and mud to be used. Information also shall be given relative to the drilling plan, such as making drill-stem tests, drilling in with oil, using reversed circulation, perforating opposite pays, using special types of mud in rotary drilling, coring at specified depths, and using electric logging together with any other information which may be required by the supervisor.

(b) *Notice of intention to change plans.* Where unexpected conditions necessitate any change in the plans of proposed work already approved, complete details of the changes must be submitted to the supervisor and approval thereof obtained before the work is undertaken.

(c) *Notice of date for casing and water shut-off test.* The protection and segregation of oil, gas, or water-bearing formations is an important item of conservation, and the supervisor will witness all casing and water shut-off tests. Notice must be filed with the supervisor in advance of the date on which the lessee expects to make such test. Later by agreement the exact time shall be fixed. The casing test and the test of water shut-off must be approved before further drilling can proceed. In the event of failure, casing must be repaired or replaced or recemented, whichever the conditions may require.

(d) *Subsequent report of casing and water shut-off test.* Within 15 days after making a casing or water shut-off test, the results of the test must be reported. The report must give complete and accurate details, amount of mud and cement used, lapse of time between running and cementing the casing and making the test, method of testing, and results.

(e) *Notice of intention to redrill, repair, or condition well.* Before repairing, deepening, or conditioning a well, a detailed written statement of the plan of work must be filed with the supervisor and approval obtained before the work is started. In work that affects only rods, pumps, or tubing, or other routine work, such as cleaning out to previous total depth, no report is necessary unless specifically required by the supervisor.

(f) *Subsequent report of redrilling, repairing, or conditioning.* Within 15 days after completion of the repair work a detailed report of work done and the results obtained should be filed. Such report

shall show the amount of production of oil, gas, and water, both before and after the work is done, and shall also include a complete statement of the work accomplished and methods employed, including all dates.

(g) *Notice of intention to use explosive or chemicals.* Before using explosive or chemicals (shooting or acidizing) in any well, whether for increasing production or in drilling, repair, or abandonment, notice of intention shall be filed and approval obtained before the work is done. When such notice of intention forms a part of a notice of intention to redrill, repair, or abandon a well, the supervisor may accept such notice in lieu of a separate notice of intention to use explosive or chemicals. The notice of intention to use explosive or chemicals must be accompanied by the complete log of the well to date, provided the complete log has not previously been filed, and must state the object of the work to be done, the amount and nature of the material to be used, its exact location and distribution in the well by depths, the method of localizing its effects, and the name of the company that is to do the work. The notice shall also contain an accurate statement of the dates and daily production of oil, gas, and water from the well for each of the last preceding 10 producing days.

(h) *Subsequent report of use of explosive or chemicals.* After using explosive or chemicals in any well a subsequent report must be filed with the supervisor. This report shall be filed separately within 15 days after the work is done, unless such report is included in the log as a part of a report of other subsequent work done or as a part of an abandonment report any one of which shall have been filed within that period. The subsequent report of use of explosive or chemicals shall include a statement of the amount and the nature of the material used, its exact location and distribution in the well by depths, and the method used to localize its effects. The report shall also contain an accurate statement of the dates and daily production of oil, gas, and water for each of the last 10 producing days preceding the use of explosive or chemicals and a similar statement of production after the work is done. In addition, this report must include other pertinent information, such as the depth to which the well was cleaned out, the time spent in hailing and cleaning out, and any injuries to the casing or well.

(i) *Notice of intention to pull, perforate, or otherwise alter casing.* If any casing is to be pulled, perforated, or otherwise altered, notice of intention must be filed and approved before the work is started. Such notice must give full details of the contemplated work, stating fully what changes are intended and what results are anticipated. A notice of intention to perforate the casing shall state the conditions of the well that make such work desirable; whether it is to be ripped or shot, the depth, number, and size of shots, or if ripped, the depths of the rips proposed; the production of oil, gas, and water; and, if a log of the well has not already been filed, the notice should be accompanied by a duplicate copy of the log showing all casing seats as well as all water strata and all oil and gas shows.

(j) *Subsequent report of pulling, perforating, or otherwise altering casing.* If any casing has been pulled, perforated, or otherwise altered, the results of the work should be reported within 15 days after the completion of such work, stating exactly what was done and the results obtained, including any change in production. The report of perforating casing also should include the number, depth, and size of shots, the date shot, and who did the shooting. If ripped, the depths and number of rips should be stated. The production of oil, gas, and water obtained by the work should be shown.

(k) *Notice of intention to abandon well.* Before beginning abandonment work on any well, whether drilling well, oil or gas well, water well, or so-called dry hole, notice of intention to abandon shall be filed with the supervisor and approval obtained before the work is started. The notice must show the reason for abandonment and must be accompanied by a complete log, in duplicate, of the well to date, provided the complete log has not been filed previously, and must give a detailed statement of the proposed work, including such information as kind, location, and length of plugs (by depths), and plans for mudding, cementing, shooting, testing, and removing casing, as well as any other pertinent information.

(l) *Subsequent report of abandonment.* After a well is abandoned or plugged a subsequent record of work done must be filed with the supervisor. This report shall be filed separately within 15

days after the work is done. The report shall give a detailed account of the manner in which the abandonment or plugging work was carried out, including the nature and quantities of materials used in plugging and the location and extent (by depths) of the plugs of different materials; records of any tests or measurements made and of the amount, size, and location (by depths) of casing left in the well; and a detailed statement of the volume of mud fluid used, and the pressure attained in mudding. If an attempt was made to part any casing, a complete report of the methods used and results obtained must be included.

§ 221.59 Log and history of well (Form 9-330).

The lessee shall furnish in duplicate, on Form 9-330, to the supervisor, not later than 15 days after the completion of each well, a complete and accurate log and history, in chronologic order, of all operations conducted on the well. If a log is compiled for geologic information from cores or formation samples, duplicate copies of such log shall be filed in addition to the regular log. Duplicate copies of all electric logs, temperature surveys, or direction surveys shall be furnished. The lessee shall require the drillers, whether using company labor or contract labor, to record accurately the depth, character, fluid content, and fluid levels, where possible, of each formation as it is penetrated, together with all other pertinent information obtained in drilling the well. The practice of compiling well logs from memory, after the work has been completed, will not be permitted.

§ 221.60 Monthly report of operations Form 9-329 Public; Form 9-329A Indian).

A separate report of operations for each lease must be made on Form 9-329 for public land and on Form 9-329A for Indian land, for each calendar month, beginning with the month in which drilling operations are initiated, and must be filed in duplicate with the supervisor on or before the 6th day of the succeeding month, unless an extension of time for the filing of such report is granted by the supervisor. The report on this form shall disclose accurately all operations conducted on each well during each month, the status of operations on the last day of the month, and a gen-

eral summary of the status of operations on the leased lands, and the report must be submitted each month until the lease is terminated or until omission of the report is authorized by the supervisor. It is particularly necessary that the report shall show for each calendar month:

(a) The lease be identified by inserting the name of the United States land office and the serial number, or in the case of Indian land the lease number and lessor's name, in the space provided in the upper right corner;

(b) Each well be listed separately by number, its location be given by 40-acre subdivision ($\frac{1}{4}$ $\frac{1}{4}$ sec. or lot), section number, township, range, and meridian;

(c) The number of days each well produced, whether oil or gas, and the number of days each input well was in operation be stated;

(d) The quantity of oil, gas, and water produced, the total amount of gasoline, and other lease products recovered, and other required information. When oil and gas, or oil, gas, and gasoline, or other hydrocarbons are concurrently produced from the same lease, separate reports on this form should be submitted for oil and for gas and gasoline, unless otherwise authorized or directed by the supervisor.

(e) The depth of each active or suspended well, and the name, character, and depth of each formation drilled during the month, the date each such depth was reached, the date and reason for every shut-down, the names and depths of important formation changes and contents of formations, the amount and size of any casing run since last report, the dates and results of any tests such as production, water shut-off, or gasoline content, and any other noteworthy information on operations not specifically provided for in the form.

(f) The footnote must be completely filled out as required by the supervisor. If no runs or sales were made during the calendar month, the report must so state.

§ 221.61 Daily report of gas-producing wells (Form 9-352).

Unless otherwise directed by the supervisor, the readings of all meters showing production of natural gas from leased lands shall be submitted daily on Form 9-352, together with the meter charts. After a check has been had the meter charts will be returned.

§ 221.62 Statement of oil and gas runs and royalties (Form 9-361 Public; Form 9-361A Indian).

When directed by the supervisor, a monthly report shall be made by the lessee in duplicate, on Form 9-361 or 9-361A, showing each run of oil, all sales of gas, gasoline, other lease products, and the royalty accruing therefrom to the lessor. When use of this form is required it must be completely filled out and sworn to.

§ 221.63 Royalty and rental remittance (Form 9-614A Indian).

Form 9-614A, completely filled out and signed, shall be submitted to the supervisor in triplicate and shall accompany each remittance covering payments of royalty or rental on Indian lands.

§ 221.64 Royalty and rental remittance (Form 11ND Naval Petroleum Reserves).

Form 11ND, completely filled out and signed, must accompany each remittance covering payments of royalty or rental on Naval Petroleum Reserves. The remittance and the original form shall be sent direct to the Property Accounting Officer, United States Navy, Bureau of Supplies and Accounts, Navy Department, Washington, D.C. 20360, and the duplicate and triplicate copies of the form shall be sent to the oil and gas supervisor.

§ 221.65 Special forms or reports.

When special forms or reports other than those referred to in the regulations in this part may be necessary, instructions for the filing of such forms or reports will be given by the supervisor.

§ 221.66 Appeals.

Orders or decisions issued under the regulations in this part may be appealed from as provided in part 290 of this chapter. Compliance with any such order or decision shall not be suspended by reason of an appeal having been taken unless such suspension is authorized in writing by the Director or the Board of Land Appeals (depending upon the official before whom the appeal is pending) and then only upon a determination that such suspension will not be detrimental to the lessor or upon submission and acceptance of a bond

deemed adequate to indemnify the lessor from loss or damage.

38 FR 10001, Apr. 23, 1973]

§ 221.67 Effective date; repeal of prior regulations.

The regulations in this part shall become effective on the 1st day of June 1942, and shall supersede the oil and gas operating regulations of November 1, 1936, as amended, 30 CFR, 1938 ed., 221.1 to 221.56, except as to leases and unit agreements in force and effect on June 1, 1942, to which the regulations in this part are not applicable.¹

PART 222—CONNALLY ACT REGULATIONS

Subpart A—General

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Subpart C—Investigations

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AUTHORITY: The provisions of this Part 222 issued under secs. 5, 11, 49 Stat. 31, 33; 15 U.S.C. 715d, 715j, E.O. 10752, 23 F.R. 973, 3 CFR, 1954—1958 Comp.

SOURCE: The provisions of this Part 222 appear at 28 F.R. 6742, June 29, 1963, unless otherwise noted.

¹Not applicable on said effective date to lands acquired under the act known as the Appalachian Forest Act of March 1, 1911, 36 Stat. 961, to lands in national parks, to lands withdrawn or reserved for military or naval uses or purposes, except naval petroleum reserves, or to lands within the Osage Indian Reservation.

Subpart A—General

§ 222.1 Delegations of authority.

(a) The Branch of Connally Act Compliance, Conservation Division, Geological Survey, shall administer the regulations prescribed in this part, under the supervision of the Director, Geological Survey, and the Chief, Conservation Division.

(b) The Chief, Branch of Connally Act Compliance, may hold and conduct such investigations, hearings, and proceedings as may be necessary to administer and enforce the Act of February 22, 1935, as amended (15 U.S.C., secs. 715-715k). In connection with such investigations, hearings, or proceedings he may exercise the authority granted by the act relating to the administering of oaths and affirmations, the attendance and testimony of witnesses, and the production of evidence.

(c) The Chief, Branch of Connally Act Compliance, may, in writing, redelegate to any official or employee of the Branch the authority delegated to him by paragraph (b) of this section. The Chief Investigator, the Investigators-in-Charge, and the General Investigators of the Branch of Connally Act Compliance are respectively empowered to exercise the authority (28 F.R. 3429) which was redelegated by the Chairman of the Federal Petroleum Board to the Chief Investigator, Investigators-in-Charge, and General Investigators, respectively, of the Federal Petroleum Board, until that authority is revoked or modified by the Chief of the Branch.

§ 222.2 Definitions.

When used in this part or in subsequent orders and regulations prescribed pursuant to said act and Executive orders, or in any forms prescribed thereunder, the term:

(a) "Branch" means Branch of Connally Act Compliance, Conservation Division, Geological Survey.

(b) "Person" shall include any individual, partnership, corporation, or joint stock company.

(c) "Producer" shall include every person having any part in the control or management of any operation by which petroleum is produced from any property. Every person in possession of crude petroleum who refuses to identify the prior owner thereof, from whom he

acquired the same, shall be deemed the producer of such petroleum within the meaning of this part.

(d) "Refiner" shall include every person who has any part in the control or management of any operation by which the physical or chemical characteristics of petroleum or petroleum products are changed, but exclusive of the operations of passing petroleum through separators to remove gas, placing petroleum in settling tanks to remove basic sediment and water, dehydrating petroleum and generally cleaning and purifying petroleum. Within the term shall be included every person who blends petroleum and any product of petroleum.

(e) "Reclamation plant" shall include every plant operated in the process of reclaiming, treating or washing waste petroleum, wash oil, pit oil, fugitive oil, basic sediment, or tank bottoms.

(f) "Casinghead gasoline plant" shall include every plant or device by the use of which gasoline or natural gasoline or casinghead gasoline, (as those terms are commonly understood in the industry); or any of them, is extracted by any process or method from natural gas or casinghead gas, or from any gas liberated from petroleum in the process of refining.

(g) "Pine line" shall include every line of pipe, however constructed and regardless of length, and all receiving, storage and delivery tanks and facilities used in the operation thereof, by which petroleum or any petroleum product is transported, regardless of whether or not such line of pipe is owned, in whole or in part, by the person producing, refining, processing, manufacturing, purchasing, cleansing, or marketing such petroleum or such petroleum product, or by any or all such persons jointly, or by any other person or combination of persons, except that the term "pipe line" shall not include any line from a well to lease storage, or any line used in actual plant operations, and not used in the receipt or delivery of petroleum or petroleum products. The terms "pipeline system" and "gathering system" are included within the term "pipe line."

(h) "Transporting agency" shall include railroads, pipe lines, gathering systems, tankers, barges, trucks, or any other means of conveyance used for transporting petroleum or petroleum products.

(i) "Storer" shall include every person who places petroleum or any petro-

leum product in any receptacle and keeps the same in any such receptacle for any period of time longer than is usually required in the ordinary conduct of business to move the same currently into the channels of trade and commerce; but excluding the ordinary working stocks of refiners and transporters by pipe line.

(j) "Petroleum" when used singly and separate and apart from "product" shall include petroleum in its crude form, and the terms "product (or products) of petroleum" or "petroleum product (or products)" shall include any article produced or derived in whole or in part from petroleum or any product thereof by refining, processing, manufacturing or otherwise. Whenever natural gas is produced in conjunction or coincidentally with petroleum, such natural gas and all products derived therefrom shall be considered petroleum products. The terms "oil," "crude oil," and "crude petroleum" shall be considered synonymous with petroleum in the regulations in this part.

(k) "Barrel of petroleum" means 42 United States gallons of petroleum, measured and calculated to net or gross quantities in accordance with the regulations of the State authorities in force at the point of production, or in the absence of such regulations, measured and calculated in the manner generally in use in the industry at such point of production. The term "barrel" as used otherwise in the regulations in this part shall mean 42 United States gallons of the article referred to.

(l) "Contraband oil" means petroleum which, or any constituent part of which, was produced, transported, or withdrawn from storage in excess of the amounts permitted to be produced, transported, or withdrawn from storage under the laws of a State or under any regulation or order prescribed thereunder by any board, commission, officer, or other duly authorized agency of such State, or any of the products of such petroleum.

(m) "Interstate commerce" means commerce between any point in a State and any point outside thereof, or between points within the same State but through any place outside thereof, or from any place in the United States to a foreign country, but only in so far as such commerce takes place within the United States.

§ 222.3 Official records.

Official records to be kept confidential, except when otherwise ordered by the Director, Geological Survey, shall include the following types of records: reports, diagrams and other papers submitted, and records of inspections made pursuant to this part; records of investigations and hearings; and recommendations in the enforcement of the Connally "Hot Oil" Act. (See also 43 CFR Part 2.)

§ 222.4 Saving clause.

If any provision of this part or any clause, sentence or part hereof is held unauthorized or invalid for any reason, or the application thereof to any person, circumstance, commodity or class of transactions with respect to any commodity be held unauthorized or invalid for any reason, the validity of the remainder of this part and the application of such provisions to other persons, circumstances, commodities and classes of transactions shall not be affected thereby.

Subpart B—Records and Reports

§ 222.9 Designated areas.

NOTE: In connection with the limitation of active enforcement of the regulations in Part 222, as of June 30, 1965, the Secretary of the Interior revoked the designation of specific areas referred to in this section.

[30 F.R. 1041, Feb. 2, 1965]

§ 222.10 Records.

The following records shall be made and retained accurately and completely showing the following facts with respect to production, refining, processing, manufacturing, transporting, withdrawing or otherwise handling petroleum or petroleum products in the designated area. Unless otherwise notified by the Chief, Branch of Connally Act Compliance, the operator may dispose of records retained for a period of 5 or more years.

(a) By producers:

(1) *Location, wells, allowable production.* The location of the producing properties, the number and location of wells thereon, and the allowable production for each property and well as prescribed by the proper State agency.

(2) *Inventories.* An opening and closing inventory of the crude petroleum on hand at the beginning and end of each month.

(3) *Production.* The monthly production in barrels of petroleum produced from each lease and each well showing the number of wells which produced said oil with a notation of the allowance made for basic sediment and water, and the tanks, identified by number and location, into which the petroleum is run. When wells are produced into common storage tanks production from each well will be based on latest gas-oil ratio or well status tests. Where a Lease Automatic Custody Transfer (LACT) system of the Positive Displacement Meter type is used, said meter's calibration correction factor shall also be recorded. Where Dump Tank and Weir Tank types of LACT systems are used, the number of pipeline runs and the quantity of each run shall likewise be recorded.

(4) *Consumption.* The amount of petroleum consumed upon each property monthly.

(5) *Deliveries.* A monthly record of all deliveries of petroleum or petroleum products, showing the names and places of business of all persons to whom such petroleum or petroleum products are delivered, whether purchasers, consignees or transporting agencies, the quantity involved in each delivery, transportation or other disposition, the identity of the means of transportation by which the petroleum or products are removed.

(6) *Tickets.* Gauge tickets and run tickets, as made by the employees actually performing or observing the operations to which such records relate.

(7) *Diagrams.* Where any type of Lease Automatic Custody Transfer system is in operation by producers, complete diagrams shall be maintained of the system in use, with accurate meter calibration records kept.

(8) *Other records.* Such other records as may now be required under the rules and regulations of other governmental agencies, State or Federal, which supervise, regulate or tax the production of petroleum.

(b) By every purchaser, refiner, storer, shipper, or consignor of petroleum or petroleum products, by every casing head gasoline plant, and by every person dealing in petroleum or petroleum products as a factor, broker, buyer, or seller:

(1) *Inventories.* An opening and closing inventory of petroleum and petroleum products on hand at the beginning and end of each month.

(2) *Receipts.* The monthly receipts of petroleum and the petroleum products

showing the amount received, the place and date of each receipt, the tanks identified by location and number into which received, the names and addresses of all producers or other persons from whom the crude petroleum and the petroleum products were received, a description identifying the transporting agency or facility by which received.

(3) *Consumption.* The amount of petroleum and petroleum products used or otherwise disposed of monthly showing the amount run to stills and to cracking units and the amount and type of petroleum products refined, processed or manufactured.

(4) *Deliveries; purchasers; transporter.* A monthly record of all deliveries of petroleum and petroleum products including the names and addresses of purchasers and a description identifying the transporting agency delivering the same.

(5) *Reports of operations.* Crude, pumping, still, transfer, and yield reports as made by the employees actually performing or observing the operations to which such records relate.

(6) *Other records.* Such other records as may now be required under the rules and regulations of other governmental agencies, State or Federal, which supervise, regulate, or tax the purchasing, refining, storing, shipping or consigning or otherwise dealing in as a factor, broker, buyer or seller of petroleum and petroleum products.

(c) By every person operating a reclamation plant:

(1) *Inventories.* An opening and closing inventory of all petroleum and petroleum products on hand at the beginning and end of each month.

(2) *Receipts.* The number of barrels of each kind of petroleum and petroleum products which came into the possession of such plant monthly, the name and address of each person from whom possession was acquired, the location from which the petroleum and petroleum products were acquired, the quantities acquired from each prior possessor and from each location, a description identifying the transporting agency by which such petroleum and petroleum products were acquired. In case any petroleum or petroleum product is picked up or reclaimed by such plant from any pit, creek, river, stream or the bed thereof, such record shall also contain information as to apparent source of the petro-

leum or petroleum product before it went into such pit, creek, river, stream or the bed thereof.

(3) *Reclamation; destination; identification.* The number of barrels reclaimed by such plant monthly and the disposition thereof showing the names and addresses of purchasers, a description identifying the transporting agency used in making delivery.

(4) *Original operating records.* The original records made by the employees actually performing or observing the operations to which such records relate as required by subparagraphs (1), (2) and (3) of this paragraph.

(5) *Other records.* Such other records as may now be required under the rules and regulations of other governmental agencies, State or Federal which supervise, regulate, or tax the reclaiming or handling of petroleum or petroleum products.

(d) By pipelines:

(1) *Inventories.* An opening and closing inventory including averages of crude petroleum and petroleum products on hand at the beginning and end of each month.

(2) *Receipts; consignors, consignees; origin, destination.* The monthly receipts of all petroleum and petroleum products showing the kind, grade, and quantity received, the names and addresses of the consignors, the names and addresses of the consignees, the points of origin and destination.

(3) *Locations; persons; transporting agencies.* In case of the first transporting pipeline, and where possible in cases of subsequent transporting pipelines, the location of the properties where the petroleum or petroleum products were produced, refined, processed, or manufactured, the names and addresses of persons removing the petroleum or petroleum products from the properties where produced, refined, processed, or manufactured, and a description identifying the transporting agency used in making delivery from such properties.

(4) *Diversion, stoppage.* A record of all shipments of petroleum or petroleum products diverted prior to reaching the original point of destination or stopped in the course of transportation, showing the disposition thereof.

(5) *Shipping documents.* Copies of all run tickets, waybills, division and transfer orders and other documents

used in the transportation of petroleum or petroleum products.

(6) *Other records.* Such other records as may now be required under the rules and regulations of other governmental agencies, States or Federal, which supervise, regulate, or tax the transportation of petroleum or petroleum products.

(e) By transporting agencies, other than pipelines:

(1) *Shipments.* The monthly shipments of all petroleum and petroleum products showing the kind, grade and quantity transported, the names and addresses of the consignors, the names and addresses of the consignees, the points of origin and destination, and in the case of railroads the car initials and numbers identifying the various shipments.

(2) *Diversion or stoppage.* A record of all shipments of petroleum or petroleum products diverted prior to reaching the original point of destination, or stoppage in the course of transportation, showing the disposition thereof.

(3) *Shipping documents.* Copies of all waybills, bills of lading and other documents used in the transportation of petroleum or petroleum products.

(4) *Other records.* Such other records as may now be required under the rules and regulations of other governmental agencies, State or Federal, which supervise, regulate, or tax the transportation of petroleum or petroleum products.

(f) The records required by this section to be made and preserved shall be made currently as the transactions involved occur. Such records prescribed in paragraph (a) (1), (2), (3), (4), and (5) of this section shall be kept on the lease or property to which they relate, or shall be kept in the field office or field headquarters from which the operations on such properties are conducted. Such records prescribed under paragraphs (b) (1), (2), (3), and (4), (c) (1), (2), and (3), and (d) (1), (2), (3), and (5) of this section shall be kept at the field office or field headquarters from which the operations involved are conducted. Such records prescribed under paragraph (e) (1) and (3) of this section shall be kept at the freight office where the shipping papers for any shipment originate.

§ 222.11 Measurements; records.

Every producer, transporter, storer and refiner in the designated area shall ac-

curately gauge and measure all petroleum and petroleum products before any part thereof leaves his possession or control. No means or device which prevents or hinders such accurate measurement shall be used. Complete and accurate records of all such measurements shall be kept up to date and retained as provided in § 222.10, and shall be open to the inspection of any person authorized by the Secretary of the Interior or by the Chief, Branch of Connally Act Compliance.

§ 222.12 Accurate billing.

No transporting agency transporting petroleum or petroleum products from the designated area in interstate commerce shall accept for shipment any petroleum or any petroleum product unless the billing and other records of transportation covering such shipment truly and accurately describe by its proper and generally accepted name the commodity so shipped. Every transporting agency shall be held responsible for the truth of its records, waybills, bills of lading, division or transfer orders and other papers relating to such shipment, and shall be answerable as for a violation of the regulations in this part for each false billing of any such petroleum or petroleum product.

§ 222.13 Waybills.

Each transporting agency, other than pipelines, transporting petroleum or petroleum products in or from the designated area shall make available daily to the Branch of Connally Act Compliance for inspection copies of all waybills, or other papers fulfilling the functions thereof, covering the movement during the preceding day of petroleum or petroleum products in or from said area, both interstate and intrastate. Upon request of the Chief of the Branch such waybills or other papers shall be attached to an affidavit executed by a duly authorized agent of the transporting agency stating that the waybills or other papers cover all shipments of petroleum or petroleum products moved by the transporting agency during the period named therein.

§ 222.14 Producer's reports.

(a) Except as provided in paragraph (b) of this section, every producer of petroleum or petroleum products in the areas designated in § 222.9 shall file a

monthly report, Form P, and a semiannual report, Form P-A.

(b) If the Chief, Branch of Connally Act Compliance, determines that the reports required of any person under this section serve no useful purpose, he may, by written notice to such person, relieve him of the obligation to submit such reports for any specified period of time or until further notice.

§ 222.15 [Reserved]

§ 222.16 Diagrams.

Whenever directed by written order issued by a person authorized under § 222.1 to conduct investigations, any producer, refiner, or operator of any pipeline, gathering system, reclamation plant or casinghead gasoline plant shall, within 30 days from the service of such order, furnish the Branch of Connally Act Compliance with a diagram or diagrams accurately and completely showing to scale, so far as is applicable to the business of the person furnishing the diagram, the location of each lease, the location and identifying number of each well, the location, capacity and identifying number of all tanks, the location and size of all pipelines, flow lines and gathering systems and other outlets attached to his properties, and every method by which oil is or can be delivered to and from his properties.

§ 222.17 Sworn or certified reports and statements.

When any sworn or certified report or statement is required by this part, or by orders promulgated pursuant hereto or to the act of February 22, 1935 (49 Stat. 30; 15 U.S.C. 715-715k) as amended, or, Executive orders, to be made or filed by any person, such report or statement must be made or filed by any real person in interest owning, producing, refining, processing, manufacturing, transporting, withdrawing from storage, or otherwise handling petroleum or petroleum products involved in the transaction or transactions which are the subject of such report or statement. Such report or statement, however, may be made or filed by a duly authorized agent of such real party in interest if, on or before the date of filing the same, proof of his authorization has been filed with the Branch of Connally Act Compliance or other agency with which the report or statement is to be filed.

Subpart C—Investigations

§ 222.23 Inspection of books and records; examination of properties and facilities.

All persons producing, refining, processing, manufacturing, transporting, withdrawing from storage or otherwise handling petroleum or any petroleum product shall permit any person or persons authorized under § 222.1 to conduct investigations to enter upon their properties, plants and facilities, and to examine all the books and records kept or required to be kept in accordance with this part, and all other books, papers, records, vouchers, run-tickets, bills of lading, way bills, charges, memoranda, diagrams showing the location of each lease, the location and identifying number of each well, the location, capacity and identifying number of each tank, the size of all pipelines, flow lines, and gathering systems and other outlets attached to their properties, or other documents which are used by them in connection with producing, refining, processing, manufacturing, transporting, withdrawing from storage or otherwise handling petroleum or any petroleum products, and to inspect such plants, facilities and properties, and to gauge tanks, and to examine wells, pipelines, gathering systems, flow lines, pipe connections, storage tanks, loading racks, separators, pumps, meters or other measuring devices, and any other equipment or instruments.

§ 222.24 Non-public investigatory proceedings.

All formal proceedings in connection with any investigation conducted pursuant to this part to hear or take the testimony of a witness, whether such witness appears voluntarily or in response to a subpoena, are designated, and shall be conducted, as non-public investigatory proceedings.

§ 222.25 Right to copy of data or transcript of testimony.

(a) Except with respect to a non-public investigatory proceeding, a person who has submitted data or evidence in the course of an investigation conducted pursuant to this part shall be entitled to retain or procure a copy of his data or a transcript of his testimony. If a person who has testified in a non-public investi-

gatory proceeding desires a copy of the transcript of his testimony such person shall file a written request stating the reason for desiring to procure such transcript. The Chief, Branch of Connally Act and Compliance, may for good cause deny such request. The determination as to whether good cause exists for denying the request shall be based upon the nature and content of the testimony in its relation to the investigation or investigations concerning which it was given or required. If the request is denied, such person, upon proper identification, shall have the right to inspect the official transcript of his testimony.

(b) A witness who desires a copy of the official transcript of the testimony which he has given in any such non-public investigatory proceeding must file a written request. The request may be filed during the proceeding or at any time thereafter. Such request shall be acted upon within fifteen days after its filing. The filing of such a request shall not be grounds for failure or refusal by a witness to testify in any such non-public investigatory proceeding until the request has been acted upon, and such testimony shall not constitute a waiver of any rights the witness may have to obtain a copy of the official transcript of his testimony.

§ 222.26 Counsel for witnesses in investigations.

(a) Any person appearing in an investigation or investigatory proceeding conducted pursuant to this part may be accompanied, represented, and advised by counsel, but such counsel may not represent any other witness, or any other person being investigated unless permitted in the discretion of the authorized person conducting the investigation, or of the Chief, Branch of Connally Act Compliance, upon being satisfied that there is no conflict of interest in such representation and that the presence of identical counsel for other witnesses or persons being investigated would not tend to hinder the course of the investigation.

(b) Counsel appearing with a person or witness, as provided in paragraph (a) of this section, shall be limited to attorneys at law permitted to practice before the courts of any State, Territory, or the District of Columbia.

§ 222.27 Suspension or exclusion of counsel.

The Chief, Branch of Connally Act Compliance, may, for good cause, issue an order requiring any counsel appearing with a person or witness during an investigation or investigatory proceeding to show cause why he should not be suspended or excluded for the duration of the investigation or investigatory proceeding in which he has so appeared, by reason of disorderly or contemptuous conduct in the course of any such investigation or proceeding. Such counsel shall be granted due opportunity to be heard in his own defense. Thereafter, if warranted by the facts, the Chief, Branch of Connally Act Compliance, may issue an order of reprimand, suspension, or exclusion against such counsel. In the event such order is one of suspension or exclusion, the person or witness shall be given the right and opportunity to retain other counsel.

§ 222.28 Witness fees.

Any person compelled to appear in person in an investigation or investigatory proceeding conducted pursuant to this part shall be entitled to fees and mileage to the extent authorized under section 10 of the Administrative Expenses Act of 1946 (60 Stat. 809, 5 U.S.C. 95a).

PART 223—APPROVAL OF SALES AGREEMENTS OR CONTRACTS COVERING THE DISPOSAL OF OIL AND GAS LEASE PRODUCTS (NOT APPLICABLE TO INDIAN OR NAVAL PETROLEUM RESERVE LANDS)¹

Sec.

223.1 What this part does.

223.2 Filing of contracts.

223.3 Contracts made pursuant to new form leases.

223.4 Contracts made pursuant to old form leases.

223.5 Requests for approval.

223.6 Pending contracts.

223.7 Appeals.

AUTHORITY: The provisions of this Part 223 issued under E.S. 161, as amended, sec. 32, 41 Stat. 450, sec. 10, 61 Stat. 915; 5 U.S.C. 301, 30 U.S.C. 189, 359.

SOURCE: The provisions of this Part 223 appear at 16 F.R. 10519, Oct. 16, 1951, unless otherwise noted.

¹ 38 FR 10002, Apr. 23, 1973.

§ 223.1 What this part does.

This part prescribes the procedure for the filing, and approval when required, of sales agreements or contracts made by lessees or their operators covering the disposal of products from oil and gas leases on public domain lands and acquired lands of the United States.

§ 223.2 Filing of contracts.

Copies of all contracts or agreements, whether or not approval is required or requested as provided in this part, must be filed in duplicate with the oil and gas supervisor of the Geological Survey not later than 30 days after the effective date thereof.

§ 223.3 Contracts made pursuant to new form leases.

On November 29, 1950, a new form of lease was adopted (Form 4-1158, 15 F.R. 8585), containing provisions whereby the lessee agrees that nothing in any contract or other arrangement made for the sale or disposal of oil, gas, natural gasoline, and other products of the leased land, shall be construed as modifying any of the provisions of the lease, including, but not limited to, provisions relating to gas waste, taking royalty in kind, and the method of computing royalties due as based on a minimum valuation and in accordance with the oil and gas operating regulations. A contract or agreement pursuant to a lease containing such provisions may be made without obtaining approval of the United States as lessor, but must be filed as provided in § 223.2.

§ 223.4 Contracts made pursuant to old form leases.

(a) Old form leases are those containing provisions prohibiting sales or disposal of oil, gas, natural gasoline, and other products of the lease except in accordance with a contract or other arrangement approved by the Secretary of the Interior, or by the Director of the Geological Survey or his representative. A contract or agreement made pursuant to an old form lease may be made without obtaining approval if the contract or agreement either contains the substance of or is accompanied by the stipulation set forth in paragraph (b) of this section, signed by the seller (lessee or operator).

(b) The stipulation the substance of which must be included in the contract,

or be made the subject matter of a separate instrument property identifying the leases affected thereby, is as follows:

It is hereby understood and agreed that nothing in the within contract or in any approval thereof shall be construed as affecting any of the relations between the United States and its lessee, particularly in matters of gas waste, taking royalty in kind and the method of computing royalties due as based on a minimum valuation and in accordance with the terms and provisions of the oil and gas operating regulations applicable to the lands covered by said contract.

(c) A contract or agreement not containing the substance of nor accompanied by the stipulation set forth in paragraph (b) of this section may, if the provisions thereof are otherwise acceptable, be approved by the oil and gas supervisor subject to the condition that nothing in such contract or agreement or in the approval thereof shall be construed as affecting any of the relations between the United States and its lessee, including, but not limited to, the matters enumerated in paragraph (b) of this section.

§ 223.5 Requests for approval.

A contract or agreement coming within the provisions of § 223.3 or § 223.4(a) may be approved by the oil and gas supervisor if request for approval is made by the seller and the provisions thereof are acceptable.

§ 223.6 Pending contracts.

Contracts filed but not acted upon before the effective date of this revision shall be acted upon in accordance with the regulations as revised in this part.

§ 223.7 Appeals.

An appeal may be taken as provided in part 290 of this chapter from any order or decision issued under the regulations in this part.

[38 FR 10002, Apr. 23, 1973]

PART 225—DISPOSAL OF GOVERNMENT ROYALTY OIL

| | |
|-------|---------------------------|
| Sec. | |
| 225.1 | Statutory authority. |
| 225.2 | Definitions. |
| 225.3 | Policy. |
| 225.4 | Exchange agreements. |
| 225.5 | Application; contents. |
| 225.6 | Action by the Supervisor. |
| 225.7 | Action by the Secretary. |
| 225.8 | Notices. |

AUTHORITY: The provisions of this Part 225 issued under secs. 32, 36, 41 Stat. 450, 451, as amended; 61 Stat. 913, 30 U.S.C. 189, 192, 359.

SOURCE: The provisions of this Part 225 appear at 34 F.R. 1019, Jan. 23, 1969, unless otherwise noted.

§ 225.1 Statutory authority.

Section 36 of the Mineral Leasing Act of February 25, 1920 (30 U.S.C. 192) authorizes the Secretary of the Interior to sell royalty oil accruing to the United States under oil and gas leases issued pursuant to that Act. The Act of July 13, 1946 (60 Stat. 533), which amended section 36 in order to assist small business enterprise, authorizes and directs the Secretary, when he determines that sufficient supplies of crude oil are not available in the open market to refineries not having their own source of supply for crude oil, to grant a preference to such refineries in the sale of royalty oil for processing or use in such refineries and not for resale in kind. The Act of July 13, 1946, also provides that the sale of royalty oil to such refineries may be at private sale at not less than the market price and that in selling such oil the Secretary may at his discretion prorate such oil among such refineries in the area in which the oil is produced. The provisions of said section 36, as amended, also are applicable to royalty oil accruing to the United States under leases issued pursuant to the Mineral Leasing Act for Acquired Lands of August 7, 1947 (61 Stat. 913). The Act of September 1, 1949, provided for the elimination of premium payments in then existing contracts entered into pursuant to the Act of July 13, 1946.

§ 225.2 Definitions.

The following definitions shall be applicable to the regulations in this part:

(a) "Eligible refiners" under the Act of July 13, 1946, shall be owners of existing refineries (including refineries not in operation) who qualify as a small business enterprise under the rules of the Small Business Administration and who are unable to purchase in the open market an adequate supply of crude oil to meet the needs of their existing refinery capacities.

(b) "Secretary" shall be the Secretary of the Interior.

(c) "Supervisor" shall be the Area Oil and Gas Supervisor, Conservation Division of the Geological Survey; a repre-

sentative of the Secretary, subject to the direction and supervisory authority of the Director, Geological Survey, the Chief, Conservation Division, Geological Survey, and the appropriate Regional Conservation Manager, Conservation Division, Geological Survey, authorized and empowered to supervise and direct oil and gas operations and to perform other duties prescribed in the regulations in part 221 of this chapter.

(d) "Area" is the geographic area over which a supervisor is authorized to exercise supervisory jurisdiction.

(e) "Preference eligible refiners" shall be eligible refiners applying for purchase of royalty oil produced in a given Area for use in their refineries located within that area.

(f) "Market price" shall be (1) the highest price per barrel regularly posted, published, or generally paid, or offered, by any principal purchaser of crude oil of equal A.P.I. gravity in the field where produced, or (2) if there are no postings in the field, the highest price posted in the nearest field where a comparable grade of crude oil is produced and sold, or (3) the true value as determined by the Supervisor when in his judgment such highest price regularly posted, published, or generally paid or offered in the same field or the nearest field is found by him to be less than the true value of the royalty oil. In no event shall the "market price" be less than the estimated reasonable value which the Supervisor would determine as the value of production, pursuant to § 221.47 of this chapter, if royalties on the production in question were being paid by the lessee rather than being taken in kind.

[16 FR 10519, Oct. 16, 1951, as amended at 38 FR 10001, Apr. 23, 1973]

§ 225.3 Policy.

Except in times of general unavailability of an adequate supply of crude oil in the United States, or when special circumstances warrant other action, as determined by the Secretary, Government royalty oil available for disposal pursuant to the Act of February 25, 1920, as amended, will be sold in accordance with the regulations in this part. Such oil will be sold only to "Eligible refiners" under the Act of July 13, 1946, and all such sales will be made at the "market price" without premium or bonus. "Preference eligible refiners" will be given a preference over other "Eligible refiners" in the purchase of such oil. When ap-

applications are filed by two or more "Preference eligible refiners" for the same oil, the oil will be allocated among such applicants by a drawing or on an equitable prorated basis as determined by the Supervisor prior to execution of contracts for sale of such oil. When applications are filed by two or more "Eligible refiners" for the same oil, and no applications for the same oil are filed by "Preference eligible refiners", or their needs are adequately supplied with only a part of the royalty oil available, the royalty oil available to such "Eligible refiners" shall be similarly allocated among them by the Supervisor.

§ 225.4 Exchange agreements.

The act of July 13, 1946, requires refiners granted a preference to process or use in such refineries and not resell in kind royalty oil purchased thereunder. Agreements providing for the exchange of crude oil purchased under the act for other crude oil on a volume or equivalent value basis will not be construed as constituting a resale in kind prohibited by the act. Where an exchange agreement has been entered into or is contemplated with regard to royalty oil available for sale, full information relative thereto must be furnished either at the time of filing application to purchase royalty oil or at such later date as specified by the Supervisor.

§ 225.5 Application; contents.

An eligible refiner may file an application with the Supervisor of the Area in which the oil is produced. Such application shall be filed in triplicate and must be accompanied by a detailed statement containing the following information:

(a) The full name and address of the applicant; the location of his refinery or refineries; a complete disclosure of applicant's affiliation or association with any other refiner of oil if such relationship exists; and reasons for believing that applicant is entitled to a preference under the act of July 13, 1946, including a full showing of efforts made to purchase the needed oil in the open market.

(b) The capacity of the refinery to be supplied and the amount, source, and grade of all crude oil currently available to the applicant refiner from his own production or by purchase.

(c) The minimum amount and grade of additional crude oil needed to meet

existing refinery commitments or existing refinery capacity, the field or fields which the refiner believes offer a potential source of crude-oil supply and the available transportation facilities which the refiner proposes to utilize.

(d) A tabulation for the preceding 12 months or for the last 12 months of operation of the amount and grade of crude oil refined each month, and the kind and amount of the principal finished products.

[16 FR 10519, Oct. 15, 1961, as amended at 38 FR 10001, Apr. 23, 1973]

§ 225.6 Action by the Supervisor.

The Supervisor shall examine each application filed pursuant to this Part and where he finds that the showing submitted is inadequate or unsatisfactory, such additional showing shall be required as may be deemed necessary. Also, in his discretion, he may notify the lessees or operators of the Federal oil and gas leases involved and the then purchaser or purchasers of the oil of his receipt of the application and allow them not in excess of 30 days within which to submit comments. When royalty oil is available for purchase in his Area, the Supervisor shall make inquiries of other small refiners having refineries in his Area as to their interest in filing applications to purchase royalty oil. He shall also make similar inquiries of any other small refiners having refineries located outside his Area when he has reason to believe they would be interested in filing applications to purchase royalty oil produced within his Area. Thereafter, he shall make appropriate recommendations for consideration by the Director, Geological Survey, and the Secretary of the Interior.

[16 FR 10519, Oct. 15, 1961, as amended at 38 FR 10001, Apr. 23, 1973]

§ 225.7 Action by the Secretary.

When the Secretary makes a decision to sell royalty oil in any given Area, he shall specify or approve the manner in which the sale is to be effected, including the form of contract to be used. At such time he may authorize the Supervisor or another official of the Geological Survey to execute the contract, or contracts, of sale on behalf of the United States, to approve exchange agreements, and to determine the amount and type of bond or other se-

curity to be required from the purchaser under such contract or contracts.

[16 FR 10519, Oct. 15, 1961, as amended at 38 FR 10001, Apr. 23, 1973]

§ 225.8 Notices.

Prior to any requirement that royalty oil be delivered in kind, the Supervisor shall notify each lessee or operator under the Federal oil and gas leases involved of the requirement at least 30 days in advance of the effective date of that requirement; where it is determined to terminate the delivery of royalty oil in kind, the Supervisor shall, if practicable in his opinion, give any affected lessee or operator notice of the change in requirements at least 30 days in advance.

[37 FR 441, Jan. 12, 1972]

PART 225a—DISPOSAL OF OUTER CONTINENTAL SHELF ROYALTY OIL

Sec.

- 225a.1 Statutory authority.
- 225a.2 Definitions.
- 225a.3 Policy.
- 225a.4 Reimbursement to lessee for transportation.
- 225a.5 Exchange agreements.
- 225a.6 Application; contents.
- 225a.7 Action by the Supervisor.
- 225a.8 Action by the Secretary.
- 225a.9 Notices.

AUTHORITY: The provisions of this Part 225a issued under sec. 5, 67 Stat. 464, 43 U.S.C. 1334.

SOURCE: 37 FR 441, Jan. 12, 1972, unless otherwise noted.

§ 225a.1 Statutory authority.

(a) Section 5 of the Outer Continental Shelf Lands Act of August 7, 1953 (43 U.S.C. section 1334), authorizes the Secretary of the Interior to sell royalty oil accruing or reserved to the United States under oil and gas leases issued pursuant to that Act.

(b) Section 2 of the Small Business Act (15 U.S.C. section 631) declares that it is the policy of Congress that Government should aid, counsel, assist, and protect, insofar as is possible, the interests of small business concerns in order to preserve free competitive enterprise and to insure that a fair proportion of the total sales of Government property be made to such enterprises.

(c) Section 8 of the Small Business Act (15 U.S.C. section 637) provides that the Small Business Administration shall consult and cooperate with officers of the

Government having property disposal powers in order to utilize the potential productive capacity of plants operated by small business concerns. That section also provides that the Small Business Administration shall determine within any industry the concerns, firms, persons, corporations, partnerships, cooperatives, or other business enterprises which are to be designated "small business concerns" for the purpose of that Act. That section also provides that the Small Business Administration shall consult and cooperate with all Government agencies for the purpose of insuring that small business concerns shall receive fair and reasonable treatment from such agencies.

§ 225a.2 Definitions.

The following definitions shall be applicable to the regulations in this part:

(a) "Small refiner" means an owner of an existing refinery or refineries (including refineries not in operation) who qualifies as a small-business concern under the rules of the Small Business Administration and who is unable to purchase in the open market an adequate supply of crude oil to meet the needs of their existing refinery capacities.

(b) "Secretary" means the Secretary of the Interior.

(c) "Director" means the Director, Geological Survey.

(d) "Supervisor" means the Area Oil and Gas Supervisor, Conservation Division of the Geological Survey; a representative of the Secretary, subject to the direction and supervisory authority of the Director, the Chief, Conservation Division, Geological Survey, and the appropriate Conservation Manager, Conservation Division, Geological Survey, authorized and empowered to supervise and direct oil and gas operations and to perform other duties prescribed in the regulations in part 250 of this chapter.

(e) "Area" means the geographic area over which a supervisor is authorized to exercise supervisory jurisdiction, unless the context in which the word is used indicates a different meaning is to apply.

(f) "Section 6 lease" means an oil and gas lease originally issued by any State and currently maintained in effect pursuant to section 6 of the Outer Continental Shelf Lands Act (43 U.S.C. section 1335).

(g) "Section 8 lease" means an oil and gas lease issued by the United States

pursuant to section 8 of the Outer Continental Shelf Lands Act (43 U.S.C. section 1337).

(h) "OCS royalty oil" means the Government's royalty portion of oil produced under section 6 or section 8 leases when royalty on oil is paid in kind or taken in kind or is being considered for such payment or taking.

(i) "Market price" means (1) the highest price per barrel regularly posted, published, or generally paid, or offered, by any principal purchaser of crude oil of like quality in the field or area where produced, or (2) if there are no postings in the field or area, the highest price posted in the nearest field or area where crude oil of comparable quality is produced and sold, or (3) the true value as determined by the Supervisor when in his judgment such highest price regularly posted, published, or generally paid or offered in the same field or area or the nearest field or area is found by him to be less than the true value of the royalty oil. In no event shall the "market price" be less than the estimated reasonable value which the Supervisor would determine as the value of production, pursuant to § 250.64 of this chapter, if royalties on the production in question were being paid in money by the lessee rather than being paid or taken in kind.

(j) "Point of delivery" means the point at which the OCS royalty oil, or the quantity thereof in a commingled stream, is delivered by the lessee to the Government and ownership of the OCS royalty oil is transferred simultaneously from the Government to the purchaser. (1) With respect to all leases issued after October 1969, the point of delivery will be a point designated by or acceptable to the Supervisor. The deliveries normally shall be made immediately after the point of measurement of such oil or the commingled stream containing such oil, after separation and treating processes; *Provided, however,* That if such measurement is at an offshore location and such oil is commingled after such measurement with other untreated oil and is transported to a treating facility for treating and final measurement, the point of delivery may be immediately downstream of the place of final measurement. The point of delivery may be otherwise, and the Supervisor shall determine that any proposed point of delivery is practical for both the lessee and the purchaser, with proper safeguards for the environment. (2) With re-

spect to section 8 leases issued prior to October 1969, the point of delivery will be a point designated by the lessee.

[37 FR 441, Jan. 12, 1972, as amended at 38 FR 10001, Apr. 24, 1973]

§ 225a.3 Policy.

Except when special circumstances warrant other action, as determined by the Secretary, OCS royalty oil available for disposal may be sold in accordance with the regulations in this part and only to small refiners for use in their refineries and not for resale in kind. All such sales will be made at the market price without premium or bonus; however, a charge for cost of administration of an amount equal to one-half percent of the market price will be made for each barrel of OCS royalty oil sold. When applications are filed by two or more small refiners for the same oil, the oil will be allocated among such applicants by a drawing or on an equitable prorated basis as determined by the Supervisor prior to execution of contracts for sale of such oil. OCS royalty oil produced under a section 6 lease may be made available for disposal only when the lessee or operator under the lease involved elects to pay royalty in kind to the Secretary. OCS royalty oil produced from areas for which ownership is in dispute between the Federal Government and a State may be made available for disposal only with the concurrence of that State, with evidence of such concurrence to be furnished by the applicant. The sum of the volumes of OCS royalty oil purchased pursuant to the regulations in this part and Government royalty oil purchased pursuant to Part 225 of this chapter by any one small refiner shall not exceed 60 percent of the combined refinery capacity of that small refiner at the time when application is made for the oil.

§ 225a.4 Reimbursement to lessee for transportation.

When the point of delivery for OCS royalty oil produced under a section 8 lease is to be other than on or immediately adjacent to the leased area, the purchaser shall promptly reimburse the lessee or operator for the cost of transporting the oil to the point of delivery. Such reimbursement shall be monthly or at such other interval as may be designated by the Supervisor. Cost of transportation must be approved by the Supervisor and may be deducted from the value of the oil at the point of delivery in

calculating payments to be made to the Government. The Government guarantees payment to the lessee or operator for such cost of transportation.

§ 225a.5 Exchange agreements.

Agreements providing for the exchange of OCS royalty oil purchased under these regulations for other crude oil on an equivalent value basis will not be construed as constituting a resale in kind prohibited by § 225a.3. Where an exchange agreement is contemplated with regard to OCS royalty oil available for disposal, full information relative thereto must be furnished at the time of filing application to purchase the OCS royalty oil unless a later date is specified by the Supervisor. Where an exchange agreement has been entered into, it must be filed for approval by the Supervisor and the agreement will become effective only upon his approval.

§ 225a.6 Application; contents.

A small refiner may file an application with the Supervisor of the Area in which the oil is produced. Such application shall be filed in triplicate and must be accompanied by a detailed statement containing the following information:

(a) The full name and address of the applicant; the location of his refinery or refineries; a complete disclosure of applicant's affiliation or association with any other refiner of oil if such relationship exists; and reasons for believing that applicant qualifies as a small refiner, including a full showing of efforts made to purchase the needed oil in the open market.

(b) The capacity of the refinery to be supplied and the amount, source, and grade of all crude oil currently available to the applicant refiner from his own production or by purchase.

(c) The minimum amount and grade of additional crude oil needed to meet existing refinery commitments or existing refinery capacity and the field or fields which the refiner believes offer a potential source of OCS royalty oil supply.

(d) The available transportation facilities which the applicant proposes to utilize. For OCS royalty oil produced under Sec. 8 leases issued prior to October 1969, this should include the proposed point of delivery as obtained from the lessee or operator.

(e) The amount of any cost to be paid by the applicant for transporting OCS royalty oil to the point of delivery.

(f) A tabulation for the last 12 months of operation of the amount and grade of crude oil refined each month, and the kind and amount of the principal finished products.

[37 FR 441, Jan. 12, 1972, as amended at 38 FR 10001, Apr. 23, 1973]

§ 225a.7 Action by the Supervisor.

The Supervisor shall examine each application filed pursuant to this part and where he finds that the showing submitted is inadequate or unsatisfactory, such additional showing shall be required as may be deemed necessary. He shall notify the lessees or operators of the OCS oil and gas leases involved and, at his discretion, the then purchaser or purchasers of the oil, of his receipt of the application and allow them not more than 30 days within which to submit comments. When OCS royalty oil is available for disposal in his Area, the Supervisor, at his discretion, also may notify the public (including various refining associations) of his receipt of the application and may make inquiries of other small refiners as to their interest in filing applications to purchase OCS royalty oil when he has reason to believe they may be interested in filing applications to purchase such oil. Thereafter, he shall make appropriate recommendations for consideration by the Director and the Secretary.

[37 FR 441, Jan. 12, 1972, as amended at 38 FR 10001, Apr. 23, 1973]

§ 225a.8 Action by the Secretary.

When the Secretary makes a decision to sell OCS royalty oil from any given Area, he shall specify or approve the manner in which the sale is to be effected, including the form of contract to be used. At such time, he may authorize the Supervisor or another official of the Geological Survey to execute the contract, or contracts, of sale on behalf of the United States and to determine the amount and type of bond or other security to be required from the purchaser under such contract or contracts.

[37 FR 441, Jan. 12, 1972, as amended at 38 FR 10001, Apr. 23, 1973]

§ 225a.9 Notices.

Prior to any requirement that OCS royalty oil be delivered in kind under section 8 leases, the Supervisor shall notify each lessee or operator under the OCS oil and gas leases involved of the requirement at least 30 days in advance

of the effective date of that requirement; where it is determined to terminate the delivery of OCS royalty oil in kind, the Supervisor shall, if practicable in his opinion, give any affected lessee or operator notice of the change in requirements at least 30 days in advance.

PART 226—UNIT OR COOPERATIVE AGREEMENTS

- Sec. 226.1 Introduction.
- 226.2 Definitions.
- 226.2a Jurisdiction.
- 226.3 Designation of unit area; depth of test well.
- 226.4 Preliminary consideration of certain unit or cooperative agreements.
- 226.5 Parties to unit or cooperative agreement.
- 226.6 Qualifications of unit operator.
- 226.7 State land.
- 226.8 Approval of unit or cooperative agreement.
- 226.9 Filing of papers and number of counterparts.
- 226.10 Bonds.
- 226.11 Appeals.
- 226.12 Form of unit agreement for unproved areas.
- 226.15 Form of collective bond.
- 226.16 Form of designation of successor unit operator by working interest owners.
- 226.17 Form of change in unit operator by assignment.

AUTHORITY: The provisions of this Part 226 issued under sec. 32, 41 Stat. 450, sec. 17b, 60 Stat. 952, as amended; 30 U.S.C. 189, 226e.

SOURCE: The provisions of this Part 226 appear at 16 F.R. 77, Jan. 4, 1951, unless otherwise noted.

§ 226.1 Introduction.

The regulations in this part prescribe the procedure to be followed and the requirements to be met by holders of Federal oil and gas leases (see § 226.2 (d)) and their representatives who wish to unite with each other, or jointly or separately with others, in collectively adopting and operating under a cooperative or unit plan for the development of any oil or gas pool, field, or like area, or any part thereof (see 43 CFR 192.20, 192.21).

§ 226.2 Definitions.

The following terms, as used in this part or in any agreement approved under the regulations in this part, shall have the meanings here indicated unless otherwise defined in such agreement:

(a) *Unit agreement.* An agreement or plan of development and operation for the recovery of oil and gas made subject

thereto as a single consolidated unit without regard to separate ownerships and for the allocation of costs and benefits on a basis as defined in the agreement or plan.

(b) *Cooperative agreement.* An agreement or plan of development and operation for the recovery of oil and gas made subject thereto in which separate ownership units are independently operated without allocation of production.

(c) *Agreement.* For convenience, the term "agreement" as used in this part refers to both a unit or a cooperative agreement as defined in paragraphs (a) and (b) of this section unless otherwise indicated.

(d) *Federal lease.* A lease issued under the act of February 25, 1920, as amended (41 Stat. 437, as amended; 30 U.S.C. 181, et seq.), or the act of August 7, 1947 (61 Stat. 913; 30 U.S.C. 351, et seq.).

(e) *Unit area.* The area described in an agreement as constituting the land logically subject to development under such agreement.

(f) *Unitized land.* The part of a unit area committed to an agreement.

(g) *Unitized substances.* Deposits of oil and gas recoverable by operation under and pursuant to an agreement.

(h) *Unit operator.* The person, association, partnership, corporation, or other business entity designated under a unit agreement to conduct operations on unitized land as specified in such agreement.

(i) *Participating area.* That part of a unit area to which production is allocated in the manner described in a unit agreement.

(j) *Working interest.* The interest held in unitized substances or in lands containing the same by virtue of a lease, operating agreement, fee title, or otherwise, under which, except as otherwise provided in a unit or cooperative agreement, the owner of such interest is vested with the right to explore for, develop, and produce such substances. The right delegated to the unit operator as such by the unit agreement is not to be regarded as a working interest.

(k) *Secretary.* The Secretary of the Interior or any person duly authorized to exercise the powers vested in that officer.

(l) *Director.* The Director of the Geological Survey.

(m) *Supervisor.* The Area Oil and Gas Supervisor, Conservation Division of

the Geological Survey; a representative of the Secretary, subject to the direction and supervisory authority of the Director, the Chief, Conservation Division, Geological Survey, and the appropriate Conservation Manager, Conservation Division, Geological Survey, authorized and empowered to supervise and direct oil and gas operations and to perform other duties prescribed in the regulations in this part.

[16 FR 77, Jan. 4, 1951, as amended at 38 FR 10001, Apr. 23, 1973]

§ 226.2a Jurisdiction.

Subject to the supervisory authority of the Secretary and the Director, the administration of the regulations in this part shall be under the jurisdiction of the supervisor. In the exercise of his jurisdiction, the supervisor shall be subject to the direction and supervisory authority of the Chief, Conservation Division, Geological Survey, and the appropriate Conservation Manager, Conservation Division, Geological Survey, each of whom may exercise the jurisdiction of the supervisor.

[38 FR 10001, Apr. 23, 1973]

§ 226.3 Designation of unit area; depth of test well.

An application for designation of an area as logically subject to development under a unit or cooperative agreement and for determination of the depth of a test well may be filed by any proponent of such an agreement. Such application shall be accompanied by a map or diagram on a scale of not less than 1 inch to 1 mile, outlining the area sought to be designated under this section. The Federal, State, and privately owned land should be indicated by distinctive symbols or colors. Federal oil and gas leases and lease applications should be identified by lease serial numbers. Geologic information, including the results of any geophysical surveys, and any other available information showing that unitization is necessary and advisable in the public interest should be furnished. If requested, geologic information so furnished will be treated as confidential. These data will be considered by the Director and the applicant will be informed of the decision reached. The designation of an area, pursuant to an application filed under this section, shall not create an exclusive right to submit an agreement for such area, nor preclude

the inclusion of such area or any part thereof in another unit area.

§ 226.4 Preliminary consideration of certain unit or cooperative agreements.

The form of unit agreement set forth in § 226.12, is acceptable for use in unproved areas. The use of this form is not mandatory, but any substantial departure therefrom should be submitted for preliminary consideration and for such revision as may be deemed necessary prior to the execution of the agreement by the interested parties. In areas proposed for unitization in which a discovery of oil or gas has been made, or where a cooperative agreement is contemplated, modification of the form of unit agreement set forth in § 226.12 will be necessary. Any such proposed agreement should likewise be submitted for preliminary consideration and for such revision as may be deemed necessary in advance of execution by the interested parties.

§ 226.5 Parties to suit or cooperative agreement.

The owners of any right, title, or interest in the oil and gas deposits to be unitized are regarded as proper parties to a proposed agreement. All such parties must be invited to join the agreement. If any party fails or refuses to join the agreement, the proponent of the agreement, at the time it is filed for approval, must submit evidence of reasonable effort made to obtain joinder of such party and the reasons for nonjoinder. The address of each signatory party to the agreement should be inserted below the signature. Each signature should be attested by at least one witness, if not notarized. Corporate or other signatures made in a representative capacity must be accompanied by evidence of the authority of the signatories to act unless such evidence is already a matter of record in the Department. The parties may execute any number of counterparts of the agreement with the same force and effect as if all parties signed the same document, or may execute a ratification or consent in a separate instrument with like force and effect.

§ 226.6 Qualifications of unit operator.

A unit operator must qualify as to citizenship in the same manner as those holding interests in oil and gas leases under the Mineral Leasing Act (see 43 CFR 192.42). The unit operator may

be an owner of a working interest in the unit area or such other party as may be selected by the owners of working interests. The unit operator shall execute an acceptance of the duties and obligations imposed by the agreement. No designation of or change in a unit operator will become effective unless and until approved by the Secretary or the Director and no such approval will be granted unless the unit operator is deemed qualified to fulfill the duties and obligations prescribed in the agreement.

§ 226.7 State land.

Where State-owned land is to be unitized, approval of the agreement by appropriate State officials must be obtained prior to its submission to the Department for final approval. When authorized by the laws of the State in which the unitized land is situated, appropriate provision may be made in the agreement accepting such laws to the extent that they are applicable to non-Federal unitized land.

§ 226.8 Approval of unit or cooperative agreement.

(a) A unit or cooperative agreement will be approved by the Secretary, or his duly authorized representative, upon a determination that such agreement is necessary or advisable in the public interest and is for the purpose of more properly conserving natural resources. Such approval will be incorporated in a certificate appended to the agreement. No such agreement will be approved unless at least one of the parties is a holder of a Federal lease in the unit area and unless the parties signatory to the agreement hold sufficient interests in the unit area to give reasonably effective control of operations.

(b) Whenever the Federal land involved in a unit or cooperative agreement accounts for less than 50 percent of the acreage of the unitized lands, and whenever, if the field involved is fully developed, the Federal land has less than 50 percent of the estimated recoverable unitized substances, the agreement may, with the approval of the Secretary or his duly authorized representative, make portions of the Operating Regulations, Part 221 of this chapter, inapplicable to operations under the agreement with respect to Federal land.

(c) Any modification of an approved agreement will require like approval.

§ 226.9 Filing of papers and number of counterparts.

(a) All papers, instruments, documents, and proposals submitted under this part should be filed in the office of the oil and gas supervisor for the geographic area in which the unit area is situated unless otherwise provided in this part.

(b) An application for designation of a proposed unit area and determination of the required depth of test well should be filed in triplicate. A like number of counterparts should be filed of any geologic data and any other information submitted in support of such application.

(c) Where substantial modification of the form of unit agreement set forth in § 226.12 is proposed, triplicate copies of the proposed agreement with all modifications plainly marked and with exhibits A and B included, should be submitted for preliminary consideration.

(d) Where a duly executed agreement is submitted for final Departmental approval a minimum of six signed counterparts should be filed. If State lands are involved, an additional counterpart should be provided for delivery to the appropriate State authority. The same number of counterparts must be filed for documents supplementing, modifying, or amending an agreement, including change of operator, designation of new operator, designation of a participating area, and notice of surrender, relinquishment, or termination.

(e) Four counterparts of a substantiating geologic report, including structure-contour map, cross sections, and pertinent data, shall accompany each application for approval of a participating area or amendment thereof under an approved agreement.

(f) Four counterparts are required of a plan of further development and operation submitted for approval under an approved agreement.

(g) One approved counterpart of each instrument or document submitted for approval will be returned to the operator by the approving official or his representative, together with such additional counterparts as may have been furnished for that purpose.

[18 FR 77, Jan. 4, 1951, as amended at 38 FR 10001, Apr. 23, 1973]

§ 226.10 Bonds.

In lieu of separate bonds required for each Federal lease committed to a unit agreement, the unit operator may fur-

nish and maintain a collective corporate surety bond or a personal bond conditioned upon faithful performance of the duties and obligations of the agreement and the terms of the leases subject thereto. Personal bonds shall be accompanied by a deposit of negotiable Federal securities in a sum equal at their par value to the amount of the bonds, and by a proper conveyance to the Secretary of full authority to sell such securities in case of default in the performance of the obligations assumed. The liability under the bond shall be for such amount as the Director shall determine to be adequate to protect the interests of the United States, and additional bond may be required whenever deemed necessary. The bond may be filed with the manager of the district land office, the Director of the Bureau of Land Management, or the Supervisor. Evidence must be furnished the supervisor that such bond has been accepted by the Bureau of Land Management before operations will be authorized. A form of corporate surety bond is set forth in § 226.15. In case of change of unit operator a new bond must be filed or consent of surety to such change must be furnished.

§ 226.11 Appeals.

An appeal may be taken as provided in part 290 of this chapter from any order or decision issued under the regulations in this part.

[38 FR 10001, Apr. 23, 1973]

§ 226.12 Form of unit agreement for unproved areas.

UNIT AGREEMENT FOR THE DEVELOPMENT AND OPERATION OF THE ----- UNIT AREA, COUNTY OF -----, STATE OF -----, I—Sec. No. -----

This agreement, entered into as of the ----- day of ----- 19___, by and between the parties subscribing, ratifying, or consenting hereto, and herein referred to as the "parties hereto,"

WITNESSETH: Whereas the parties hereto are the owners of working, royalty, or other oil and gas interests in the unit area subject to this agreement; and

Whereas the act of February 25, 1920, 41 Stat. 437, as amended by the act of August 8, 1946, 60 Stat. 950, 30 U. S. C. secs. 181 et seq., authorizes Federal lessees and their representatives to unite with each other, or jointly or separately with others, in collectively adopting and operating a cooperative or unit plan of development or operation of any oil or gas pool, field, or like area, or any part thereof, for the purpose of more properly

conserving the natural resources thereof whenever determined and certified by the Secretary of the Interior to be necessary or advisable in the public interest; and

Whereas the parties hereto hold sufficient interests in the ----- Unit Area covering the land hereinafter described to give reasonably effective control of operations therein; and

Whereas it is the purpose of the parties hereto to conserve natural resources, prevent waste, and secure other benefits obtainable through development and operation of the area subject to this agreement under the terms, conditions, and limitations herein set forth;

Now, therefore, in consideration of the premises and the promises herein contained the parties hereto commit to this agreement their respective interests in the below-defined unit area, and agree severally among themselves as follows:

1. *Enabling act and regulations.* The act of February 25, 1920, as amended, supra, and all valid pertinent regulations, including operating and unit plan regulations, heretofore issued thereunder or valid pertinent and reasonable regulations hereafter issued thereunder are accepted and made a part of this agreement as to Federal lands, provided such regulations are not inconsistent with the terms of this agreement; and as to non-Federal lands, the oil and gas operating regulations in effect as of the effective date hereof governing drilling and producing operations, not inconsistent with the terms hereof or the laws of the State in which the non-Federal land is located, are hereby accepted and made a part of this agreement.

2. *Unit area.* The following-described land is hereby designated and recognized as constituting the unit area:

Exhibit A attached hereto is a map showing the unit area and the boundaries and identity of tracts and leases in said area to the extent known to the Unit Operator. Exhibit B attached hereto is a schedule showing to the extent known to the Unit Operator the acreage, percentage, and kind of ownership of oil and gas interests in all land in the unit area. However, nothing herein or in said schedule or map shall be construed as a representation by any part hereto as to the ownership of any interest other than such interest or interests as are shown in said map or schedule as owned by such party. Exhibits A and B shall be revised by the Unit Operator whenever changes in the unit area render such revision necessary, or when requested by the Oil and Gas Supervisor, hereinafter referred to as "Supervisor," and not less than six copies of the revised exhibits shall be filed with the Supervisor.

The above-described unit area shall when practicable be expanded to include therein any additional tract or tracts regarded as reasonably necessary or advisable for the purposes of this agreement, or shall be contracted to exclude lands not within any participating area whenever such expansion or contrac-

tion is necessary or advisable to conform with the purposes of this agreement. Such expansion or contraction shall be effected in the following manner:

(a) Unit Operator, on its own motion or on demand of the Director of the Geological Survey, hereinafter referred to as "Director," shall prepare a notice of proposed expansion or contraction describing the contemplated changes in the boundaries of the unit area, the reasons therefor, and the proposed effective date thereof.

(b) Said notice shall be delivered to the Supervisor, and copies thereof mailed to the last known address of each working interest owner, lessee, and lessor whose interests are affected, advising that 30 days will be allowed for submission to the Unit Operator of any objections.

(c) Upon expiration of the 30-day period provided in the preceding item (b) hereof, Unit Operator shall file with the Supervisor evidence of mailing of the notice of expansion or contraction and a copy of any objections thereto which have been filed with the Unit Operator.

(d) After due consideration of all pertinent information, the expansion or contraction shall, upon approval by the Director, become effective as of the date prescribed in the notice thereof.

All land committed to this agreement shall constitute land referred to herein as "unitized land" or "land subject to this agreement."

3. *Unitized substances.* All oil and gas in any and all formations of the unitized land are unitized under the terms of this agreement and herein are called "unitized substances."

4. *Unit operator* ----- is hereby designated as Unit Operator and by signature hereto as Unit Operator agrees and consents to accept the duties and obligations of Unit Operator for the discovery, development, and production of unitized substances as herein provided. Whenever reference is made herein to the Unit Operator, such reference means the Unit Operator acting in that capacity and not as an owner of interest in unitized substances, and the term "working interest owner" when used herein shall include or refer to Unit Operator as the owner of a working interest when such an interest is owned by it.

5. *Resignation or removal of unit operator.* Unit Operator shall have the right to resign at any time prior to the establishment of a participating area or areas hereunder, but such resignation shall not become effective so as to release Unit Operator from the duties and obligations of Unit Operator and terminate Unit Operator's rights as such for a period of 6 months after notice of intention to resign has been served by Unit Operator on all working interest owners and the Director, and until all wells then drilled hereunder are placed in a satisfactory condition for suspension or abandonment whichever is required by the Supervisor, unless a

new Unit Operator shall have been selected and approved and shall have taken over and assumed the duties and obligations of Unit Operator prior to the expiration of said period.

Unit Operator shall have the right to resign in like manner and subject to like limitations as above provided at any time a participating area established hereunder is in existence, but until a successor unit operator is selected and approved as herein-after provided, the working interest owners shall be jointly responsible for performance of the duties of unit operator, and shall not later than 30 days before such resignation becomes effective appoint a common agent to represent them in any action to be taken hereunder.

The resignation of Unit Operator shall not release Unit Operator from any liability for any default by it hereunder occurring prior to the effective date of its resignation.

The Unit Operator may, upon default or failure in the performance of its duties or obligations hereunder, be subject to removal by the same percentage vote of the owners of working interests determined in like manner as herein provided for the selection of a new Unit Operator. Such removal shall be effective upon notice thereof to the Director.

The resignation or removal of Unit Operator under this agreement shall not terminate its right, title, or interest as the owner of a working interest or other interest in unitized substances, but upon the resignation or removal of Unit Operator becoming effective, such Unit Operator shall deliver possession of all equipment, materials, and appurtenances used in conducting the unit operations and owned by the working interest owners to the new duly qualified successor Unit Operator or to the owners thereof if no such new Unit Operator is elected, to be used for the purpose of conducting unit operations hereunder. Nothing herein shall be construed as authorizing removal of any material, equipment and appurtenances needed for the preservation of any wells.

6. *Successor unit operator.* Whenever the Unit Operator shall tender his or its resignation as Unit Operator or shall be removed as herein-above provided, the owners of the working interests in the participating area or areas according to their respective acreage interests in such participating area or areas, or, until a participating area shall have been established, the owners of the working interests according to their respective acreage interests in all unitized land, shall by majority vote select a successor Unit Operator: *Provided*, That, if a majority but less than 75 per cent of the working interests qualified to vote are owned by one party to this agreement, a concurring vote of one or more additional working interest owners shall be required to select a new operator. Such selection shall not become effective until (a) a Unit Operator so selected shall accept in writing the duties and responsibilities of Unit Operator, and (b) the selection shall

have been approved by the Director. If no successor Unit Operator is selected and qualified as herein provided, the Director at his election may declare this unit agreement terminated.

7. *Accounting provisions and unit operating agreement.* If the Unit Operator is not the sole owner of working interests, costs and expenses incurred by Unit Operator in conducting unit operations hereunder shall be paid and apportioned among and borne by the owners of working interests, all in accordance with the agreement or agreements entered into by and between the Unit Operator and the owners of working interests, whether one or more, separately or collectively. Any agreement or agreements entered into between the working interest owners and the Unit Operator as provided in this section, whether one or more, are herein referred to as the "unit operating agreement." Such unit operating agreement shall also provide the manner in which the working interest owners shall be entitled to receive their respective proportionate and allocated share of the benefits accruing hereto in conformity with their underlying operating agreements, leases, or other independent contracts, and such other rights and obligations as between Unit Operator and the working interest owners as may be agreed upon by Unit Operator and the working interest owners; however, no such unit operating agreement shall be deemed either to modify any of the terms and conditions of this unit agreement or to relieve the Unit Operator of any right or obligation established under this unit agreement, and in case of any inconsistency or conflict between the unit agreement and the unit operating agreement, this unit agreement shall prevail. Three true copies of any unit operating agreement executed pursuant to this section shall be filed with the Supervisor.

8. *Rights and obligations of Unit Operator.* Except as otherwise specifically provided herein, the exclusive right, privilege, and duty of exercising any and all rights of the parties hereto which are necessary or convenient for prospecting for, producing, storing, allocating, and distributing the unitized substances are hereby delegated to and shall be exercised by the Unit Operator as herein provided. Acceptable evidence of title to said rights shall be deposited with said Unit Operator and, together with this agreement, shall constitute and define the rights, privileges, and obligations of Unit Operator. Nothing herein, however, shall be construed to transfer title to any land or to any lease or operating agreement, it being understood that under this agreement the Unit Operator, in its capacity as Unit Operator, shall exercise the rights of possession and use vested in the parties hereto only for the purposes herein specified.

9. *Drilling to discovery.* Within 6 months after effective date hereof, the Unit Operator shall begin to drill an adequate test well at a location approved by the Supervisor,

unless on such effective date a well is being drilled conformably with the terms hereof, and thereafter continue such drilling diligently until the ----- formation has been tested or until at a lesser depth unitized substances shall be discovered which can be produced in paying quantities (to wit: quantities sufficient to repay the costs of drilling, and producing operations, with a reasonable profit) or the Unit Operator shall at any time establish to the satisfaction of the Supervisor that further drilling of said well would be unwarranted or impracticable, provided, however, that Unit Operator shall not in any event be required to drill said well to a depth in excess of ---- feet. Until the discovery of a deposit of unitized substances capable of being produced in paying quantities, the Unit Operator shall continue drilling diligently one well at a time, allowing not more than 6 months between the completion of one well and the beginning of the next well, until a well capable of producing unitized substances in paying quantities is completed to the satisfaction of said Supervisor, or until it is reasonably proved that the unitized land is incapable of producing unitized substances in paying quantities in the formations drilled hereunder. Nothing in this section shall be deemed to limit the right of the Unit Operator to resign as provided in section 5 hereof, or as requiring Unit Operator to commence or continue any drilling during the period pending such resignation becoming effective in order to comply with the requirements of this section. The Director may modify the drilling requirements of this section by granting reasonable extensions of time when, in his opinion, such action is warranted.

Upon failure to comply with the drilling provisions of this section, the Director may after reasonable notice to the Unit Operator, and each working interest owner, lessee, and lessor at their last known addresses, declare this unit agreement terminated.¹

10. *Plan of further development and operation.* Within 6 months after completion of a well capable of producing unitized substances in paying quantities, the Unit Operator shall submit for the approval of the Supervisor an acceptable plan of development and operation for the unitized land which, when approved by the Supervisor, shall constitute the further drilling and operating obligations of the Unit Operator under this

¹ The following paragraph may be substituted for the last paragraph of section 9:

"Upon failure to commence any well provided for in this section within the time allowed including any extension of time granted by the Director, this agreement will automatically terminate; upon failure to continue drilling diligently, the Director may, after reasonable notice to the Unit Operator, and each working interest owner, lessee, and lessor, declare this unit agreement terminated."

agreement for the period specified therein. Thereafter, from time to time before the expiration of any existing plan, the Unit Operator shall submit for the approval of the Supervisor a plan for an additional specified period for the development and operation of the unitized land. Any plan submitted pursuant to this section shall provide for the exploration of the unitized area and for the determination of the area or areas thereof capable of producing unitized substances in paying quantities in each and every productive formation and shall be as complete and adequate as the Supervisor may determine to be necessary for timely development and proper conservation of the oil and gas resources of the unitized area and shall (a) specify the number and locations of any wells to be drilled and the proposed order and time for such drilling; and (b) to the extent practicable specify the operating practices regarded as necessary and advisable for proper conservation of natural resources. Separate plans may be submitted for separate productive zones, subject to the approval of the Supervisor. Said plan or plans shall be modified or supplemented when necessary to meet changed conditions or to protect the interests of all parties to this agreement. Reasonable diligence shall be exercised in complying with the obligations of the approved plan of development. The Supervisor is authorized to grant a reasonable extension of the 6-month period herein prescribed for submission of an initial plan of development where such action is justified because of unusual conditions or circumstances. After completion hereunder of a well capable of producing any unitized substance in paying quantities, no further wells, except such as may be necessary to afford protection against operations not under this agreement or such as may be specifically approved by the Supervisor, shall be drilled except in accordance with a plan of development approved as herein provided.

11. *Participation after discovery.* Upon completion of a well capable of producing unitized substances in paying quantities or as soon thereafter as required by the Supervisor, the Unit Operator shall submit for approval by the Director a schedule, based on subdivisions of the public-land survey or aliquot parts thereof, of all unitized land then regarded as reasonably proved to be productive of unitized substances in paying quantities; all lands in said schedule on approval of the Director to constitute a participating area, effective as of the date of first production. Said schedule also shall set forth the percentage of unitized substances to be allocated as herein provided to each unitized tract in the participating area so established, and shall govern the allocation of production from and after the date the participating area becomes effective. A separate participating area shall be established in like manner for each separate pool or deposit of unitized substances or for any group thereof pro-

duced as a single pool or zone, and any two or more participating areas so established may be combined into one with the consent of the owners of all working interests in the lands within the participating areas so to be combined, on approval of the Director. The participating area or areas so established shall be revised from time to time, subject to like approval, whenever such action appears proper as a result of further drilling operations or otherwise, to include additional land then regarded as reasonably proved to be productive in paying quantities,* **or to exclude land then regarded as reasonably proved not to be productive** and the percentage of allocation shall also be revised accordingly. The effective date of any revision shall be the first of the month in which is obtained the knowledge or information on which such revision is predicated, unless a more appropriate effective date is specified in the schedule. No land shall be excluded from a participating area on account of depletion of the unitized substances.

It is the intent of this section that a participating area shall represent the area known or reasonably estimated to be productive in paying quantities, but, regardless of any revision of the participating area, nothing herein contained shall be construed as requiring any retroactive adjustment for production obtained prior to the effective date of the revision of the participating area.

In the absence of agreement at any time between the Unit Operator and the Director as to the proper definition or redefinition of a participating area, or until a participating area has, or areas have, been established as provided herein, the portion of all payments affected thereby may be impounded in a manner mutually acceptable to the owners of working interests, except royalties due the United States, which shall be determined by the Supervisor and the amount thereof deposited, as directed by the Supervisor, to be held as unearned money until a participating area is finally approved and then applied as earned or returned in accordance with a determination of the sum due as Federal royalty on the basis of such approved participating area.

Whenever it is determined, subject to the approval of the Supervisor, that as well drilled under this agreement is not capable of production in paying quantities and inclusion of the land on which it is situated in a participating area is unwarranted, production from such well shall, for the purposes of settlement among all parties other than working interest owners, be allocated to the land on which the well is located so long as such land is not within a participating area established for the pool or deposit from which such production is obtained. Settle-

* Alternative: Clause between double asterisks may be omitted if the working interests are owned by more than one party and such interests are divided.

ment for working interest benefits from such a well shall be made as provided in the unit operating agreement.

12. *Allocation of production.* All unitized substances produced from each participating area established under this agreement, except any part thereof used in conformity with good operating practices within the unitized area for drilling, operating, camp and other production or development purposes, for repressuring or recycling in accordance with a plan of development approved by the Supervisor, or unavoidably lost, shall be deemed to be produced equally on an acreage basis from the several tracts of unitized land of the participating area established for such production and, for the purpose of determining any benefits accruing under this agreement, each such tract of unitized land shall have allocated to its such percentage of said production as the number of acres of such tract included in said participating area bears to the total acres of unitized land in said participating area. It is hereby agreed that production of unitized substances from a participating area shall be allocated as provided herein regardless of whether any wells are drilled on any particular part or tract of said participating area. If any gas produced from one participating area is used for repressuring or recycling purposes in another participating area, the first gas withdrawn from such last-mentioned participating area for sale during the life of this agreement shall be considered to be the gas so transferred until an amount equal to that transferred shall be so produced for sale and such gas shall be allocated to the participating area from which initially produced as constituted at the time of such final production.

13. *Development or operation of non-participating land or formations.* Any party hereto owning or controlling the working interest in any unitized land having thereon a regular well location may with the approval of the Supervisor, at such party's sole risk, cost, and expense drill a well to test any formation for which a participating area has not been established or to test any formation for which a participating area has been established if such location is not within said participating area, unless within 90 days of receipt of notice from said party of his intention to drill the well the Unit Operator elects and commences to drill such well in like manner as other wells are drilled by the Unit Operator under this agreement.

If any well drilled as aforesaid by a working interest owner results in production such that the land upon which it is situated may properly be included in a participating area, such participating area shall be established or enlarged as provided in this agreement and the well shall thereafter be operated by Unit Operator in accordance with the terms of this agreement and the unit operating agreement.

If any well drilled as aforesaid by a working interest owner obtains production in quantities insufficient to justify the inclusion in a participating area of the land upon which such well is situated, such well may be operated and produced by the party drilling the same subject to the conservation requirements of this agreement. The royalties in amount or value of production from any such well shall be paid as specified in the underlying lease and agreements affected.

14. *Royalty settlement.* The United States and any State and all royalty owners who under existing contract, are entitled to take in kind a share of the substances now unitized hereunder produced from any tract, shall hereafter be entitled to the right to take in kind their share of the unitized substances allocated to such tract, and Unit Operator, or in case of the operation of a well by a working interest owner as herein in special cases provided for, such working interest owner, shall make deliveries of such royalty share taken in kind in conformity with the applicable contracts, laws, and regulations. Settlement for royalty interest not taken in kind shall be made by working interest owners responsible therefor under existing contracts, laws, and regulations, on or before the last day of each month for unitized substances produced during the preceding calendar month; provided, however, that nothing herein contained shall operate to relieve the lessee of any land from their respective lease obligations for the payment of any royalties due under their leases.

If gas obtained from lands not subject to this agreement is introduced into any participating area hereunder, for use in repressuring, stimulation of production, or increasing ultimate recovery, which shall be in conformity with a plan first approved by the Supervisor, a like amount of gas, after settlement as herein provided for any gas transferred from any other participating area and with due allowance for loss or depletion from any cause, may be withdrawn from the formation into which the gas was introduced, royalty free as to dry gas, but not as to the products extracted therefrom; provided that such withdrawal shall be at such time as may be provided in the plan of operations or as may otherwise be consented to by the Supervisor as conforming to good petroleum engineering practice; and provided further, that such right of withdrawal shall terminate on the termination of this unit agreement.

Royalty due the United States shall be computed as provided in the operating regulations and paid in value or delivered in kind as to all unitized substances on the basis of the amounts thereof allocated to unitized Federal land as provided herein at the rates specified in the respective Federal leases, or at such lower rate or rates as may be authorized by law or regulation; provided, that for leases on which the royalty rate depends

on the daily average production per well, said average production shall be determined in accordance with the operating regulations as though each participating area were a single consolidated lease.

15. *Rental settlement.* Rental or minimum royalties due on leases committed hereto shall be paid by working interest owners responsible therefor under existing contracts, laws, and regulations, provided that nothing herein contained shall operate to relieve the lessees of any land from their respective lease obligations for the payment of any rental or minimum royalty in lieu thereof due under their leases. Rental or minimum royalty for lands of the United States subject to this agreement shall be paid at the rate specified in the respective leases from the United States unless such rental or minimum royalty is waived, suspended, or reduced by law or by approval of the Secretary or his duly authorized representative.

With respect to any lease on non-Federal land containing provisions which would terminate such lease unless drilling operations were within the time therein specified commenced upon the land covered thereby or rentals paid for the privilege of deferring such drilling operations, the rentals required thereby shall, notwithstanding any other provision of this agreement, be deemed to accrue and become payable during the term thereof as extended by this agreement and until the required drilling operations are commenced upon the land covered thereby or some portion of such land is included within a participating area.

16. *Conservation.* Operations hereunder and production of unitized substances shall be conducted to provide for the most economical and efficient recovery of said substances without waste, as defined by or pursuant to State or Federal law or regulation.

17. *Drainage.* The Unit Operator shall take appropriate and adequate measures to prevent drainage of unitized substances from unitized land by wells on land not subject to this agreement or pursuant to applicable regulations pay a fair and reasonable compensatory royalty as determined by the Supervisor.

18. *Leases and contracts conformed and extended.* The terms, conditions, and provisions of all leases, subleases, and other contracts relating to exploration, drilling, development, or operation for oil or gas of lands committed to this agreement are hereby expressly modified and amended to the extent necessary to make the same conform to the provisions hereof, but otherwise to remain in full force and effect; and the

*Alternative: Paragraph between double asterisks optional if non-Federal land included.

parties hereto hereby consent that the Secretary shall and by his approval hereof, or by the approval hereof by his duly authorized representative, does hereby establish, alter, change, or revoke the drilling producing, rental, minimum royalty, and royalty hereto and the regulations in respect thereto to conform said requirements to the provisions of this agreement, and, without limiting the generality of the foregoing, all leases, subleases, and contracts are particularly modified in accordance with the following:

(a) The development and operation of lands subject to this agreement under the terms hereof shall be deemed full performance of all obligations for development and operation with respect to each and every part or separately owned tract subject to this agreement, regardless of whether there is any development of any particular part or tract of the unit area, notwithstanding anything to the contrary in any lease, operating agreement or other contract by and between the parties hereto, or their respective predecessors in interest, or any of them.

(b) Drilling and producing operations performed hereunder upon any tract of unitized lands will be accepted and deemed to be performed upon and for the benefit of each and every tract of unitized land, and no lease shall be deemed to expire by reason of failure to drill or produce wells situated on the land therein embraced.

(c) Suspension of drilling or producing operations on all unitized lands pursuant to direction or consent of the Secretary or his duly authorized representative shall be deemed to constitute such suspension pursuant to such direction or consent as to each and every tract of unitized land.

(d) Each lease, sublease or contract relating to the exploration, drilling, development or operation for oil or gas of lands other than those of the United States, committed to this agreement, which, by its terms might expire prior to the termination of this agreement, is hereby extended beyond any such term so provided therein so that it shall be continued in full force and effect for and during the term of this agreement.

(e) Any Federal lease for a fixed term of twenty (20) years of any renewal thereof or any part of such lease which is made subject to this agreement shall continue in force beyond the term provided therein until the termination hereof. Any other Federal lease committee hereto shall continue in force beyond the term so provided therein or by law as to the committed land so long as such land remains committed hereto, provided unitized substances are discovered in paying quantities within the unit area prior to the expiration date of the primary term of such lease.

(f) Each sublease or contract relating to the operation and development of unitized substances from lands of the United States committed to this agreement, which by its terms would expire prior to the time at which the underlying lease, as extended by the immediately preceding paragraph, will expire, is hereby extended beyond any such term so provided therein so that it shall be continued in full force and effect for and during the term of the underlying lease as such term is herein extended.

(g) Any lease having only a portion of its lands committed hereto shall be segregated as to the portion committed and the portion not committed, and the terms of such lease shall apply separately to such segregated portions commencing as of the effective date hereof. In the event any such lease provides for a lump-sum rental payment, such payment shall be prorated between the portions so segregated in proportion to the acreage of the respective tracts.

19. *Covenants run with land.* The covenants herein shall be construed to be covenants running with the land with respect to the interest of the parties hereto and their successors in interest until this agreement terminates, and any grant, transfer, or conveyance, of interest in land or leases subject hereto shall be and hereby is conditioned upon the assumption of all privileges and obligations hereunder by the grantee, transferee, or other successor in interest. No assignment or transfer of any working interest, royalty, or other interest subject hereto shall be binding upon Unit Operator until the first day of the calendar month after Unit Operator is furnished with the original, photostatic, or certified copy of the instrument of transfer.

20. *Effective date and term.* This agreement shall become effective upon approval by the Secretary or his duly authorized representative and shall terminate on⁴ unless (a) such date of expiration is extended by the Director, or (b) it is reasonably determined prior to the expiration of the fixed term or any extension thereof that the unitized land is incapable of production of unitized substances in paying quantities in the formations tested hereunder and after notice of intention to terminate the agreement on such grounds is given by the Unit Operator to all parties in interest at their last known addresses, the agreement is terminated with the approval of the Director, or (c) a valuable discovery of unitized substances has been made on unitized land during said initial term or any extension thereof, in which event the agreement shall remain in effect for such term and so long as unitized

substances can be produced in paying quantities, i.e., in this particular instance in quantities sufficient to pay for the cost of producing same from wells on unitized land within any participating area established hereunder and, should production cease, so long thereafter as diligent operations are in progress for the restoration of production or discovery of new production and so long thereafter as the unitized substances so discovered can be produced as aforesaid, or (d) it is terminated as heretofore provided in this agreement.

This agreement may be terminated at any time by not less than 75 per centum, on an acreage basis, of the owners of working interests signatory hereto, with the approval of the Director; notice of any such approval to be given by the Unit Operator to all parties hereto.

21. *Rate of prospecting, development, and production.* The Director is hereby vested with authority to alter or modify from time to time in his discretion the quantity and rate of production under this agreement when such quantity and rate is not fixed pursuant to Federal or State law or does not conform to any state-wide voluntary conservation or allocation program, which is established, recognized, and generally adhered to by the majority of operators in such State, such authority being hereby limited to alteration or modification in the public interest, the purpose thereof and the public interest to be served thereby to be stated in the order of alteration or modification. Without regard to the foregoing, the Director is also hereby vested with authority to alter or modify from time to time in his discretion the rate of prospecting and development and the quantity and rate of production under this agreement when such alteration or modification is in the interest of attaining the conservation objectives stated in this agreement and is not in violation of any applicable Federal or State law.

Powers in this section vested in the Director shall only be exercised after notice to Unit Operator and opportunity for hearing to be held not less than 15 days from notice.

22. *Determinations by unit operator and review thereof.*⁵ Whenever a determination is required to be made in order to carry out the express terms of this agreement and the agreement does not specify by whom such determination shall be made, the Unit Operator is hereby authorized to make the necessary determination subject to approval of the Director in the manner hereinafter provided. Notice of any such determination by the Unit Operator, accompanied by data in support thereof, shall be furnished to the

⁴The termination date to be specified in section 20 should not be more than 5 years from the effective date of the agreement.

⁵Section 22 entitled "Determinations by Unit Operator and Review Thereof" may be omitted at the option of the parties.

Director through the Supervisor. If, after reviewing all the available evidence, the Director finds that the determination reviewed is incorrect he shall advise the Unit Operator accordingly, stating the reasons therefor, and thereupon such determination shall be of no force and effect.

The Unit Operator shall then make a new determination in conformity with the finding of the Director or appeal to the Secretary as provided in the Operating Regulations. All determinations made by the Unit Operator pursuant to this section shall be effective unless and until altered, modified, or rescinded as herein provided.

Any party hereto shall have the right to request the Director (such request to be accompanied by appropriate supporting evidence) to review any determination made by the Unit Operator pursuant to this section not previously reviewed on appeal to the Secretary. Such request will be granted or denied in the discretion of the Director within 60 days after being received. If denied, the requesting party shall have the right to appeal to the Secretary. If the request for review is granted and thereafter the Director finds that the determination should be altered, modified, or rescinded, the Unit Operator shall be advised accordingly and shall either comply with the finding of the Director or appeal to the Secretary.

23. Appearances. Unit Operator shall, after notice to other parties affected, have the right to appear for or on behalf of any and all interests affected hereby before the Department of the Interior and to appeal from orders issued under the regulations of said Department or to apply for relief from any of said regulations or in any proceedings relative to operations before the Department of the Interior or any other legally constituted authority; provided, however, that any other interested party shall also have the right at his own expense to be heard in any such proceeding.

24. Notices. All notices, demands or statements required hereunder to be given or rendered to the parties hereto shall be deemed fully given if given in writing and personally delivered to the party or sent by postpaid registered mail, addressed to such party or parties at their respective addresses set forth in connection with the signatures hereto or to the ratification or consent hereof or to such other address as any such party may have furnished in writing to party sending the notice, demand or statement.

25. No waiver of certain rights. Nothing in this agreement contained shall be construed as a waiver by any party hereto of the right to assert any legal or constitutional right or defense as to the validity or invalidity of any law of the State wherein said unitized lands are located, or of the United States, or regulations issued there-

under in any way affecting such party, or as a waiver by any such party of any right beyond his or its authority to waive.

26. Unavoidable delay. All obligations under this agreement requiring the Unit Operator to commence or continue drilling or to operate on or produce unitized substances from any of the lands covered by this agreement shall be suspended while, but only so long as, the Unit Operator despite the exercise of due care and diligence is prevented from complying with such obligations, in whole or in part, by strikes, acts of God, Federal, State, or municipal law or agencies, unavoidable accidents, uncontrollable delays in transportation, inability to obtain necessary materials in open market, or other matters beyond the reasonable control of the Unit Operator whether similar to matters herein enumerated or not.

27. Fair employment. The Unit Operator shall not discriminate against any employee or applicant for employment because of race, creed, color or national origin, and an identical provision shall be incorporated in all sub-contracts.

28. Loss of title. In the event title to any tract of unitized land shall fail and the true owner cannot be induced to join in this unit agreement, such tract shall be automatically regarded as not committed hereto and there shall be such readjustment of future costs and benefits as may be required on account of the loss of such title. In the event of a dispute as to title as to any royalty, working interest, or other interests subject thereto, payment or delivery on account thereof may be withheld without liability for interest until the dispute is finally settled; provided, that as to Federal land or leases, no payments of funds due the United States should be withheld, but such funds shall be deposited as directed by the Supervisor to be held as unearned money pending final settlement of the title dispute, and then applied as earned or returned in accordance with such final settlement.

Unit Operator as such is relieved from any responsibility for any defect or failure of any title hereunder.

29. Non-joinder and subsequent joinder. If the owner of any substantial interest in a tract within the unit area fails or refuses to subscribe or consent to this agreement, the owner of the working interest in that tract may withdraw said tract from this agreement by written notice to the Director and the Unit Operator prior to the approval of this agreement by the Director. Any oil or gas interests in lands within the unit area, not committed hereto prior to submission of this agreement for final approval may thereafter be committed hereto by the owner or owners thereof subscribing or consenting to this agreement, and, if the interest is a working interest, by the owner of such interest

also subscribing to the unit operating agreement. After operations are commenced hereunder, the right of subsequent joinder, as provided in this section, by a working interest owner is subject to such requirements or approvals, if any, pertaining to such joinder, as may be provided for in the unit operating agreement. After final approval hereof joinder by a non-working interest owner must be consented to in writing by the working interest owner committed hereto and responsible for the payment of any benefits that may accrue hereunder in behalf of such non-working interest. Prior to final approval hereof, joinder by any owner of a non-working interest must be accompanied by appropriate joinder by the owner of the corresponding working interest in order for the interest to be regarded as effectively committed hereto. Except as may otherwise herein be provided subsequent joinders to this agreement shall be effective as of the first day of the month following the filing with the Supervisor or duly executed counterparts of all or any papers necessary to establish effective commitment of any tract to this agreement unless objection to such joinder is duly made within 60 days by the Director.

30. *Counterparts.* This agreement may be executed in any number of counterparts no one of which needs to be executed by all parties or may be ratified or consented to by separate instrument in writing specifically referring hereto and shall be binding upon all those parties who have executed such a counterpart, ratification, or consent hereto with the same force and effect as if all such parties had signed the same document and regardless of whether or not it is executed by all other parties owning or claiming an interest in the lands within the above-described unit area.

31. *Surrender.*⁶ Nothing in this agreement shall prohibit the exercise by any working interest owner of the right to surrender vested in such party in any lease, sub-lease or operating agreement as to all or any part of the lands covered thereby, provided that each party who will or might acquire such working interest by such surrender or by forfeiture as hereafter set forth, is bound by the terms of this agreement.

If as a result of any such surrender, the working interest rights as to such lands become vested in any party other than the fee owner of the unitized substances, said party shall forfeit such rights and no further benefits from operations hereunder as to said land shall accrue to such party, unless within ninety (90) days thereafter said party shall execute this agreement and the unit operat-

ing agreement as to the working interest acquired through such surrender, effective as though such land had remained continuously subject to this agreement and the unit operating agreement. And in the event such agreements are not so executed, the party next in the chain of title shall be and become the owner of such working interest at the end of such ninety (90) day period, with the same force and effect as though such working interest had been surrendered to such party.

If as the result of any such surrender or forfeiture the working interest rights as to such lands become vested in the fee owner of the unitized substances, such owner may:

(1) Execute this agreement and the unit operating agreement as a working interest owner, effective as though such land had remained continuously subject to this agreement and the unit operating agreement.

(2) Again lease such lands but only under the condition that the holder of such lease shall within thirty (30) days after such lands are so leased execute this agreement and the unit operating agreement as to each participating area theretofore established hereunder, effective as though such land had remained continuously subject to this agreement and the unit operating agreement.

(3) Operate or provide for the operation of such land independently of this agreement as to any part thereof or any oil or gas deposits therein not then included within a participating area.

If the fee owner of the unitized substances does not execute this agreement and the unit operating agreement as a working interest owner or again lease such lands as above provided with respect to each existing participating area, within six (6) months after any such surrender or forfeiture, such fee owner shall be deemed to have waived the right to execute the unit operating agreement or lease such lands as to each such participating area, and to have agreed, in consideration for the compensation hereinafter provided, that operations hereunder as to any such participating area or areas shall not be affected by such surrender.

For any period the working interest in any lands are not expressly committed to the unit operating agreements as the result of any such surrender or forfeiture, the benefits and obligations of operations accruing to such lands under this agreement and the unit operating agreement shall be shared by the remaining owners of unitized working interests in accordance with their respective participating working interest ownerships in any such participating area or areas, and such owners of working interests shall compensate the fee owner of unitized substances in such lands by paying sums equal to the rentals, minimum royalties, and royalties

⁶ Section 31 entitled "Surrender" may be omitted at the option of the parties.

applicable to such lands under the lease in effect when the lands were unitized, as to such participating area or areas.

Upon commitment of a working interest to this agreement and the unit operating agreement as provided in this section, and appropriate accounting and settlement shall be made, to reflect the retroactive effect of the commitment, for all benefits accruing to or payments and expenditures made or incurred on behalf of such surrendered working interest during the period between the date of surrender and the date of recommitment, and payment of any moneys found to be owing by such an accounting shall be made as between the parties then signatory to the unit operating agreement and this agreement within thirty (30) days after the recommitment. The right to become a party to this agreement and the unit operating agreement as a working interest owner by reason of a surrender or forfeiture as provided in this section shall not be defeated by the non-existence of a unit operating agreement and in the event no unit operating agreement is in existence and a mutually acceptable agreement between the proper parties thereto cannot be consummated, the Supervisor may prescribe such reasonable and equitable agreement as he deems warranted under the circumstances.

Nothing in this section shall be deemed to limit the right of joinder or subsequent joinder to this agreement as provided elsewhere in this agreement. The exercise of any right vested in a working interest owner to reassign such working interest to the party from whom obtained shall be subject to the same conditions as set forth in this section in regard to the exercise of a right to surrender.

WORKING INTEREST OWNERS

Date: -----
 Attest: -----
 Secretary By -----
 President

Date: -----
 Date: -----

OTHER PARTIES

Date: -----
 Attest: -----
 Secretary By -----
 President

Date: -----
 Date: -----

NOTE

(a) At the option of the parties a section may be included covering the payment of taxes.

(b) Unit Operator should sign both as Unit Operator and as a working interest owner.

(c) Only those who are parties to the Unit Operating and Accounting Agreement should sign as working interest owners.

(d) A carried working interest owner should sign under the heading of OTHER PARTIES.

NOTE: The following is a sample form of approval certificate to be attached to each executed copy of unit agreement submitted for approval.

CERTIFICATION—DETERMINATION

Pursuant to the authority vested in the Secretary of the Interior, under the act approved February 25, 1920, 41 Stat. 437, 30 U. S. C. secs. 181, et seq., as amended by the act of August 8, 1946, 60 Stat. 950, and delegated to the Director of the Geological Survey pursuant to Departmental Order No. 2365 of October 8, 1947, 12 F.R. 6784, I do hereby:

A. Approve the attached agreement for the development and operation of the ----- Unit Area, State of -----

B. Certify and determine that the unit plan of development and operation contemplated in the attached agreement is necessary and advisable in the public interest for the purpose of more properly conserving the natural resources.

C. Certify and determine that the drilling, producing, rental, minimum royalty, and royalty requirements of all Federal leases committed to said agreement are hereby established, altered, changed, or revoked to conform with the terms and conditions of this agreement.

Dated: -----

Director, United State Geological Survey.

EXHIBIT A

**SWAN UNIT AREA
 T. 54 N. R. 70W. 6th PM. WYOMING**

| | | | |
|---------------------|-------------|-----------|--------------------|
| Deer | Frost | Deer | Doe |
| 12 | 1 | 3 | 13 |
| S. S. Sims chrl. | B. 038470 | B. 039210 | J. C. Smith |
| Snow | Smith | Frost | Deer |
| 5 | 14 | 4 | 10 |
| B. 041274 | T. J. Cook | B. 039791 | B. 043970 |
| Frost | Deer & Doe | Deer | Snow |
| 6 | 7 | 9 | 11 |
| B. 041345 | B. 041679 | B. 042780 | B. 044792 |
| Doe | Deer | Deer | Doe et al. |
| 8 | 15 | 2 | 16 |
| B. M. A. 041783 | K. C. Knott | B. 039123 | A. A. A. et al. |

① Means tract number as listed on Exhibit B.

SAMPLE EXHIBIT B—SWAN UNIT AREA, CAMPBELL COUNTY, WYOMING, T. 54 N., R. 70 W.

| Tract No. | Description of land | Number of acres | Application or serial No. and effective or expiration date of lease | Basic royalty and percentage | Lessee of record | Overriding royalty and percentage | Working interest and percentage |
|-----------|---|-----------------|---|------------------------------|------------------|-----------------------------------|---------------------------------|
| | <i>Federal land</i> T. 54 N. R. 70 W. | | <i>Buffalo</i> <i>Serials</i> | | | | |
| 1 | All Sec. 15. | 640.00 | 038470 | U.S. All..... | T. J. Cook.... | T. J. Cook 2%.. | Frost O. Co., All. |
| 2 | All Sec. 35. | 640.00 | 7-1-49 039123 |do..... | O. M. Odom.... | O. M. Odom 1%.. | Deer O. Co., All. |
| 3 | All Sec. 14. | 640.00 | 7-1-49 039210 |do..... | Tom Black.... | Tom Black 2%.. | Do. |
| 4 | All Sec. 23. | 640.00 | 7-1-49 039791 |do..... | G. G. White...- | G. G. White 2%.. | Frost O. Co., All. |
| 5 | All Sec. 21. | 640.00 | 8-1-49 041274 |do..... | Joe Blue..... | Joe Blue 1%.... | Snow O. Co., All. |
| 6 | All Sec. 28. | 640.00 | 10-1-49 041345 |do..... | {Max Pen..... | Max Pen 1%.... | }Frost O. Co., All. |
| 7 | All Sec. 27. | 640.00 | 11-1-49 041679 |do..... | {Sam Small.... | Sam Small 1%.. | |
| 8 | All Sec. 33. | 640.00 | 12-1-49 BLM-A- |do..... | Al Preen..... | Al Preen 2%.... | {Deer O. Co. 50%. |
| 9 | All Sec. 26. | 640.00 | 041789 1-1-50 |do..... | S. T. Jones.... | S. T. Jones 1½%. | {Doe O. Co., 50%. |
| 10 | All Sec. 24. | 640.00 | 042780 2-1-50 |do..... | J. G. Goodin.. | J. G. Goodin 2%. | {Doe O. Co., All. |
| 11 | All Sec. 25. | 640.00 | 043970 3-1-50 |do..... | Tim Holder...- | Tim Holder 2%.. | Do. |
| 12 | All Sec. 16. | 640.00 | 044792 Appl'n. |do..... | Al Black..... | Al Black 2%.... | Snow O. Co., All. |
| 13 | All Sec. 13. | 640.00 | 7-12-50 | {S. S. Sims 50%.. | }Deer O. Co.... | T. T. Timo 2%.. | Deer O. Co., All. |
| 14 | All Sec. 22. | 640.00 | 8-2-50 | {Wm. Sims 25%.. | | | |
| 15 | All Sec. 34. | 640.00 | 6-1-50 | {Joe Sims 25%.. | }Doe O. Co.... | None..... | Doe O. Co., All. |
| 16 | All Sec. 36. | 640.00 | 5-15-50 | {J. C. Smith.... | | | |
| | | | | {T. J. Cook..... | W. W. Smith.. | Sam Spade 1%.. | W. W. Smith, All. |
| | | | | {K. C. Knott.... | Deer O. Co.... | None..... | Deer O. Co., All. |
| | | | | {A. A. Aben 75%.. | }Doe O. Co.... |do..... | {Doe O. Co. 60%. |
| | | | | {L. P. Aben 25%.. | | | |

Total: 16 tracts 10,240.00 acres in entire unit area.
 NOTE: Group lands by types, listing Federal leases by order of serial number.
 Tract numbers are merely for simple and convenient reference.
 Consents should be identified (in pencil if desired) by tract numbers as listed in Exhibit B and assembled in that order as far as practical.
 For patented land tracts, the lease expiration date may be shown in lieu of the lease date.

§ 226.15 Form of collective bond.

COLLECTIVE CORPORATE SURETY BOND

Know all men by these presents, That we, _____, signing as
 (Name of unit operator)

Principal, for and on behalf of the record owners of unitized substances now or hereafter covered by the unit agreement for the _____, approved _____,
 (Name of unit) (Date)

_____, as Surety
 (Name and address of Surety)

are jointly and severally held and firmly bound unto the United States of America in the sum of _____ Dollars, lawful
 (Amount of bond)

money of the United States, for the use and benefit of and to be paid to the United States and any entryman or patentee of any portion of the unitized land heretofore entered or patented with the reservation of the

oil or gas deposits to the United States, for which payment, well and truly to be made, we bind ourselves, and each of us, and each of our heirs, executors, administrators, successors, and assigns by these presents.

The condition of the foregoing obligation is such, that, whereas the Secretary of the Interior on _____ approved under
 (Date)

der the provisions of the act of February 25, 1920, 41 Stat. 437, 30 U.S.C. secs. 181, et seq., as amended by the act of August 8, 1946, 60 Stat 950, a unit agreement for the development and operation of the _____;
 (Name of unit and State)

Whereas said Principal and record owners of unitized substances, pursuant to said unit agreement, have entered into certain covenants and agreements as set forth therein, under which operations are to be conducted: and

Whereas said Principal as Unit Operator has assumed the duties and obligations of the respective owners of unitized substances as defined in said unit agreement; and

Whereas said Principal and Surety agree to remain bound in the full amount of the bond for failure to comply with the terms of the unit agreement, and the payment of rentals, minimum royalties, and royalties due under the Federal leases committed to said unit agreement; and

Whereas the Surety hereby waives any right of notice of and agrees that this bond may remain in force and effect notwithstanding:

(a) Any additions to or change in the ownership of the unitized substances herein described;

(b) Any suspension of the drilling or producing requirements or waiver, suspension, or reduction of rental or minimum royalty payments or reduction of royalties pursuant to applicable laws or regulations thereunder; and

Whereas said Principal and Surety agree to the payment of compensatory royalty under the regulations of the Interior Department in lieu of drilling necessary offset wells in the event of drainage; and

Whereas nothing herein contained shall preclude the United States from requiring an additional bond at any time when deemed necessary:

Now, therefore, if the said Principal shall faithfully comply with all of the provisions of the above-identified unit agreement and with the terms of the leases committed thereto, then the above obligation is to be of no effect; otherwise to remain in full force and virtue.

Signed, sealed, and delivered this _____ day of _____, 19____, in the presence of:

Witnesses: _____ (Principal)
_____ (Surety)

§ 226.16 Form of designation of successor unit operator by working interest owners.

Designation of successor Unit Operator _____ Unit Area, County of _____ State of _____ No. _____

This indenture, dated as of the _____ day of _____, 19____, by and between _____ hereinafter designated as "First Party," and the owners of unitized working interests, hereinafter designated as "Second Parties,"

WITNESSETH: Whereas under the provisions of the act of February 25, 1920, 41 Stat. 437, 30 U.S.C. secs. 181, et seq., as amended by the act of August 8, 1946, 60 Stat. 950, the Secretary of the Interior, on the _____ day of _____, 19____, approved a unit

agreement for the _____ Unit Area, wherein _____ is designated as Unit Operator; and

Whereas said _____ has resigned as such Operator,¹ and the designation of a successor Unit Operator is now required pursuant to the terms thereof; and

Whereas the First Party has been and hereby is designated by Second Parties as Unit Operator, and said First Party desires to assume all the rights, duties, and obligations of Unit Operator under the said unit agreement:

Now, therefore, in consideration of the premises hereinbefore set forth and the promises hereinafter stated, the First Party hereby covenants and agrees to fulfill the duties and assume the obligations of Unit Operator under and pursuant to all the terms of the _____ unit agreement, and the Second Parties covenant and agree that, effective upon approval of this indenture by the Director of the Geological Survey, First Party shall be granted the exclusive right and privilege of exercising any and all rights and privileges as Unit Operator, pursuant to the terms and conditions of said unit agreement; said unit agreement being hereby incorporated herein by reference and made a part hereof as fully and effectively as though said unit agreement were expressly set forth in this instrument.

In witness whereof, the parties hereto have executed this instrument as of the date hereinabove set forth.

(First Party)

(Witnesses)

(Second Parties)

(Witnesses)

I hereby approve the foregoing indenture designating _____ as Unit Operator under the unit agreement for the _____ Unit Area, this _____ day of _____ 19____

Director of the Geological Survey.

§ 226.17 Form of change in unit operator by assignment.

Change in Unit Operator _____ Unit Area, County of _____, State of _____, No. _____

This indenture, dated as of the _____ day of _____, 19____, by and between _____ hereinafter designated as "First Party," and _____ hereinafter designated as "Second Party."

WITNESSETH: Whereas under the provisions of the act of February 25, 1920, 41 Stat. 437, 30 U.S.C. secs. 181, et seq., as amended by

¹ Where the designation of a successor Unit Operator is required for any reason other than resignation, such reason shall be substituted for the one stated.

the act of August 8, 1946, 60 Stat. 950, the Secretary of the Interior, on the ----- day of -----, 19----, approved a unit agreement for the ----- Unit Area, wherein the First Party is designated as Unit Operator; and

Whereas the First Party desires to transfer, assign, release, and quitclaim, and the Second Party desires to assume all the rights, duties, and obligations of Unit Operator under the unit agreement; and

Whereas for sufficient and valuable consideration, the receipt whereof is hereby acknowledged, the First Party has transferred, conveyed, and assigned all his/its rights under certain operating agreements involving lands within the area set forth in said unit agreement unto the Second Party:

Now, therefore, in consideration of the premises hereinbefore set forth, the First Party does hereby transfer, assign, release, and quitclaim unto Second Party all of First Party's rights, duties, and obligations as Unit Operator under said unit agreement; and

Second Party hereby accepts this assignment and hereby covenants and agrees to fulfill the duties and assume the obligations of Unit Operator under and pursuant to all the terms of said unit agreement to the full extent set forth in this assignment, effective upon approval of this indenture by the Director of the Geological Survey; said unit agreement being hereby incorporated herein by reference and made a part hereof as fully and effectively as though said unit agreement were expressly set forth in this instrument.

In witness whereof, the parties hereto have executed this instrument as of the date hereinabove set forth.

 (Witnesses) (First Party)

 (Second Party)

I hereby approve the foregoing indenture designating ----- as Unit Operator under the unit agreement for the ----- Unit Area, this --- day of ----- 19---

 Director of the Geological Survey.

PART 229—REGULATIONS FOR OBTAINING FEDERAL ASSISTANCE IN FINANCING EXPLORATIONS FOR MINERAL RESERVES, EXCLUDING ORGANIC FUELS, IN THE UNITED STATES, ITS TERRITORIES AND POSSESSIONS

GENERAL PROVISIONS

- Sec. 229.1 Purpose.
- 229.2 Definitions.
- 229.3 Eligible minerals or mineral products.
- 229.4 Operator's property rights.

APPLICATIONS

- Sec. 229.5 Form and filing.
- 229.6 Information required.
- 229.7 Criteria.
- 229.8 Approval.

EXPLORATION CONTRACTS

- 229.9 Government participation.
- 229.10 Allowable costs.
- 229.11 Repayment by the operator.
- 229.12 Interest on amount of Government participation.
- 229.13 Limitation on the amount of Government participation.
- 229.14 Government not obligated to buy.
- 229.15 Title to and disposition of property

AUTHORITY: The provisions of this Part 229 issued under sec. 2(e), 72 Stat. 700; 30 U.S.C. 642(e).

SOURCE: The provisions of this Part 229 appear at 30 F.R. 2866, Mar. 5, 1965, unless otherwise noted.

GENERAL PROVISIONS

§ 229.1 Purpose.

The regulations in this part govern the obtaining of Federal financial assistance in conducting exploration for mineral reserves, excluding organic fuels, in the United States, its territories or possessions.

§ 229.2 Definitions.

As used in this part:

(a) "Exploration" means the search, including related development work, for new or unexplored mineral deposits within a specified area or parcel of ground where geologic conditions favor their occurrence. Exploration using recognized and sound procedures, including standard geophysical and geochemical methods, may be conducted from the surface or underground to obtain information. The work shall not go beyond a reasonable delineation and sampling of a mineral deposit, and shall not be conducted primarily for mining or preparation for mining.

(b) "Operator" means an individual partnership, corporation, or other legal entity that is party to an exploration contract with the Government.

(c) "Secretary" means the Secretary of the Interior, or his authorized representative.

(d) "Government" and "Federal" means the United States of America.

(e) "Commercial sources" means banking institutions or other private sources of credit.

§ 229.3 Eligible minerals or mineral products.

(a) The following are eligible for Government financial assistance of 50 percent of the allowable costs of exploration:

| | |
|----------------------------|---------------------------------|
| Asbestos. | Kyanite (strategic). |
| Bauxite. | Manganese. |
| Beryllium. | Mica (strategic). |
| Cadmium. | Molybdenum. |
| Chromite. | Monazite. |
| Cobalt. | Nickel. |
| Columbium. | Quartz Crystal (piezoelectric). |
| Copper. | Rare Earths. |
| Corundum. | Selenium. |
| Diamond (Industrial). | Sulphur |
| Fluorspar. | Talc (block steatite). |
| Graphite (crucible flake). | Tellurium. |
| Iron Ore. | Thorium. |
| | Uranium. |

(b) The following are eligible for Government financial assistance of 75 percent of the allowable costs of exploration:

| | |
|------------------------|-----------|
| Antimony. | Rutile. |
| Bismuth. | Silver. |
| Gold. | Tantalum. |
| Mercury. | Tin. |
| Platinum Group Metals. | |

(c) Combination of the minerals or mineral products named in paragraphs (a) and (b) of this section may be eligible for Government financial assistance of 62.5 percent of the allowable costs of exploration.

[32 F.R. 12941, Sept. 12, 1967]

§ 229.4 Operator's property rights.

The operator must have and preserve the right to possession of the land (as owner, lessee, or otherwise) for a term at least sufficient to complete the exploration work. (See § 229.11(f) regarding repayment.) The operator shall devote the land and all existing improvements, facilities, buildings installations, and appurtenances necessary to the purposes of the exploration.

APPLICATIONS

§ 229.5 Form and filing.

An application for Federal financial assistance must be submitted in quadruplicate on forms which may be obtained from and filed with either:

Geological Survey,
Department of the Interior,
Washington, D.C. 20242

or Field Officers, Geological Survey. The regions which they serve and their Post Office addresses are as follows:

Region I: Alaska, Idaho, Montana, Oregon, and Washington—Geological Survey, South 157 Howard Street, Spokane, Washington 99204. Applicants for Alaska projects may file applications with the United States Bureau of Mines, P.O. Box 2688, Juneau, Alaska, for forwarding to the Field Officer, Region I.

Region II—California, Hawaii, and Nevada—Geological Survey, 113 Custom House, 555 Battery Street, San Francisco California 94111.

Region III: Arizona, Colorado, Kansas, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, Utah, and Wyoming—Geological Survey, Federal Center, Denver, Colorado 80202.

Region IV: Alabama, Arkansas, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia, and Wisconsin—Geological Survey Room 11, Post Office Building, Knoxville, Tennessee 37902.

§ 229.6 Information required.

(a) Each application shall fully describe the proposed exploration, and shall include all detailed data called for by the application form. The Secretary may require the filing of additional information, including financial statements, reports, maps, or charts, and exhibits and such physical on-site examination as he deems necessary.

(b) The application must include evidence that funds for the exploration work are unavailable on reasonable terms from commercial sources. The evidence shall include information as to the commercial sources to which applications were made, the amounts requested, and the reasons why loans were not obtained.

(c) The application must include a certification by the applicant that he would not normally undertake the exploration at his sole expense under current conditions or circumstances.

§ 229.7 Criteria.

The following factors will be considered and weighed in passing upon applications:

(a) The geologic probability of a significant discovery being made.

(b) The estimated cost of the exploration in relation to the size and grade of the potential deposit.

(c) The plan and method of conducting the exploration.

(d) The accessibility of the project area.

(e) The background and operating experience of the applicant.

(f) The applicant's title or right to possession of the property.

§ 229.8 Approval.

If the application is approved, the Government may enter into an exploration contract with the applicant upon terms and conditions which the Secretary deems necessary and appropriate as set forth in the contract form furnished by the Government.

EXPLORATION CONTRACTS

§ 229.9 Government participation.

The Government will contribute not more than the percent of the total allowable costs of exploration which is specified in each exploration project contract. The percent specified in each contract will depend upon the minerals or mineral products sought and the Government contribution provided by § 229.3 at the time the contract is made.

[32 F.R. 12941, Sept. 12, 1967]

§ 229.10 Allowable costs.

(a) The Government, to the extent provided in the exploration contract, will contribute to:

(1) The necessary, reasonable, and direct actual costs of performing the exploration, including the costs of: Labor, supervision, and outside consultants; operating materials, supplies, and equipment; initial rehabilitation or repair of existing buildings, installations, fixtures, and operating equipment; construction of buildings, fixed improvements, and installations; repairs and maintenance of operating equipment; analytical work, accounting, payroll and sales taxes, and employers' liability or employees' compensation insurance; payments by the operator to independent contractors; and such other necessary, reasonable, and direct actual costs as may be approved by the Government in the course of work; and

(2) The fixed unit costs agreed upon by the operator and the Government in terms of units of work to be performed (per foot of drifting, per foot of drilling, etc.) in lieu of actual costs.

(b) The Government will not contribute to costs incurred before the date

of the contract, or to costs of or incident to:

(1) Acquiring, owning or possessing land with any existing improvements, facilities, buildings, installations, and appurtenances, or the depreciation and depletion thereof;

(2) General overhead, corporate management, interest and taxes (other than payroll and sales taxes);

(3) Insurance (other than employers' liability or employees' compensation insurance); and

(4) Damages to persons or property (other than authorized repair to or replacement of equipment or other property used in the work).

§ 229.11 Repayment by the operator.

(a) If the Secretary considers that as a result of the exploration, mineral or metal production from the area covered by the contract may be possible, he shall so certify in writing to the operator within the time specified in the contract.

(b) When the Secretary determines not to certify, he shall promptly so notify the operator provided the operator has completed all obligations under the contract.

(c) The operator shall pay the Government a royalty on all minerals or metals produced from the land described in the contract and any other royalty as may be provided therein:

(1) Irrespective of any certification of possible production—from the date of the contract to the date of notice that certification will not be made, or until the total amount contributed by the Government with interest is fully repaid, whichever occurs first; or

(2) Irrespective of any certification of possible production—if the Secretary, deeming it necessary and in the public interest, enters into an agreement to provide for royalty payments.

(3) If a certification of possible production is issued—for a period of ten years (or other period fixed by the contract not exceeding 25 years) from the date of the contract, or until the total amount contributed by the Government, with interest, is fully repaid, whichever occurs first.

(d) The Government's royalty shall be 5 percent of the "gross proceeds" (including any bonuses, premiums, allowances, or other benefits) from the production sold, in the form sold (ore, concentrates, metal, or equivalent) at the

point of delivery (the f.o.b. point) except, that charges of the buyer (not the operator or producer) arising in the regular course of his business, and shown on the buyer's settlement sheets as deductions (such as treatment processes performed by the buyer, sampling and assaying to determine the value of the production sold, and freight payable by the buyer to a carrier (not the operator or producer) shall be allowed as deductions in arriving at the "gross proceeds" as that term is used in this section. No costs of the operator or producer are deductible in arriving at the "gross proceeds" as that term is used in this section. The term "treatment processes", as used in this paragraph means those processes (such as milling, concentrating, smelting, refining, or equivalent) applied to the crude ore or other production after it is extracted from the ground to put it into a commercially marketable form, excluding fabricating or manufacturing.

(e) If any production (ore, concentrate, metal, or equivalent) remains unsold or is not used by the operator or producer in integrated manufacturing or fabricating operations (for instance, if it is stockpiled) after the lapse of six months from the date it is extracted from the ground, the Government, at its option, may require the computation and payment of its royalty on the value of such production in the form (ore, concentrate, metal, or equivalent) it is in at the time the Government elects to exercise its option. If any production is used by the operator or producer in integrated manufacturing or fabricating operations, the Government's royalty on such production shall be computed on the "value" thereof in the form in which and at the time when it is used. "Value" as used in this section means what is or would be gross income from mining operations for percentage depletion purposes in Federal income tax determination, or the market value, whichever is greater.

(f) (1) To secure the payment of the Government's royalty, the contract shall provide for a lien upon the operator's interest in the land, upon any production from the land, and upon any interests in the land other than the operator's interest. However, the Secretary may accept the undertaking of a surety company or third person in lieu of a lien

upon interests in the land other than the operator's interest. In circumstances where the Secretary deems it to be in the public interest, the requirement for a lien or other undertaking concerning interests in land, other than the lien upon the operator's interest, may be omitted from the Contract.

(2) If the operator is not the producer (for example, if the operator transfers or does not retain his interest in production or in the land), the operator shall remain liable for the payment of the Government's royalty.

(g) If, in any particular case, the Secretary finds that it would be more economical or practicable to compute the Government's royalty upon some basis other than "gross proceeds" or "value", as these terms are used in this section, or upon the production in some form other than that in which it is sold, held, or used in integrated operations, he may agree with the operator, either in the original exploration contract or by an amendment thereof, upon some other basis of computation.

(h) Nothing in this part shall be construed as imposing any obligation on the operator to engage in any mining or production operations.

(i) The Secretary may modify and adjust the terms and conditions of any contract to reduce the amount and terms of any royalty payment when he shall determine that such action is necessary and in the public interest.

§ 229.12 Interest on amount of Government participation.

(a) Simple interest is calculated from the first day of the month following the dates Federal funds are made available until the period specified for royalty payments expires or until the amount of Federal funds contributed, including interest, is fully repaid, whichever occurs first.

(b) The rate of interest shall be fixed by the Secretary at not less than the rate the Department of the Interior would be required to pay if it borrowed from the Treasury, plus a two percent interest charge in lieu of the actual cost to the Government of administering the contract.

(c) Paragraphs (a) and (b) of this section shall not be construed to increase the rate of royalty or to extend the period for which the royalty is payable as set forth in § 229.11.

§ 229.13 Limitation on the amount of Government participation.

No single contract shall authorize Government participation in excess of \$250,000.

§ 229.14 Government not obligated to buy.

Nothing in this part or in any contract entered into pursuant to this part shall be construed as imposing any obligation on the Government to purchase any materials mined or produced from the land which is the subject of such contract.

§ 229.15 Title to and disposition of property.

Facilities, buildings, fixtures, equipment, or other items or groups of items (such as pipe, rail, steel, etc.), costing more than \$50.00 each, paid for or purchased with funds contributed jointly by the operator and the Government, although title may be taken in the name of the operator, shall belong to the operator and the Government jointly, in proportion to their respective contributions to the extent set forth in the contract. The exploration contract shall make suitable provisions also for their disposal for the joint account of the operator and the Government.

PART 231—OPERATING REGULATIONS FOR EXPLORATION DEVELOPMENT, AND PRODUCTION

ADMINISTRATION OF REGULATIONS AND DEFINITIONS

- Sec.
 231.1 Scope and purpose.
 231.2 Definitions.
 231.3 Responsibilities.
 231.4 General obligations of lessees and permittees.
 231.5 Public inspection of records.

MAPS AND PLANS

- 231.10 Operating plans.
 231.11 Maps of underground workings and surface operations and equipment.
 231.12 Other maps.

BOREHOLES AND SAMPLES

- 231.20 Core or test hole, cores, samples, cuttings, mill products.

WELFARE AND SAFETY

- 231.25 Sanitary, welfare, and safety arrangements.

MINING METHODS

- 231.30 Good practice to be observed.
 231.31 Ultimate maximum recovery; information regarding mineral deposits.

- Sec.
 231.32 Pillars left for support.
 231.33 Boundary pillars and isolated blocks.
 231.34 Development on leased tracts through adjoining mines as part of a mining unit.
 231.35 Minerals soluble in water; brines; minerals taken in solution.

PROTECTION AGAINST MINE HAZARDS

- 231.40 Surface openings.
 231.41 Abandonment of underground workings.
 231.42 Flammable gas and dust.
 231.43 Fire protection.

MILLING; WASTE FROM MINING OR MILLING

- 231.50 Milling.
 231.51 Disposal of waste.

PRODUCTION RECORDS AND AUDIT

- 231.60 Books of account.
 231.61 Royalty basis.
 231.62 Audits.

INSPECTION, ISSUANCE OF ORDERS AND ENFORCEMENT OF ORDERS

- 231.70 Inspection of underground and surface conditions; surveying, estimating, and study.
 231.71 Issuance of orders.
 231.72 Service of notices, instructions, and orders.
 231.73 Enforcement of orders.
 231.74 Appeals.

AUTHORITY: The provisions of this Part 231 issued under 35 Stat. 312; 35 Stat. 781, as amended; secs. 32, 6, 26, 41 Stat. 450, 753, 1248; secs. 1, 2, 3, 44 Stat. 301, as amended; secs. 6, 3, 44 Stat. 659, 710; secs. 1, 2, 3, 44 Stat. 1057; 47 Stat. 1487; 49 Stat. 1482, 1250, 1967, 2026; 52 Stat. 347; sec. 10, 53 Stat. 1196, as amended; 56 Stat. 273; sec. 10, 61 Stat. 915; sec. 3, 63 Stat. 683; 64 Stat. 311; 25 U.S.C. 396, 396a-f, 30 U.S.C. 189, 271, 281, 298, 359. Interpret or apply secs. 5, 5, 44 Stat. 302, 1058, as amended; 58 Stat. 483-485; 5 U.S.C. 301, 16 U.S.C. 508b, 30 U.S.C. 189, 192c, 271, 281, 293, 359, 43 U.S.C. 387.

SOURCE: 37 FR 11041, June 1, 1972, unless otherwise noted.

ADMINISTRATION OF REGULATIONS AND DEFINITIONS

§ 231.1 Scope and purpose.

(a) The regulations in this part shall govern operations for the discovery, testing, development, mining, and processing of potash, sodium, phosphate, sulphur, asphalt, and oil shale (except for operations for the extraction of shale oil by in situ retorting methods utilizing boreholes or wells) under leases or permits issued for public domain lands pursuant to the regulations in 43 CFR Group 3500. These regulations shall also apply

to operations for the discovery, testing, development, mining, and processing of minerals (except coal, oil, and gas) in acquired lands under leases or permits issued pursuant to the regulations in 43 CFR Group 3500 and minerals (except coal, oil, and gas) in tribal and allotted Indian lands leased under the regulations in 25 CFR Parts 171, 172, 173, 174, and 176.

(b) The purpose of the regulations in this part is to promote orderly and efficient prospecting, exploration, testing, development, mining, and processing operations and production practices without waste or avoidable loss of minerals or damage to deposits; to promote the safety, health, and welfare of workmen; to encourage maximum recovery and use of all known mineral resources; to promote operating practices which will avoid, minimize, or correct damage to the environment—land, water and air—and avoid, minimize, or correct hazards to public health and safety; and to obtain a proper record and accounting of all minerals produced.

(c) When the regulations in this part relate to matters included in the regulations in 43 CFR Part 23—Surface Exploration, Mining, and Reclamation of Lands—pertaining to public domain and acquired lands, or 25 CFR Part 177—Surface Exploration, Mining, and Reclamation of Lands—pertaining to Indian lands, the regulations in this part shall be considered as supplemental to the regulations in those parts, and the regulations in those parts shall govern to the extent of any inconsistencies.

CROSS REFERENCE: See Part 211 of this chapter for regulations governing operations under coal permits and leases. See Part 221 of this chapter for regulations governing operations under oil and gas leases and operations for the extraction of shale oil by in situ retorting or other methods utilizing boreholes or wells.

§ 231.2 Definitions.

The terms used in this part shall have the following meanings:

(a) *Secretary.* The Secretary of the Interior.

(b) *Director.* The Director of the Geological Survey, Washington, D.C.

(c) *Mining Supervisor.* The Area Mining Supervisor, Conservation Division of the Geological Survey; a representative of the Secretary, subject to the direction and supervisory authority

of the Director, the Chief, Conservation Division, Geological Survey, and the appropriate Regional Conservation Manager, Conservation Division, Geological Survey, authorized and empowered to regulate operations and to perform other duties prescribed in the regulations in this part, or any subordinate acting under his direction.

(d) *Lessee.* Any person or persons, partnership, association, corporation, or municipality to whom a mineral lease is issued subject to the regulations in this part, or an assignee of such lease under an approved assignment.

(e) *Permittee.* Any person or persons, partnership, association, corporation, or municipality to whom a mineral prospecting permit is issued subject to the regulations in this part, or an assignee of such permit under an approved assignment.

(f) *Leased lands, leased premises, or leased tract.* Any lands or deposits under a mineral lease and subject to the regulations in this part.

(g) *Permit lands.* Any lands or deposit under a mineral prospecting permit and subject to the regulations in this part.

(h) *Operator.* A lessee or permittee or one conducting operations on the leased or permit lands under the authority of the lessee or permittee.

(i) *Reclamation.* The measures undertaken to bring about the necessary reconditioning or restoration of land or water that has been affected by exploration, testing, mineral development, mining, onsite processing operations, or waste disposal, in ways which will prevent or control onsite and offsite damage to the environment.

[37 FR 11041, June 1, 1972, as amended at 38 FR 10001, Apr. 23, 1973]

§ 231.3 Responsibilities.

(a) Subject to the supervisory authority of the Secretary, the regulations in this part shall be administered by the Director through the Chief, Conservation Division, of the Geological Survey.

(b) The responsibility for health and safety inspections of mines subject to the regulations in this part is vested in the Bureau of Mines in accordance with section 4 of the Federal Metal and Non-metallic Mine Safety Act (80 Stat. 772, 773; 30 U.S.C. 723) and the Health and Safety Standards contained in Parts 55, 56, and 57, Chapter I, of this title.

(c) The mining supervisor, individually, or through his subordinates is em-

powered to regulate prospecting, exploration, testing, development, mining, and processing operations under the regulations in this part. The duties of the mining supervisor or his subordinates include the following:

(1) *Inspections; supervision of operations to prevent waste or damage.* Examine frequently leased or permit lands where operations for the discovery, testing, development, mining, or processing of minerals are conducted or are to be conducted; inspect and regulate such operations, including operations at accessory plants, for the purpose of preventing waste of mineral substances or damage to formations and deposits containing them, or damage to other formations, deposits, or nonmineral resources affected by the operations, and insuring that the terms and conditions of the permit or lease and the requirements of the exploration or mining plans are being complied with.

(2) *Compliance with regulations, lease or permit terms, and approved plans.* Require operators to conduct their operations in compliance with the provisions of applicable regulations, the terms and conditions of the leases or permits, and the requirements of approved exploration or mining plans.

(3) *Reports on condition of lands and manner of operations; recommendations for protection of property.* Make reports to the Chief, Conservation Division through the Regional Conservation Manager, Conservation Division of Geological Survey, as to the general condition of lands under permit or lease and the manner in which operations are being conducted and orders or instructions are being complied with, and to submit information and recommendations for protecting the minerals, the mineral-bearing formations and the nonmineral resources.

(4) *Manner and form of records, and notices.* Prescribe, subject to the concurrence of the Regional Conservation Manager, Conservation Division, and the approval of the Chief, Conservation Division of the Geological Survey, the manner and form in which records of operations, reports, and notices shall be made.

(5) *Records of production; rentals and royalties.* Obtain and check the records of production of minerals; determine rental and royalty liability of lessees and permittees; collect and de-

posit rental and royalty payments; and maintain rental and royalty accounts.

(6) *Suspension of operations and production.* Act on applications for suspension of operations or production or both filed pursuant to 43 CFR 3503.3-2(e), and terminate such suspensions which have been granted; and transmit to the Bureau of Indian Affairs for appropriate action applications for suspension of operations or production or both under leases on Indian lands.

(7) *Cessation and abandonment of operations.* Upon receipt of a report of cessation or abandonment of operations, inspect and determine whether the terms and conditions of the permit or lease and the exploration or mining plans have been complied with; and determine and report to the agency having administrative jurisdiction over the lands when the lands have been properly conditioned for abandonment. The mining supervisor, in accordance with applicable regulations, will consult with, or obtain the concurrence of, the authorized officer of the agency having administrative jurisdiction over the lands with respect to compliance by the operator with the surface protection and reclamation requirements of the lease or permit and the exploration or mining plan.

(8) *Trespass involving removal of mineral deposits.* Report to the agency having administrative jurisdiction over the lands any trespass that involves removal of mineral deposits.

(d) Prior to the approval of an exploration or mining plan, the mining supervisor shall consult with the authorized officer of the agency having administrative jurisdiction over the lands with respect to the surface protection and reclamation aspects of the plan.

(e) The mining supervisor shall inspect exploratory and mining operations to determine the adequacy of water management and pollution control measures for the protection and control of the quality of surface and ground water resources and the adequacy of emission control measures for the protection and control of air quality.

(f) The mining supervisor shall issue such orders and instructions not in conflict with the laws of the State in which the leased or permit lands are situated as necessary to assure compliance with the purposes of the regulations in this part.

(g) In the exercise of his jurisdiction under the regulations in this part, the

mining supervisor shall be subject to the direction and supervisory authority of the Chief, Conservation Division, and the appropriate Regional Conservation Manager, Conservation Division of the Geological Survey, each of whom may exercise the jurisdiction of the mining supervisor.

[37 FR 11041, June 1, 1972, as amended at 38 FR 10001, Apr. 23, 1973]

§ 231.4 General obligations of lessees and permittees.

(a) Operations for the discovery, testing, development, mining, or processing of minerals shall conform to the provisions of applicable regulations, the terms and conditions of the lease or permit, the requirements of approved exploration or mining plans, and the orders and instructions issued by the mining supervisor or his subordinates under the regulations in this part. Lessees and permittees shall take precautions to prevent waste and damage to mineral-bearing formations, and shall take such steps as may be needed to prevent injury to life or health and to provide for the health and welfare of employees.

(b) Lessees and permittees shall take such action as may be needed to avoid, minimize, or repair soil erosion; pollution of air; pollution of surface or ground water; damage to vegetative growth, crops, including privately owned forage, or timber; injury or destruction of fish and wildlife and their habitat; creation of unsafe or hazardous conditions; and damage to improvements, whether owned by United States, its permittees, licensees or lessees, or by others; and damage to recreational, scenic, historical, and ecological values of the land. The surface of leased or permit lands shall be reclaimed in accordance with the terms and conditions prescribed in the lease or permit and the provisions of the approved exploration or mining plan. Where any question arises as to the necessity for or the adequacy of an action to meet the requirements of this paragraph, the determination of the mining supervisor shall be final subject to the right of appeal as provided in part 290 of this chapter.

(c) All operations conducted under the regulations in this part must be consistent with Federal and State water and air quality standards.

(d) When the mining supervisor determines that a water pollution problem

exists, the mining supervisor may require that a lessee or permittee maintain records of the use of water, quantity and quality of waste water produced, and the quantity and quality of waste water disposal, including mine drainage discharge, process wastes and associated wastes. In order to obtain this information, the lessee or permittee may be required to install a suitable monitoring system.

(e) Full reports of accidents, inundations, or fires shall be promptly mailed to the mining supervisor by the operator or his representative. Fatal accidents, accidents threatening damage to the mine, the lands, or the deposits, or accidents which could cause water pollution shall be reported promptly to the mining supervisor by telegram or telephone. The reports required by this section shall be in addition to those required by Parts 55, 56, or 57, Chapter I of this title or other applicable regulations.

(f) Lessees and permittees shall submit the reports required by 25 CFR Part 177; Part 200 of this chapter, and 43 CFR Part 23.

[37 FR 11041, June 1, 1972, as amended at 38 FR 10001, Apr. 23, 1973]

§ 231.5 Public inspection of records.

Geological and geophysical interpretations, maps, and data and commercial and financial information required to be submitted under this part shall not be available for public inspection without the consent of the permittee or lessee so long as the permittee or lessee furnishing such data, or his successors or assignees, continues to hold a permit or lease of the lands involved.

MAPS AND PLANS

§ 231.10 Operating plans.

(a) *General.* Before conducting any operations under a permit or lease, the operator shall submit, in quintuplicate, to the mining supervisor for approval an exploration or mining plan which shall show in detail the proposed exploration, prospecting, testing, development, or mining operations to be conducted. Exploration and mining plans shall be consistent with and responsive to the requirements of the lease or permit for the protection of nonmineral resources and for the reclamation of the surface of the lands affected by the operations. The mining supervisor shall consult with the other agencies involved, and shall promptly approve the plans or indicate

what modifications of the plans are necessary to conform to the provisions of the applicable regulations and the terms and conditions of the permit or lease. No operations shall be conducted except under an approved plan.

(b) *Exploration plans.* The mining supervisor may require that an exploration plan include any or all of the following:

(1) A description of the area within which exploration is to be conducted;

(2) Five copies of a suitable map or aerial photograph showing topographic, cultural, and drainage features;

(3) A statement of proposed exploration methods, i.e., drilling, trenching, etc., and the location of primary support roads and facilities;

(4) A description of measures to be taken to prevent or control fire, soil erosion, pollution of surface and ground water, pollution of air, damage to fish and wildlife or other natural resources, and hazards to public health and safety both during and upon abandonment of exploration activities.

(c) *Mining plans.* The mining supervisor may require that a mining plan include any or all of the following:

(1) A description of the location and area to be affected by the operations;

(2) Five copies of a suitable map, or aerial photograph showing the topography, the area covered by the permit or lease, the name and location of major topographic and cultural features, and the drainage plan away from the area affected;

(3) A statement of proposed methods of operating, including a description of the surface or underground mining methods; the proposed roads or vehicular trails; the size and location of structures and facilities to be built;

(4) An estimate of the quantity of water to be used and pollutants that are expected to enter any receiving waters;

(5) A design for the necessary impoundment, treatment or control of all runoff water and drainage from workings so as to reduce soil erosion and sedimentation and to prevent the pollution of receiving waters;

(6) A description of measures to be taken to prevent or control fire, soil erosion, pollution of surface and ground water, pollution of air, damage to fish and wildlife or other natural resources, and hazards to public health and safety;

(7) A statement of the proposed manner and time of performance of work to reclaim areas disturbed by the operations.

(d) *Revegetation; regrading; backfilling.* In those instances in which the permit or lease requires the revegetation of an area to be affected by operations the exploration or mining plan shall show:

(1) Proposed methods of preparation and fertilizing the soil prior to re-planting;

(2) Types and mixtures of shrubs, trees, or tree seedlings, grasses or legumes to be planted; and

(3) Types and methods of planting, including the amount of grasses or legumes per acre, or the number and spacing of trees, or tree seedlings, or combinations of grasses and trees.

If the permit or lease requires regrading and backfilling, the exploration or mining plan shall show the proposed methods and the timing of grading and backfilling of areas of lands affected by the operations.

(e) *Changes in plans.* Exploration and mining plans may be changed by mutual consent of the mining supervisor and the operator at any time to adjust to changed conditions or to correct an oversight. To obtain approval of a changed or supplemental plan the operator shall submit a written statement of the proposed changes or supplement and the justification for the changes proposed.

(f) *Partial plan.* If circumstances warrant, or if development of an exploration or mining plan for the entire operation is dependent upon unknown factors which cannot or will not be determined except during the progress of the operations, a partial plan may be approved and supplemented from time to time. The operator shall not, however, perform any operation except under an approved plan.

§ 231.11 Maps of underground workings and surface operations and equipment.

Maps of underground workings and surface operations shall be drawn to a scale acceptable to the mining supervisor. All maps shall be appropriately marked with reference to Government land marks or lines and elevations with reference to sea level. When required by the mining supervisor vertical projections and cross sections shall accompany plan views. Maps shall be based on accurate

surveys made at least annually and as may be necessary at other times. Accurate copies of such maps on reproducible material or prints thereof shall be furnished the mining supervisor when and as required. The maps shall be posted to date and submitted to the mining supervisor at least once each year. The accuracy of maps furnished shall be certified by a professional engineer, professional land surveyor, or other professionally qualified person.

§ 231.12 Other maps.

(a) The operator shall prepare such maps of the leased lands as in the judgment of the mining supervisor are necessary to show the surface boundaries, improvements, and topography, including subsidence resulting from mining, and the geological conditions so far as determined from outcrops, drill holes, exploration or mining. All excavations in each separate bed or deposit shall be shown in such manner that the production of minerals for any royalty period can be accurately ascertained.

(b) In the event of the failure of the operator to furnish the maps required, the mining supervisor shall employ a competent mine surveyor to make a survey and maps of the mine, and the cost thereof shall be charged to and promptly paid by the operator.

(c) If any map submitted by an operator is believed to be incorrect, the mining supervisor may cause a survey to be made, and if the survey shows the map submitted by the operator to be substantially incorrect in whole or in part, the cost of making the survey and preparing the map shall be charged to and promptly paid by the operator.

BORE HOLES AND SAMPLES

§ 231.20 Core or test hole, cores, samples, cuttings, mill products.

(a) The operator shall submit promptly to the mining supervisor signed copies, in duplicate, of records of all core or test holes made on the leased or permit lands, the records to be in such form that the position and direction of the holes can be accurately located on a map. The records shall include a log of all strata penetrated and conditions encountered, such as water, quicksand, gas, or unusual conditions, and copies of analyses of all samples analyzed from strata penetrated shall be transmitted to the mining supervisor as soon as ob-

tained or at such time as specified by the mining supervisor. All drill holes will be logged under supervision of a competent geologist or engineer, and the lessees will furnish to the mining supervisor a detailed lithologic log of each drill hole and all other in-hole surveys, such as electric logs, gamma ray neutron logs, sonic logs or any other logs produced. The core from test holes shall be retained by the operator for 1 year and shall be available for inspection at the convenience of the mining supervisor, and he shall be privileged to cut such cores and receive samples of such parts as he may deem advisable, or on request of the mining supervisor the operator shall furnish such samples of strata, drill cuttings, and mill products as may be required.

(b) Drill holes for development or holes for prospecting shall be abandoned to the satisfaction of the mining supervisor by cementing and/or casing or by other methods approved in advance by the mining supervisor and in a manner to protect the surface and not to endanger any present or future underground operation or any deposit of oil, gas, other mineral substances, or water strata.

(c) At the option of the mining supervisor or the operator drill holes may be converted to surveillance wells for the purpose of determining the effect of subsequent operations upon the quantity, quality, or pressure of ground water or mine gases.

(d) When drilling on lands valuable or potentially valuable for oil and gas or geothermal resources drilling equipment shall be equipped with blowout control devices acceptable to the mining supervisor before penetrating more than 100 feet of consolidated sediments unless a greater depth is approved in advance by the mining supervisor.

WELFARE AND SAFETY

§ 231.25 Sanitary, welfare, and safety arrangements.

The underground and surface sanitary, welfare, health, and safety arrangements shall be in accordance with the recommendations of the U.S. Public Health Service and the applicable standards in Parts 55, 56, and 57, Chapter I of this title.

CROSS REFERENCE: For regulations of the U.S. Public Health Service, Department of Health, Education, and Welfare, see 42 CFR Chapter I.

MINING METHODS

§ 231.30 Good practice to be observed.

The operator shall observe good practice following the highest standards in prospecting, exploration, testing, development, and mining, sinking wells, shafts, and winzes, driving drifts and tunnels, stoping, blasting, transporting ore and materials, hoisting, the use of explosives, timbering, pumping, and other activities on the leased or permit lands.

§ 231.31 Ultimate maximum recovery; information regarding mineral deposits.

(a) Mining operations shall be conducted in a manner to yield the ultimate maximum recovery of the mineral deposits, consistent with the protection and use of other natural resources and the protection and preservation of the environment—land, water, and air. All shafts, main exits, and passageways, as well as overlying beds or mineral deposits that at a future date may be of economic importance, shall be protected by adequate pillars in the deposit being worked or by such other means as approved by the mining supervisor.

(b) Information obtained regarding the mineral deposit being worked and other mineral deposits on the leased or permit lands shall be fully recorded and a copy of the record furnished to the mining supervisor.

§ 231.32 Pillars left for support.

Sufficient pillars shall be left in first mining to insure the ultimate maximum recovery of mineral deposits when the time arrives for the removal of pillars. Boundary pillars shall in no case be less than 50 feet thick unless otherwise specified in writing by the mining supervisor. Boundary and other main pillars shall be mined only with the written consent or by order of the mining supervisor or his authorized subordinates.

§ 231.33 Boundary pillars and isolated blocks.

(a) If the ore on adjacent lands subject to these regulations has been worked out beyond any boundary pillar, if the water level beyond the pillar is below the lessee's adjacent operations, and if no other hazards exist, the lessee shall, on the written demand of the mining supervisor, mine out and remove all available ore in such boundary pillar, both

in the lands covered by the lease and in the adjoining premises, when the mining supervisor determines that it can be mined without undue hardship to the lessee.

(b) If the mining rights in adjoining premises are privately owned or controlled, an agreement may be made with the owners of such interests for the extraction of the ore in the boundary pillars.

(c) Narrow strips of ore between leased lands and the outcrop on other lands subject to these regulations and small blocks of ore adjacent to leased lands that would otherwise be isolated or lost may be mined under the provisions specified in paragraphs (a) and (b) of this section.

§ 231.34 Development on leased tract through adjoining mines as part of a mining unit.

A lessee may mine his leased tract from an adjoining underground mine on land privately owned or controlled or from adjacent leased lands, under the following conditions:

(a) A mine that is on the land privately owned or controlled shall conform to all sections in the regulations in this part.

(b) The only connections between the mine on land privately owned or controlled and the mine on leased land shall be the main haulageways, the ventilationways, and the escapeways. Substantial concrete frames and fireproof doors that may be closed in an emergency and opened from either side shall be installed in each such connection. Other connections through the boundary pillars shall not be made until both mines are about to be exhausted and abandoned. The mining supervisor may waive any of the requirements in this paragraph when, in his judgment, such a waiver would not conflict with the regulations in Part 57, Chapter I of this title and would not entail substantial loss of ore.

(c) Free access for inspection of said connecting mine on land privately owned or controlled shall be given at any reasonable time to the mining supervisor or other representative of the Secretary of the Interior.

(d) If a lessee operating on a lease through a mine on land privately owned or controlled does not maintain the mine in accordance with the operating regulations, operations on the leased land may be ordered stopped or departmental seals applied by the mining supervisor,

and the operations on leased lands shall be stopped.

§ 231.35 Minerals soluble in water; brines; mineral taken in solution.

In mining or prospecting deposits of potassium or other minerals soluble in water, all wells, shafts, prospect holes, and other openings shall be adequately protected with neat cement or other suitable materials against the coursing or entrance of water; and the operator shall, on orders of the mining supervisor, backfill with rock or other suitable material to protect the roof from breakage when there is a danger of the entrance of water. On leased or permit lands containing brines, due precaution shall be exercised to prevent the deposits becoming diluted or contaminated by the mixture of water or valueless solution. Where minerals are taken from the earth in solution, such extraction shall not be within 500 feet of the boundary line of the leased lands without the written permission of the mining supervisor.

PROTECTION AGAINST MINE HAZARDS

§ 231.40 Surface openings.

(a) The operator shall substantially fill in, fence, protect or close all surface openings, subsidence holes, surface excavations or workings which are a hazard to people or animals. Such protective measures shall be maintained in a secure condition during the term of the permit or lease. Before abandonment of operations all openings, including water discharge points, shall be closed to the satisfaction of the mining supervisor.

(b) Reclamation or protection of surface areas no longer needed for operations should commence without delay. The mining supervisor shall designate such areas where restoration or protective measures, or both, must be taken.

§ 231.41 Abandonment of underground workings.

No underground workings or part thereof shall be permanently abandoned and rendered inaccessible without the advance and written approval of the mining supervisor.

§ 231.42 Flammable gas and dust.

Mines in which flammable gas is found or explosive dust produced shall be subject to the coal-mining operating regulations in Part 211 of this chapter. An "explosive dust" is a combustible solid

in airborne dispersion capable of propagating flame when ignited.

§ 231.43 Fire protection.

All structures within 100 feet of any mine opening shall be protected against fire and constructed of fire resistant material. Flammable material shall not be stored within 100 feet of a mine exit. All shafts shall be fireproof, or adequate fire-control devices, satisfactory to the mining supervisor, shall be installed. All underground offices, stations, shops, magazines, and stores shall be so constructed, equipped, and maintained as to reduce the fire hazard to a minimum. Sufficient fire-fighting apparatus shall be maintained in working condition at the mine exits and at convenient points in the mine workings for fire emergencies. An adequate water supply shall be held in storage tanks or reservoirs for fire emergencies and shall be available for immediate use through connecting pipelines for either surface or underground fires.

MILLING; WASTE FROM MINING OR MILLING

§ 231.50 Milling.

It shall be the duty of the operator to conduct milling operations pursuant to the terms of the lease, the approved mining plan, and the regulations in this part and to use due diligence in the reduction, concentration, or separation of mineral substances by mechanical or chemical processes, by distillation, by evaporation, or other means so that the percentage of salts, concentrates, oil, or other mineral substances recovered shall be in accordance with approved practices.

§ 231.51 Disposal of waste.

The operator shall dispose of all wastes resulting from the mining, reduction, concentration, or separation of mineral substances in accordance with the terms of the lease, approved mining plan, the regulations in this part, and the directions of the mining supervisor.

PRODUCTION RECORDS AND AUDIT

§ 231.60 Books of account.

Operators shall maintain books in which will be kept a correct account of all ore and rock mined, of all ore put through the mill, of all mineral products produced, and of all ore and mineral products sold and to whom sold, the weight, assay value, moisture content, base price, dates, penalties, and price

received, and the percentage of the mineral products recovered and lost shall be shown.

CROSS REFERENCE: See Part 200 of this chapter for reports required to be filed and the forms to be used.

§ 231.61 Royalty basis.

The sale price basis for the determination of the rates and amount of royalty shall not be less than the highest and best obtainable market price of the ore and mineral products, at the usual and customary place of disposing of them at the time of sale, and the right is reserved to the Secretary of the Interior to determine and declare such market price, if it is deemed necessary by him to do so for the protection of the interests of the lessor.

§ 231.62 Audits.

An audit of the lessee's accounts and books may be made annually or at such other times as may be directed by the mining supervisor, by certified public accountants, and at the expense of the lessee. The lessee shall furnish free of cost duplicate copies of such annual or other audits to the mining supervisor, within 30 days after the completion of each auditing.

INSPECTION, ISSUANCE OR ORDERS, AND ENFORCEMENT OF ORDERS

§ 231.70 Inspection of underground and surface conditions; surveying, estimating, and study.

Operators shall provide means at all reasonable hours, either day or night, for the mining supervisor or his representative to inspect or investigate the underground and surface conditions; to conduct surveys; to estimate the amount of ore or mineral product mined; to study the methods of prospecting, exploration, testing, development, processing, and handling that are followed; to determine the volumes, types, and composition of wastes generated, the adequacy of measures for minimizing the amount of such wastes, and the measures for treatment and disposal of such wastes; and to determine whether the terms and conditions of the permit or lease and the requirements of the exploration or mining plan have been complied with.

§ 231.71 Issuance of orders.

Before beginning operations the operator shall inform the mining supervisor in writing of the designation and post

office address of the exploration or mining operation, the operator's temporary and permanent post office address, and the name and post office address of the superintendent or other agent who will be in charge of the operations and who will act as the local representative of the operator. The mining supervisor shall also be informed of each change thereafter in the address of the mine office or in the name or address of the local representative.

§ 231.72 Service of notices, instructions, and orders.

The operator shall be considered to have received all notices, instructions, and orders that are mailed to or posted at the mine or mine office, or mailed or handed to the superintendent, the mine foreman, the mine clerk, or higher officials connected with the mine, for transmittal to the operator or his local representative.

§ 231.73 Enforcement of orders.

(a) If the mining supervisor determines that an operator has failed to comply with the regulations in this part, other applicable departmental regulation, the terms and conditions of the permit or lease, the requirements of an approved exploration or mining plan, or with the mining supervisor's orders or instructions, and such noncompliance does not threaten immediate, serious, or irreparable damage to the environment, the mine or the deposit being mined, or other valuable mineral deposits or other resources, the mining supervisor shall serve a notice of noncompliance upon the operator by delivery in person to him or his agent or by certified or registered mail addressed to the operator at his last known address. Failure of the operator to take action in accordance with the notice of noncompliance shall be grounds for suspension by the mining supervisor of operations.

(b) A notice of noncompliance shall specify in what respects the operator has failed to comply with the provisions of applicable regulations, the terms and conditions of the permit or lease, the requirements of an approved exploration or mining plan or the orders and instructions of the mining supervisor, and shall specify the action which must be taken to correct the noncompliance and the time limits within which such action must be taken.

(c) If in the judgment of the mining supervisor such failure to comply with the regulations, the terms and conditions of the permit or lease, the requirements of approved exploration or mining plans, or with the mining supervisor's orders or instructions threatens immediate, serious, or irreparable damage to the environment, the mine or the deposit being mined, or other valuable mineral deposits or other resources, the mining supervisor is authorized, either in writing or orally with written confirmation, to suspend operations without prior notice.

§ 231.74 Appeals.

Orders or decisions issued under the regulations in this part may be appealed as provided in part 290 of this chapter. [38 FR 10001, Apr. 23, 1973]

CROSS REFERENCE: See 43 CFR 23.12 for appeals under 43 CFR Part 23—Surface Exploration, Mining, and Reclamation of Lands. See 25 CFR 177.11 for appeals under 25 CFR Part 177—Surface Exploration, Mining, and Reclamation of Lands.

PART 241—ACQUISITION AND LEASING OF WATER WELLS

Sec.

- 241.1 Secretary of the Interior may take over, purchase casing in, and condition wells for water production.
- 241.2 Wells drilled prior to or after act of June 16, 1934 under permits issued prior to said act; development of water in wells drilled by persons not in privity with permittees or lessees.
- 241.3 Provisions of act of June 16, 1934; where inapplicable.
- 241.4 Federal oil and gas supervisor to submit report before approving notice of intention to abandon any well not excluded in § 241.3.
- 241.5 Geological Survey to determine value of water.
- 241.6 Application for, and award of lease to, water well.
- 241.7 Funds available for plugging and abandonment, available for conditioning, maintenance and development of water supplies.

AUTHORITY: The provisions of this Part 241 issued under sec. 32, 41 Stat. 450, sec. 40, 48 Stat. 977; 30 U.S.C. 189, 229a.

SOURCE: The provisions of this Part 241 contained in Regulations, Oct. 23, 1934, unless otherwise noted.

CROSS REFERENCE: For Bureau of Land Management regulations relating to water reserves, see 43 CFR Subpart 2311.

§ 241.1 Secretary of the Interior may take over, purchase casing in, and condition wells for water production.

Under the provisions of the act of June 16, 1934 (48 Stat. 977; 30 U.S.C. 229a), amending the act of February 25, 1920 (41 Stat. 441-445; 30 U.S.C. 221, 223-228), all oil and gas permits and leases issued after June 16, 1934, are subject to the authority of the Secretary of the Interior to take over, purchase necessary casing in, and condition for water production any well drilled which strikes water of value for any of the uses named in the act: *Provided*, That the taking over of such well will not restrict operations under the permit or lease.

§ 241.2 Wells drilled prior to or after act of June 16, 1934 under permits issued prior to said act; development of water in wells drilled by persons not in privity with permittees or lessees.

The Secretary of the Interior may also take over and condition wells heretofore or hereafter drilled under permits and leases previously issued, and may develop water in any wells plugged or abandoned or wells drilled prior to the issuance of permits or leases by persons not in privity with the permittees or lessees.

§ 241.3 Provisions of act of June 16, 1934; where inapplicable.

The provisions of this act do not apply to wells drilled on lands entered or patented under any of the public land laws with reservation of the oil and gas deposits since any water developed in such lands does not belong to the United States.

§ 241.4 Federal oil and gas supervisor to submit report before approving notice of intention to abandon any well not excluded in § 241.3.

Before approving any notice of intention to abandon any well on land not excluded in § 241.3, which well is known or believed to contain water of such quality and quantity as to be valuable and usable at a reasonable cost for agricultural, domestic, or other purposes, the Federal oil and gas supervisor having jurisdiction will submit a report to the Director of the Geological Survey, containing information as to the location of the well by legal subdivision of the public land survey, the depth to water, the yield, if determinable, the suitability of the water for irrigation,

stock, domestic, or other beneficial use, the amount and reasonable value of casing to be purchased, the nature and estimated cost of repairs to condition the well as a source of water, the existing and prospective markets for the water, and any other pertinent factors bearing on a determination of the economic value of the water supply available. A similar report will be made by the supervisor as to other existing wells or plugged or abandoned wells coming within the purview of the act.

§ 241.5 Geological Survey to determine value of water.

Upon receipt of this report the Geological Survey will determine the value of the water for any of the purposes stated in section 40 of the act. If the water is found to be valuable and usable at a reasonable cost for any of the purposes specified in the act, the land subdivision which contains the well will, if subject thereto, be held to be withdrawn by Executive Order of April 17, 1926,¹ and reserved for public use pursuant to section 10 of the act of December 29, 1916 (39 Stat. 862; 43 U.S.C. 300), as a water hole. If the water is found not to be valuable and usable at a reasonable cost for any of the purposes specified in the act, the oil and gas supervisor will be directed to authorize proper abandonment of the well.

§ 241.6 Application for, and award of lease to, water well.

When the oil and gas supervisor recommends that a well be preserved as a source of water he will notify the register of the appropriate district land office of such recommendation and of the

land subdivision specifically involved. Upon receipt of such notice the register will note the same on the tract books and will thereafter allow no filing or entry for the subdivision involved until otherwise directed by the Director, Bureau of Land Management. When a well found subject to the act has been duly conditioned for use under the direction of the oil and gas supervisor, when title to the necessary casing has been duly vested in the United States, and when decision to lease rather than to operate has been reached, the register will be directed to receive applications for lease of the requisite premises and water involved. Such applications, including preference claims asserted under section 40 (c) (48 Stat. 977; 30 U.S.C. 229a), will be submitted in regular course to the Bureau of Land Management where preference rights will be determined and an appropriate lease for the use of the water will be prepared for award by the Secretary of the Interior to such applicant as he shall determine to be equitably entitled thereto. The effective period of the lease, and the terms and conditions thereof, shall be determined by the Secretary of the Interior.

§ 241.7 Funds available for plugging and abandonment, available for conditioning, maintenance and development of water supplies.

Funds available to the Geological Survey for the plugging and abandonment of wells shall be available for the purchase of casing and other necessary equipment contemplated by the act, for the conditioning and maintenance of water wells, and for the development of water supplies in abandoned wells found subject to the provisions of the act.

PART 250—OIL AND GAS AND SULPHUR OPERATIONS IN THE OUTER CONTINENTAL SHELF

GENERAL PROVISIONS

| Sec. | |
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JURISDICTION AND FUNCTIONS OF SUPERVISOR

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¹ Executive Order of Withdrawal, dated April 17, 1926, and designated as "Public Water Reserve No. 107" reads, as follows: "Under and pursuant to the provisions of the act of Congress approved June 25, 1910 (36 Stat. 847), entitled 'An Act to authorize the President of the United States to make withdrawals of public lands in certain cases', as amended by act of Congress approved August 24, 1912 (37 Stat. 497), it is hereby ordered that every smallest legal subdivisions of the public land surveys which is vacant unappropriated unreserved public land and contains a spring or water hole, and all land within one-quarter of a mile of every spring or water hole located on un-surveyed public land be, and the same is hereby, withdrawn from settlement, location, sale or entry, and reserved for public use in accordance with the provisions of section 10 of the act of December 29, 1916 (39 Stat. 862), and in aid of pending legislation."

REQUIREMENT FOR LESSEES

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MINERAL LEASES AFFECTED BY SECTION 6 OF OUTER CONTINENTAL SHELF LANDS ACT

- 250.100 Effect of regulations on provisions of lease.

AUTHORITY: The provisions of this Part 250 issued under secs. 5, 6, 67 Stat. 464, 465; 43 U.S.C. 1334, 1335.

CROSS REFERENCE: For further regulations pertaining to the issuance and recognition of mineral leases covering submerged lands in the outer Continental Shelf, see 43 CFR Part 3300.

GENERAL PROVISIONS

§ 250.1 Purpose and authority.

The Outer Continental Shelf Lands Act enacted on August 7, 1953 (67 Stat. 462), referred to in this part as "the act," authorizes the Secretary of the Interior at any time to prescribe and amend such rules and regulations, to be applicable to all operations conducted under a lease issued or maintained under the provisions of the act, as he determines to be necessary and proper to provide for the prevention of waste and conservation of the natural resources of the Outer Continental Shelf, and the protection of correlative rights therein. Subject to the supervisory authority of the Secretary of the Interior, the regulations in this part shall be administered by the Director of the Geological Survey through the Chief, Conservation Division. [34 F.R. 13544, Aug. 22, 1969]

§ 250.2 Definitions.

The following terms as used in the regulations in this part shall have the meanings here given:

(a) *Secretary.* The Secretary of the Interior.

(b) *Director.*—The Director of the Geological Survey, Washington, D.C., having direction of the enforcement of the regulations in this part.

(c) *Supervisor.*—The Area Oil and Gas Supervisor, Conservation Division of the Geological Survey; a representative of the Secretary, subject to the direction and supervisory authority of the Director, the Chief, Conservation Division, Geological Survey, and the appropriate Conservation Manager, Conservation Division, Geological Survey, authorized and empowered to regulate operations and to perform other duties prescribed in the regulations in this part or any subordinate of such representative acting under his direction.

(d) *Outer Continental Shelf.* All submerged lands (1) which lie seaward and outside of the area of lands beneath navigable waters as defined in the Submerged Lands Act (67 Stat. 29) and (2) of which the subsoil and seabed apper-

tain to the United States and are subject to its jurisdiction and control.

(e) *Lease*. The contract or agreement under which the leasehold rights are held by the lessee, or the land covered by the contract or agreement, whichever is required by the context.

(f) *Lessee*. The party authorized by a lease, or an approved assignment thereof, to develop and produce the leased deposits in accordance with the regulations in this part, including all parties holding such authority by or through him.

(g) *Operator*. The individual, partnership, firm, or corporation having control or management of operations on the leased land or a portion thereof. The operator may be a lessee, designated agent of the lessee, or holder of rights under an approved operating agreement.

(h) *Waste of oil and gas*. Waste means and includes (1) physical waste as that term is generally understood in the oil and gas industry; (2) the inefficient, excessive, or improper use of, or the unnecessary dissipation of reservoir energy; (3) the locating, spacing, drilling, equipping, operating, or producing of any oil or gas well or wells in a manner which causes or tends to cause reduction in the quantity of oil or gas ultimately recoverable from a pool under prudent and proper operations or which causes or tends to cause unnecessary or excessive surface loss or destruction of oil or gas; (4) the inefficient storage of oil; and (5) the production of oil or gas in excess of transportation or marketing facilities or in excess of reasonable market demand.

(i) *Directional drilling*. The deviation of a bore hole from the vertical or from its normal course in an intended predetermined direction or course with respect to the points of the compass. Directional drilling shall not include deviations made for the purpose of straightening a hole that has become crooked in a normal course of drilling or deviating a hole at random without regard to compass direction in an attempt to sidetrack a portion of the hole on account of mechanical difficulty in drilling.

(j) *OCS Order*. A formal numbered order issued by the supervisor and available in his office, with the prior approval of the Chief, Conservation Division, Geological Survey, that implements the regulations in this part and applies to operations in a region or a major portion thereof.

(k) *Pollution Contingency Plan*. The National Multi-Agency Oil and Hazardous Materials Pollution Contingency Plan cosigned by the Department of the Interior, Department of Transportation, Department of Defense, Department of Health, Education, and Welfare, and the Office of Emergency Preparedness and administered by the Secretary of the Interior, or any successor plan thereto.

[19 F.R. 2656, May 8, 1954, as amended at 34 FR 13544, Aug. 22, 1969; 38 FR 10001, Apr. 23, 1973]

JURISDICTION AND FUNCTIONS OF SUPERVISOR

§ 250.10 Jurisdiction.

Subject to the supervisory authority of the Secretary and the Director, drilling and production operations, handling, and measurement of production, determination and collection of rental and royalty, and in general, all operations conducted on a lease by or on behalf of a lessee are subject to the regulations in this part, and are under the jurisdiction of the Supervisor for any area as delineated by the Director. In the exercise of this jurisdiction, the Supervisor shall be subject to the direction and supervisory authority of the Chief, Conservation Division and the appropriate Conservation Manager, Conservation Division, Geological Survey, each of whom may exercise the jurisdiction of the Supervisor.

[38 FR 10001, Apr. 23, 1973]

§ 250.11 General functions.

The supervisor is authorized and directed to act upon the requests, applications, and notices submitted under the regulations in this part and to require compliance with applicable laws, the lease terms, applicable regulations, and OCS Orders to the end that all operations shall be conducted in a manner which will protect the natural resources of the Outer Continental Shelf and result in the maximum economic recovery of the mineral resources in a manner compatible with sound conservation practices. Subject to the approval of the Chief, Conservation Division, Geological Survey, the supervisor may issue OCS Orders implementing the requirements of the regulations of this part when such implementations apply to an entire region or a major portion thereof. The supervisor may issue written or oral orders to govern lease operations. Oral orders shall be confirmed in writing by the supervisor as promptly as possible.

The supervisor may issue other orders, and rules to govern the development and method of production of a pool, field, or area. Prior to the issuance of OCS Orders and other orders and rules, the supervisor may consult with, and receive comments from, lessees, operators, and other interested parties. Before permitting operations on the leased land, the supervisor may require evidence that a lease is in good standing, that the lessee is authorized to conduct operations, and that an acceptable bond has been filed. [34 F.R. 13544, Aug. 22, 1969]

§ 250.12 Regulation of operations.

(a) *Duties of supervisor.* The supervisor in accordance with the regulations in this part shall inspect and regulate all operations and is authorized to issue OCS Orders and other orders and rules necessary for him to effectively supervise operations and to prevent damage to, or waste or, any natural resource, or injury to life or property. The supervisor shall receive, and shall, when in his judgment it is necessary, consult with or solicit advice from lessees, field officials of interested Departments and agencies, including the Fish and Wildlife Service, Federal Water Pollution Control Administration, Bureau of Land Management, Coast Guard, Department of Defense, Corps of Engineers, and representatives of State and local governments.

(b) *Departures from orders.* (1) The supervisor may prescribe or approve in writing, or orally with written confirmation, minor departures from the requirements of OCS Orders and other orders and rules issued pursuant to (a) of this section, when such departures are necessary for the proper control of a well, conservation of natural resources, protection of aquatic life, protection of human health and safety, property, or the environment.

(2) All requests or recommendations for major departures from the requirements of OCS Orders, whether on an individual well or field basis, shall be approved by the Chief, Conservation Division.

(c) *Emergency suspensions.* The supervisor is authorized, either in writing or orally with written confirmation, to suspend any operation, including production, which in his judgment threatens immediate, serious, or irreparable harm or damage to life, including aquatic life, to property, to the leased deposits, to other valuable mineral deposits or to the

environment. Such emergency suspension shall continue until in his judgment the threat or danger has terminated.

(d) *Other suspensions.* (1) In addition to the provisions of section 12 (c) and (d) of the act providing for suspension of operations and production, in the interest of conservation the supervisor may direct or, at the request of a lessee, may approve the suspension of operations or production, or both, including the approval of suspension of production for (i) leases on which a well has been drilled and determined by the supervisor to be capable of being produced in paying quantities and thereafter temporarily abandoned or permanently plugged and abandoned to facilitate proper development of the lease, and (ii) leases on which a well has been drilled and determined by the supervisor to be capable of being produced in paying quantities, but which cannot be produced because of the lack of transportation facilities. Suspensions of operations or production, or both, may be approved for an initial period, not exceeding 2 years, and for succeeding periods, not exceeding 1 year each.

(2) As to any leases maintained under section 6 of the act covering minerals in addition to oil and gas, the supervisor may suspend operations separately as to oil and gas or as to any other mineral designated in the suspension, order, or grant.

(3) The supervisor is authorized by written notice to the lessee to suspend any operation, including production, for failure to comply with applicable law, the lease terms, the regulations in this part, OCS orders, or any other written order or rule including orders for filing of reports and well records or logs within the time specified.

(e) *Reduction of rental and royalty.* In order to increase the ultimate recovery of minerals and in the interest of conservation, the Director of the Geological Survey, whenever he determines it necessary to promote development or finds that a lease cannot be successfully operated under the terms provided therein, may reduce the rental, minimum royalty, or royalty on the entire leasehold, or on any deposit, tract, or portion thereof segregated for royalty purposes. An application for any of the above relief shall be filed in triplicate with the Director of the Geological Survey. It must contain the serial number of the lease; the name of the record title holder; a description

of the area included in the lease; the number, location, and status of each well that has been drilled; a tabulated statement for each month, covering a period of not less than 6 months prior to the date of filing the application, of the aggregate amount of minerals subject to royalty computed in accordance with the lease and applicable regulations. Every application must also contain a detailed statement of expenses and costs of operating the entire lease and of the income from the sale of any leased products, and all facts tending to show whether the wells or workings can be successfully operated upon the rental or royalty fixed in the lease. Where the application is for a reduction of royalty, full information shall be furnished as to whether royalties or payments out of production are paid to others than the United States, the amounts so paid, and efforts made to reduce them. The applicant must also file agreements of the holders of the lease and of royalty holders to a permanent reduction of all other royalties from the leasehold to an aggregate not in excess of one-half the Government royalties.

[34 F.R. 13544, Aug. 22, 1969]

§ 250.13 Temporary approvals.

Whenever the regulations in this part require a lessee to obtain approval of the supervisor, the lessee may make an oral or telegraphic request for such approval, and the supervisor may give such oral or telegraphic approval as may be warranted: *Provided*, That the transaction shall forthwith be confirmed in the manner otherwise required by the regulations in this part.

[19 F.R. 2656, May 8, 1954]

§ 250.14 Samples, tests, and surveys.

(a) When deemed necessary or advisable, the supervisor is authorized to require that adequate tests or surveys be made in an acceptable manner without cost to the lessor to determine the reservoir energy; the presence, quantity, and quality of oil, gas, sulphur, other mineral deposits, or water; the amount and direction of deviation of any well from the vertical; or the formation, casing, tubing, or other pressures.

(b) The supervisor may, at the time of approval of any notice to drill or redrill any well, stipulate reasonable requirements for the taking of formation samples or cores to determine the identity and character of any formation.

[19 F.R. 2657, May 8, 1954]

§ 250.15 Drilling and abandonment of wells.

The supervisor shall demand drilling in accordance with the terms of the lease and of the regulations in this part; and shall require plugging and abandonment, in accordance with such plan as may be approved or prescribed by him, of any well no longer used or useful, and upon failure to secure compliance with such requirement, perform the work at the expense of the lessee, expending available public funds, and submit such report as may be needed to furnish a basis for appropriate action to obtain reimbursement.

[19 F.R. 2657, May 8, 1954]

§ 250.16 Well potentials and permissible flow.

The supervisor is authorized to specify the time and method for determining the potential capacity of any well and to fix, after appropriate notice, the permissible production of any such well that may be produced when such action is necessary to prevent waste or to conform with such proration rules, schedules, or procedures as may be established by the Secretary.

[19 F.R. 2657, May 8, 1954]

§ 250.17 Well locations and spacing.

The supervisor is authorized to approve well locations and well spacing programs necessary for proper development giving consideration to such factors as the location of drilling platforms, the geological and reservoir characteristics of the field, the number of wells that can be economically drilled, the protection of correlative rights, and minimizing unreasonable interference with other uses of the Outer Continental Shelf area.

[34 F.R. 13545, Aug. 22, 1969]

§ 250.18 Rights of use and easement.

(a) In addition to the rights and privileges granted to a lessee under any lease issued or maintained under the act, the supervisor may grant such lessee, subject to such reasonable conditions as said supervisor may prescribe, the right of use or an easement to construct and maintain platforms, fixed structures, and artificial islands, and to use the same for carrying on operations, including drilling, directional drilling, producing, treating, handling, and storing production, and housing personnel engaged in operations, not only in connection with the lease on which the platform, structure,

or island, is situated, but for the conduct of operations on any other lease, State or Federal.

(b) The supervisor may grant to a holder of a Federal or State lease the right of use or an easement to construct and maintain platforms, fixed structures, and artificial islands on areas of the outer Continental Shelf, near or adjacent to the leased area, and to use same for drilling directional well or wells to be bottomed under the leased area, and for producing and reworking such well or wells, and for handling, treating, and storing the production therefrom. Such rights of use or easement if on an area subject to any mineral lease issued or maintained under the act shall be granted only after the lessee under such lease has been notified and afforded an opportunity to voice objections thereto, and any such right shall be exercised only in such manner so as not to interfere unreasonably with operations of the lessee under such lease.

(c) In addition to the rights and privileges granted to a Federal lessee under any lease issued or maintained under the act, the supervisor upon proper application may grant to a holder of a Federal lease or State lease issued by a State which extends the same rights to holders of Federal leases, subject to such reasonable conditions as the supervisor may prescribe, the right of use or an easement to construct and maintain pipelines on areas of the Outer Continental Shelf which are constructed, owned, and maintained by the lessee and used for purposes such as (1) moving production to a central point for gathering, treating, storing, or measuring; (2) delivery of production to a point of sale; (3) delivery of production to a pipeline operated by a transportation company; or (4) moving fluids in connection with lease operations, such as for injection purposes. The supervisor is authorized to approve any reasonable offshore or onshore location as the central or delivery point. Rights of use or easement across areas covered by a mineral lease issued or maintained under the act shall be granted only after the lessee under such lease has been notified by the applicant and afforded a reasonable opportunity to express its views with respect thereto, and any such rights shall be exercised only in a manner so as not to interfere unreasonably with operations of the lessee under such lease. The foregoing right of use and easement shall not apply to pipelines used for transporting

oil, gas, or other production after custody has been transferred to a purchaser or carrier as provided for in section 5(c) of the Outer Continental Shelf Lands Act and regulations in 43 CFR 2234.5-3.

(d) Once a right of use or easement has been exercised by the erection of platforms, fixed structures, artificial islands, or pipelines, the right shall continue only so long as they are maintained and are useful for the purpose specified therein, as determined by the supervisor, even beyond the termination of any lease on which they may be situated, and the rights of all subsequent lessees shall be subject to such rights of use and easement by prior lessees. Upon termination by the supervisor of the right of use and easement, the lessee shall remove or otherwise dispose of all platforms, fixed structures, artificial islands, pipelines, and other facilities and restore the premises to the satisfaction of the supervisor; provided, however, that pipelines may be abandoned in place for so long as they do not constitute a navigational or other hazard as determined by the supervisor.

[19 F.R. 2657, May 8, 1954, as amended at 34 F.R. 13545, Aug. 22, 1969]

§ 250.19 Platforms and pipelines.

(a) The supervisor is authorized to approve the design, other features, and plan of installation of all platforms, fixed structures, and artificial islands as a condition of the granting of a right of use or easement under paragraphs (a) or (b) of § 250.18 or authorized under any lease issued or maintained under the act.

(b) The supervisor is authorized to approve the design, other features, and plan of installation of all pipelines for which a right of use or easement has been granted under paragraph (c) of § 250.18 or authorized under any lease issued or maintained under the act, including those portions of such lines which extend onto or traverse areas other than the Outer Continental Shelf.

[34 F.R. 13545, Aug. 22, 1969]

§ 250.20 Rentals, royalties, and other payments.

The supervisor shall determine pursuant to the lease and regulations the rental and the amount or value of production accruing to the lessor as royalty, the loss through waste or failure to drill and produce protection wells on the lease, and the compensation due to

the lessor as reimbursement for such loss.

[19 F.R. 2657, May 8, 1954. Redesignated at 34 F.R. 13545, Aug. 22, 1969]

REQUIREMENTS FOR LESSEES

§ 250.30 Lease terms, regulations, waste, damage and safety.

The lessee shall comply with the terms of applicable laws and regulations, the lease terms, OCS Orders and other written orders and rules of the supervisor, and with oral orders of the supervisor. All such oral orders shall be effective when issued, and are to be confirmed in writing as provided in § 250.11. The lessee shall take all necessary precautions to prevent damage to or waste of any natural resource or injury to life, or property, or the aquatic life of the seas.

[34 F.R. 13545, Aug. 22, 1969]

§ 250.31 Designation of operator.

In all cases where operations are not conducted by the record owner but are to be conducted under authority of an unapproved operating agreement, assignment, or other arrangement, a "designation of operator" shall be submitted to the supervisor, in a manner and form approved by him, prior to commencement of operations. Such designation will be accepted as authority of operator or his local representative to fulfill the obligations of the lessee and to sign any papers or reports required under the regulations in this part. All changes of address and any termination of the authority of the operator shall be immediately reported, in writing, to the supervisor or his representative. In case of such termination or of controversy between the lessee and the designated operator, the operator, if in possession of the lease, will be required to protect the interests of the lessor.

[19 F.R. 2657, May 8, 1954]

§ 250.32 Local agent.

When required by the supervisor, the lessee shall designate a representative empowered to receive notices and comply with orders of the supervisor issued pursuant to the regulations in this part.

[19 F.R. 2657, May 8, 1954]

§ 250.33 Drilling and producing obligations.

(a) The lessee shall diligently drill and produce such wells as are neces-

sary to protect the lessor from loss by reason of production on other properties, or in lieu thereof, with the consent of the supervisor, shall pay a sum determined by the supervisor as adequate to compensate the lessor for failure to drill and produce any such well. In the event that the lease is not being maintained in force by other production of oil or gas in paying quantities or by other approved drilling or reworking operations, such payments shall be considered as the equivalent of production in paying quantities for all purposes of the lease.

(b) The lessee shall promptly drill and produce such other wells as the supervisor may reasonably require in order that the lease may be properly and timely developed and produced in accordance with good operating practices [19 F.R. 2657, May 8, 1954]

§ 250.34 Drilling and development programs.

(a) *Exploratory drilling plan.* Prior to commencing each exploratory drilling program on a lease, including the construction of platforms, the lessee shall submit a plan to the supervisor for approval. Each plan for the leased area shall include (1) a description of drilling vessels, platforms, or other structures showing the location, the design, and the major features thereof, including features pertaining to pollution prevention and control; (2) the general location of each well including surface and projected bottom hole location for directionally drilled wells; (3) structural interpretations based on available geological and geophysical data; and (4) such other pertinent data as the supervisor may prescribe.

(b) *Development plan.* Prior to commencing each development program on a lease, the lessee shall submit a plan to the supervisor for approval. The plan shall include all information specified in paragraph (a) of this section in detail.

(c) *Drilling applications.* Prior to commencing drilling operations either under an exploratory or development plan, the lessee shall submit an Application for Permit to Drill (Form 9-331C) to the supervisor for approval. The application shall include the integrated blowout prevention, mud, casing, and cementing program for the well, and shall meet the requirements specified in § 250.41(a), and contain the information

specified in § 250.91(a), and shall conform with the approved exploratory or development plan.

(d) *Modifications.* The lessee shall submit: (1) All requests for modifications of an approved exploratory or development plan in writing to the supervisor for approval; and (2) all notices of changes to plans set forth in the approved Application for Permit to Drill on Sundry Notices and Reports on Wells (Form 9-331), except that these requirements shall not relieve the lessee from taking appropriate action to prevent or abate damage, waste, or pollution of any natural resource or injury to life or property.

[34 F.R. 13546, Aug. 22, 1969]

§ 250.35 Extension of leases by drilling or well reworking.

(a) The Secretary shall be deemed to have approved, within the meaning of section 8(b) (2) of the Outer Continental Shelf Lands Act, drilling or well reworking operations, conducted on the leased area in the following instances:

(1) If, after discovery of oil or gas in paying quantities has been made on the leasehold, and within 90 days prior to expiration of the five-year term or any extension thereof, or thereafter, the production thereof shall cease at any time, or from time to time, from any cause and production is restored or drilling or well reworking operations are commenced within 90 days thereafter, and such drilling or well reworking operations (whether on the same or different wells) are prosecuted diligently until production is restored in paying quantities.

(2) If, within 90 days prior to expiration of the five-year term or any extension thereof, or thereafter, at any time, or from time to time, lessee is engaged in drilling or well reworking operations on the leasehold and there is no well on the leasehold capable of producing in paying quantities and the lessee diligently prosecutes such operations (whether on the same or different wells) with no cessation of more than 90 days.

(b) The Secretary may approve such other operations for drilling or reworking upon application of lessee.

(c) Nothing in this section obviates the necessity of obtaining the Supervisor's approval of a plan or notice of

intention to drill or of complying with the other provisions of this part.

[24 F.R. 9527, Nov. 28, 1959. Redesignated at 34 F.R. 13546, Aug. 22, 1969]

§ 250.36 Subsequent well operations.

Prior to commencing operations not previously approved, such as deepening, plugging-back, repairing (other than work incidental to ordinary well operations), acidizing or stimulating production by other methods, perforating, sidetracking, squeezing with mud or cement, abandoning, and any similar operation which will alter the condition of a well, the lessee shall submit an application or notice as specified in § 250.91 and 250.92 to the supervisor for approval. This requirement shall not relieve the lessee from taking appropriate action to prevent or abate damage or waste of any natural resource, or injury to life or property.

[34 F.R. 13546, Aug. 22, 1969]

§ 250.37 Well designations.

The lessee shall mark promptly each drilling platform or structure in a conspicuous place, showing his name or the name of the operator, the serial number of the lease, the identification of the wells, and shall take all necessary means and precautions to preserve these markings.

[19 F.R. 2658, May 8, 1954. Redesignated at 34 F.R. 13546, Aug. 22, 1969]

§ 250.38 Well records.

(a) The lessee shall keep for each well at his field headquarters or at other locations conveniently available to the supervisor, accurate and complete records of all well operations including production, drilling, logging, directional well surveys, casing, perforating, safety devices, re-drilling, deepening, repairing, cementing, alterations to casing, plugging, and abandoning. The records shall contain a description of any unusual malfunction, condition or problem; all the formations penetrated; the content and character of oil, gas, and other mineral deposits, and water in each formation; the kind, weight, size, grade, and setting depth of casing; and any other pertinent information.

(b) Upon request of the supervisor, the lessee shall immediately transmit copies of records of any of the well operations specified in paragraph (a) of

this section; however, in any event the lessee shall, within 30 days after completion of any well, transmit to the supervisor copies of the records of all operations (except logging) in duplicate on or attached to Form 9-330, except that when operations are suspended the lessee shall transmit copies of the records of all operations conducted thereon to the supervisor within 30 days after the suspension; and within 30 days after the suspension or completion of any further operations, including those described in § 250.92, the lessee shall transmit to the supervisor copies of the records of such operations in duplicate on or attached to Form 9-330 or Form 9-331, as appropriate.

(c) Upon request by the supervisor, the lessee shall submit paleontological reports identifying microscopic fossils by depth (not the resulting interpretations based upon such identifications) unless washed well samples normally maintained by the lessee for paleontological determinations are made available to the supervisor for inspection.

(d) Upon request of the supervisor, the lessee shall immediately transmit copies (field or final prints of individual runs) of logs or charts of electrical, radioactive, sonic, and other well logging operations and directional well surveys. Composite logs of multiple runs and directional well surveys shall be transmitted to the supervisor in duplicate as soon as available, but not later than 30 days after completion of such operations for each well.

(e) Upon request of and in the manner and form prescribed by the supervisor, the lessee shall furnish copies of the daily drilling report and a plat showing the location, designation, and status of all wells on the leased lands.

(f) Upon request of the supervisor, the lessee shall furnish legible, exact copies of service company reports on cementing, perforating, acidizing, analyses of cores, or other similar services.

(g) The lessee shall submit any other reports and records of operations when required and in the manner and form prescribed by the supervisor.

[34 F.R. 13546, Aug. 22, 1969]

§ 250.39 Samples, tests, and surveys.

(a) The lessee, when required by the supervisor, shall make adequate tests or surveys in an acceptable manner, with-

out cost to the lessor, to determine the reservoir energy; the presence, quantity, and quality of oil, gas, sulphur, other mineral deposits, or water; the amount and direction of deviation of any well from the vertical; or the formation, casing, tubing, or other pressures.

(b) The lessee shall take such formation samples or cores to determine the identity and character of any formation in accordance with reasonable requirements of the supervisor prescribed at the time of approval of the notice to drill or redrill any well.

[19 F.R. 2658, May 8, 1954. Redesignated at 34 F.R. 13546, Aug. 22, 1969]

§ 250.40 Directional survey.

(a) An angular deviation and directional survey shall be made of the finished hole of each well directionally drilled.

(b) The supervisor, at the request of an offset lessee made prior to completion of a well, may require a lessee of an adjoining lease to make or furnish a directional survey of any hole, at the risk and expense of the offset lessee making such request. A copy of such directional survey shall be furnished to the supervisor and the offset lessee. If it is determined that such well is closer to the line of the offset lease than one-half ($\frac{1}{2}$) the required distance from such line fixed by an approved spacing program or by special field rules, the risk and expense of making such directional survey shall be borne by the offending lessee; and, unless and until the hole is promptly straightened to correct the offense, the supervisor may reduce the allowable production from the well to prevent its draining unduly the offset leased area. Neither the imposition of any penalty or of the costs of such survey upon the offending lessee nor the reduction of the allowable production from the well is intended to prejudice any other remedy which the affected parties may have.

[19 F.R. 2658, May 8, 1954. Redesignated at 34 F.R. 13546, Aug. 22, 1969]

§ 250.41 Control of wells.

(a) *Drilling wells.* The lessee shall take all necessary precautions to keep all wells under control at all times, shall utilize only personnel trained and competent to drill and operate such wells, and shall utilize and maintain materials

and high-pressure fittings and equipment necessary to insure the safety of operating conditions and procedures. The design of the integrated casing, cementing, drilling mud, and blowout prevention program shall be based upon sound engineering principles, and must take into account the depths at which various fluid or mineral-bearing formations are expected to be penetrated, and the formation fracture gradients and pressures expected to be encountered, and other pertinent geologic and engineering data and information about the area.

(1) *Well casing and cementing.* The lessee shall case and cement all wells with a sufficient number of strings of casing in a manner necessary to: (i) Prevent release of fluids from any stratum through the well bore (directly or indirectly) into the sea; (ii) prevent communication between separate hydrocarbon-bearing strata (except such strata approved for commingling) and between hydrocarbon and water-bearing strata; (iii) prevent contamination of fresh water strata, gas, or water; (iv) support unconsolidated sediments; and (v) otherwise provide a means of control of the formation pressures and fluids. The lessee shall install casing necessary to withstand collapse, bursting, tensile, and other stresses and the casing shall be cemented in a manner which will anchor and support the casing. Safety factors in casing program design shall be of sufficient magnitude to provide optimum well control while drilling and to assure safe operations for the life of the well. When directed by the supervisor, the lessee shall install structural or drive casing to provide hole stability for the initial drilling operation. A conductor string of casing (the first string run other than any structural or drive casing) must be cemented with a volume of cement sufficient to circulate back to the sea floor; however, if authorized by OCS Order or the supervisor, cement may be washed out or displaced to a specified depth below the sea floor to facilitate casing removal upon well abandonment. All subsequent strings must be securely cemented.

(2) *Drilling mud.* The lessee shall maintain readily accessible for use quantities of mud sufficient to insure well control. The testing procedures, characteristics, and use of drilling mud and the conduct of related drilling procedures

shall be such as are necessary to prevent blowouts. Mud testing equipment and mud volume measuring devices shall be maintained at all times, and mud tests shall be performed frequently and recorded on the driller's log as prescribed by the supervisor.

(3) *Blowout prevention equipment.* The lessee shall install, use, and test blowout preventers and related well-control equipment in a manner necessary to prevent blowouts. Such installation, use and testing must meet the standards or requirements prescribed by the supervisor; provided, however, in no event shall the lessee conduct drilling below the conductor string of casing until the installation of at least one remotely controlled blowout preventer and equipment for circulating drilling fluid to the drilling structure or vessel. Blowout preventers and related well-control equipment shall be pressure tested when installed, after each string of casing is cemented, and at such other times as prescribed by the supervisor. Blowout preventers shall be activated frequently to test for proper functioning as prescribed by the supervisor. All blowout-preventer tests shall be recorded on the driller's log.

(b) *Completed wells.* In the conduct of all its operations, the lessee shall take all steps necessary to prevent blowouts, and the lessee shall immediately take whatever action is required to bring under control any well over which control has been lost. The lessee shall: (1) In wells capable of flowing oil or gas, when required by the supervisor, install and maintain in operating condition storm chokes or similar subsurface safety devices; (2) for producing wells not capable of flowing oil or gas, install and maintain surface safety valves with automatic shutdown controls; and (3) periodically test or inspect such devices or equipment as prescribed by the supervisor.

[34 F.R. 13546, Aug. 22, 1969]

§ 250.42 Emulsion and dehydration.

(a) The lessee shall complete and maintain all oil wells in such mechanical condition and operate them in such manner as to prevent, so far as possible, the formation of emulsion and basic sediment.

(b) The lessee shall put in marketable condition, if commercially feasible, all products produced from the leased land and pay royalty thereon without recourse

to the lessor for deductions on account of costs of treatment.

[19 F.R. 2658, May 8, 1954. Redesignated at 34 F.R. 13546, Aug. 22, 1969]

§ 250.43 Pollution and waste disposal.

(a) The lessee shall not pollute land or water or damage the aquatic life of the sea or allow extraneous matter to enter and damage any mineral- or water-bearing formation. The lessee shall dispose of all liquid and nonliquid waste materials as prescribed by the supervisor. All spills or leakage of oil or waste materials shall be recorded by the lessee and, upon request of the supervisor, shall be reported to him. All spills or leakage of a substantial size or quantity, as defined by the supervisor, and those of any size or quantity which cannot be immediately controlled also shall be reported by the lessee without delay to the supervisor and to the Coast Guard and the Regional Director of the Federal Water Pollution Control Administration. All spills or leakage of oil or waste materials of a size or quantity specified by the designee under the pollution contingency plan shall also be reported by the lessee without delay to such designee.

(b) If the waters of the sea are polluted by the drilling or production operations conducted by or on behalf of the lessee, and such pollution damages or threatens to damage aquatic life, wildlife, or public or private property, the control and total removal of the pollutant, wheresoever found, proximately resulting therefrom shall be at the expense of the lessee. Upon failure of the lessee to control and remove the pollutant the supervisor, in cooperation with other appropriate agencies of the Federal, State and local governments, or in cooperation with the lessee, or both, shall have the right to accomplish the control and removal of the pollutant in accordance with any established contingency plan for combating oil spills or by other means at the cost of the lessee. Such action shall not relieve the lessee of any responsibility as provided herein.

(c) The lessee's liability to third parties, other than for cleaning up the pollutant in accordance with paragraph (b) of this section shall be governed by applicable law.

[34 F.R. 13547, Aug. 22, 1969]

§ 250.44 Well abandonment.

The lessee shall promptly plug and abandon any well on the leased land that

is not used or useful, but no productive well shall be abandoned until its lack of capacity for further profitable production of oil, gas, or sulphur has been demonstrated to the satisfaction of the supervisor. Before abandoning a producible well, the lessee shall submit to the supervisor a statement of reasons for abandonment and his detailed plans for carrying on the necessary work. A producible well may be abandoned only after receipt of written approval by the supervisor. No well shall be plugged and abandoned until the manner and method of plugging shall be approved or prescribed by the supervisor. Equipment shall be removed, and premises at the well-site shall be properly conditioned immediately after plugging operations are completed on any well when directed by the supervisor. Drilling equipment shall not be removed from any suspended drilling well without taking adequate measures to protect the natural resources.

[19 F.R. 2658, May 8, 1954. Redesignated at 34 F.R. 13546, Aug. 22, 1969]

§ 250.45 Accidents, fires, and malfunctions.

In the conduct of all its operations, the lessee shall take all steps necessary to prevent accidents and fires, and the lessee shall immediately notify the supervisor of all serious accidents and all fires on the lease, and shall submit in writing a full report thereon within 10 days. The lessee shall notify the supervisor within 24 hours of any other unusual condition, problem, or malfunction.

[34 F.R. 13547, Aug. 22, 1969]

§ 250.46 Workmanlike operations.

The lessee shall perform all operations in a safe and workmanlike manner and shall maintain equipment for the protection of the lease and its improvements, for the health and safety of all persons, and for the preservation and conservation of the property and the environment. The lessee shall take all necessary precautions to prevent and shall immediately remove any hazardous oil and gas accumulations or other health, safety or fire hazards.

[34 F.R. 13547, Aug. 22, 1969]

§ 250.47 Sales contracts.

The lessee shall file with the supervisor within 30 days after the effective date thereof copies of all contracts for the

disposal of lease products. Nothing in any such contract shall be construed or accepted as modifying any of the provisions of the lease, including provisions relating to gas waste, taking royalty in kind, and the method of computing royalties due as based on a minimum valuation and in accordance with the regulations applicable to the lands covered by the contract.

[34 F.R. 13547, Aug. 22, 1969]

§ 250.48 Division orders.

The lessee shall file with the supervisor within 30 days after the effective date thereof copies of division orders or other instruments granting to transportation agencies or purchasers authority to receive products from leased lands. The supervisor may, upon request, approve such orders or other instruments subject to such conditions as he shall prescribe.

[19 F.R. 2659, May 8, 1954, as amended at 34 F.R. 13547, Aug. 22, 1969]

§ 250.49 Royalty and rental payments.

The lessee shall pay all rentals when due and shall pay in value or deliver in production all royalties in the amounts determined by the supervisor as due under the terms of the lease. Payments of rentals and royalties in value shall be by check or draft on a solvent bank, or by money order, drawn to the order of the United States Geological Survey.

[21 F.R. 4668, June 27, 1956. Redesignated at 34 F.R. 13546, Aug. 22, 1969]

§ 250.50 Unit plans, pooling, and drilling agreements.

Section 5(a)(1) of the act authorizes the Secretary in the interest of conservation to provide for unitization, pooling and drilling agreements. Such agreements may be initiated by lessees or where in the interest of conservation they are deemed necessary they may be required by the Director.

[29 F.R. 4563, Mar. 31, 1964, as amended at 34 F.R. 13547, Aug. 22, 1969]

§ 250.51 Application for approval of unit plan.

The procedure for obtaining the approval of a unit plan of development is contained in 30 CFR Part 226. "Unit or Cooperative Agreements". All applications to unitize and all documents incident thereto shall be filed in the office of the oil and gas supervisor,

Geological Survey, for the geographic area in which the unit areas is situated. [29 F.R. 4563, Mar. 31, 1964. Redesignated at 34 FR 13547, Aug. 22, 1969, as amended at 38 FR 10001, Apr. 23, 1973]

§ 250.52 Pooling or drilling agreements.

(a) With the approval of the supervisor, pooling or drilling agreements may be made between lessees for the purposes of (1) utilizing a common drilling platform to develop adjacent or adjoining leases; (2) permitting operators or pipeline companies to enter into contracts involving a number of leases sufficient to justify operations on a large scale for the discovery, development, production or transportation of oil and gas, sulphur, or other minerals and to finance the same; or (3) for other purposes in the interest of conservation.

(b) A contract submitted for approval under these provisions should be filed with the oil and gas supervisor, together with enough copies to permit retention of 5 copies by the Department after approval. Complete details must be furnished in order that the supervisor may have facts upon which to make a definite determination and prescribe the conditions on which the contract is approved.

[29 F.R. 4563, Mar. 31, 1964, as amended at 34 F.R. 13547, Aug. 22, 1969]

§ 250.53 Subsurface storage of oil or gas.

(a) In order to avoid waste or to promote conservation of natural resources, and when it can be shown that no undue interference with operations under existing leases will result, the Director, upon application by the interested parties, may authorize the subsurface storage of oil or gas in the lands of the outer Continental Shelf, whether or not produced from the outer Continental Shelf. Such authorization will provide for the payment of such storage fee or rental on the stored oil or gas as may be determined adequate in each case, or, in lieu thereof, for a royalty other than that prescribed in any lease of the area involved when such stored oil or gas is produced in conjunction with oil or gas not previously produced. Any lease of an area used for the storage of oil or gas shall not be deemed to expire during the period of such storage and so long thereafter as oil or gas not previously produced is produced in paying quantities, or drilling or well rework-

ing operations as approved by the Secretary are conducted thereon.

(b) Applications for subsurface storage shall be filed in triplicate with the oil and gas supervisor and shall disclose the ownership of the lands or interests in the lands involved, the parties in interest, including lessees of other mineral interests, the storage fee, rental, or royalty offered to be paid for such storage and all essential information showing the necessity for such storage. Enough copies of the final agreement signed by the parties in interest shall be submitted for the approval of the Director to permit retention of 5 copies by the Department after approval.

[29 F.R. 4563, Mar. 31, 1964, as amended at 34 F.R. 13547, Aug. 22, 1969]

MEASUREMENT OF PRODUCTION AND COMPUTATION OF ROYALTIES

§ 250.60 Measurement of oil.

The lessee shall gage and measure all production in accordance with methods approved by the supervisor. The lessee shall provide tanks suitable for measuring accurately the crude oil produced from the lease (exact copies of 100 percent capacity tank tables to be furnished to the supervisor) or may arrange with the supervisor for other acceptable methods of measuring, storing, and recording production. The quantity and quality of all production shall be determined in accordance with the standard practices, procedures, and specifications generally used by the industry.

[19 F.R. 2659, May 8, 1954 as amended at 34 F.R. 13547, Aug. 22, 1969]

§ 250.61 Measurement of gas.

The lessee shall measure all gas production in accordance with methods approved by the supervisor, and the measured volumes shall be adjusted to the standard pressure base of 10 ounces above the atmospheric pressure of 14.4 pounds per square inch, a standard temperature of 60° Fahrenheit, and for deviation from Boyle's law. If gas is being disposed of at a different pressure base, the supervisor may require that gas volumes be adjusted to conform to such base.

§ 250.62 Determination of content of gas.

The content of gas delivered to an extraction plant treating gas from the lease shall be determined periodically by field tests, as required by the supervisor, to be made at the place and by the

methods approved by him and under his supervision.

[19 F.R. 2659, May 8, 1954]

§ 250.63 Quantity basis for substances extracted from gas.

(a) The primary quantity basis for computing monthly royalties on casing-head or natural gasoline, butane, propane, or other substances (hereinafter called substances in this section) extracted from gas is the monthly net output of the plant at which the substances are manufactured, "net output" being defined as the quantity of each substance that the plant produces for sale.

(b) If the net output of a plant is derived from the gas obtained from only one lease, the quantity of substances on which computations of royalty for the lease is based is the net output of the plant.

(c) If the net plant output of a substance is derived from gas obtained from several leases producing gas of uniform content of such substance, the proportion of net output of the substance allocable to each lease as a basis for computing royalty will be determined by dividing the amount of gas delivered to the plant from each lease by the total amount of gas delivered from all leases.

(d) If the net plant output of a substance is derived from gas obtained from several leases producing gas of diverse content of such substance, the proportion of net output of the substance allocable to each lease as a basis for computing royalty will be determined by multiplying the amount of gas delivered to the plant from the lease by the substance content of the gas and dividing the arithmetical product thus obtained by the sum of the similar arithmetical products separately obtained for all leases from which gas is delivered to the plant.

[19 F.R. 2659, May 8, 1954]

§ 250.64 Value basis for computing royalties.

The value of production, for the purpose of computing royalty, shall be the estimated reasonable value of the product as determined by the supervisor, due consideration being given to the highest price paid for a part or for a majority of production of like quality in the same field or area, to the price received by the lessee, to posted prices, and to other relevant matters. Under no circumstances shall the value of production of any of said substances for the

purposes of computing royalty be deemed to be less than the gross proceeds accruing to the lessee from the sale thereof or less than the value computed on such reasonable unit value as shall have been determined by the Secretary. In the absence of good reason to the contrary, value computed on the basis of the highest price paid or offered at the time of production in a fair and open market for the major portion of like-quality products produced and sold from the field or area where the leased lands are situated will be considered to be a reasonable value.

[19 F.R. 2659, May 8, 1954]

§ 250.65 Royalty on oil.

(a) The royalty on crude oil, including condensates separated from gas without the necessity of a manufacturing process, shall be the percentage of the value or amount of the crude oil produced from the leased lands established by law, regulation, or the provisions of the lease. No deduction shall be made for actual or theoretical transportation losses.

(b) Royalty shall be based on production removed from the lease except that, when conditions so warrant, the supervisor may require such royalty to be based on actual monthly production. Evidence of all shipments shall be filed with the supervisor within five days (or such longer period as the supervisor may approve) after the oil has been run by pipeline or by other means of transportation. Such evidence shall be signed by representatives of the lessee and of the purchaser or the transporter who have witnessed the measurements reported, and the determinations of gravity, temperature, and the percentage of impurities contained in the oil shall be shown.

[19 F.R. 2659, May 8, 1954, as amended at 34 F.R. 13547, Aug. 22, 1969]

§ 250.66 Royalty on unprocessed gas.

If gas, either gas-well gas or casing-head gas, is sold without processing for the recovery of constituent products, the royalty thereon shall be the percentage established by the terms of the lease of the value or amount of the gas produced.

[19 F.R. 2659, May 8, 1954]

§ 250.67 Royalty on processed gas and constituent products.

(a) If gas is processed for the recovery of constituent products, a royalty as provided in the lease will accrue on the value or amount of:

(1) All residue gas remaining after processing; and

(2) All natural gasoline, butane, propane, or other products extracted therefrom, subject to deduction of such portion thereof as the supervisor determines to be a reasonable allowance for the cost of processing based upon regional plant practices and costs and other pertinent factors; provided, however, that such reasonable allowance shall not exceed two-thirds of the products extracted unless the Director determines that a greater allowance is in the interest of conservation.

(b) Under no circumstances shall the amount of royalty on the residue gas and extracted products be less than the amount which the supervisor determines would be payable if the gas had been sold without processing.

(c) In determining the value of natural gasoline, the volume of such gasoline shall be adjusted to a standard by a method approved by the supervisor when necessary to adjust volumetric differences between natural gasolines of various specifications.

(d) No allowance shall be made for boosting residue gas or other expenses incidental to marketing.

(e) The lessee, with the approval of the supervisor, may establish a gross value per unit of 1,000 cubic feet of gas on the lease or at the wellhead for the purpose of computing royalty on gas processed for the recovery of constituent products, provided that the royalty shall not be less than that which would accrue by computing royalties in accordance with the provisions of paragraphs (a) through (d) of this section.

[34 F.R. 13547, Aug. 22, 1969]

§ 250.68 Commingling production.

Subject to such conditions as he may prescribe for measurement and allocation of production, the supervisor may authorize the lessee to move production from the lease to a central point for purposes of treating, measuring, and storing, and in moving such production, the lessee may commingle the production from different wells, leases, pools, and fields, and with production of other operators. The central point may be on shore or at any other convenient place selected by lessee.

[19 F.R. 2660, May 8, 1954]

§ 250.69 Measurement of sulphur.

The measurement of sulphur for the purpose of computing royalty shall be

on such basis and shall conform to such standards as the supervisor may approve. [19 F.R. 2660, May 8, 1954]

PROCEDURE IN CASE OF DEFAULT BY LESSEE

§ 250.80 Default.

Whenever the owner of a lease fails to comply with the provisions of the regulations in this part, the supervisor is authorized to give 30-day notice of such default by registered letter to the lessee at his record post office address as provided in section 5(b)(1) of the act and to recommend to the Secretary through the Director, lease cancellation pursuant to section 5(b)(1) and (2) of the act, appropriate action under the penalty provisions of section 5(a)(2) of the act, or the exercise of such other legal or equitable remedy as the lessor may have.

[19 F.R. 2660, May 8, 1954]

§ 250.81 Appeals.

Orders or decisions issued under the regulations in this part may be appealed as provided in part 290 of this chapter. Compliance with any such order or decision shall not be suspended by reason of any appeal having been taken unless such suspension is authorized in writing by the Director or the Board of Land Appeals (depending upon the official before whom the appeal is pending) and then only upon a determination that such suspension will not be detrimental to the lessor or upon the submission and acceptance of a bond deemed adequate to indemnify the lessor from loss or damage.

[38 FR 10001, Apr. 23, 1973]

§ 250.82 Judicial review.

Nothing contained in this part shall be construed to prevent any interested party from seeking judicial review as authorized by law.

[19 F.R. 2660, May 8, 1954]

REPORTS TO BE MADE BY ALL LESSEES (INCLUDING OPERATORS)

§ 250.90 General requirements.

Information required to be submitted in accordance with the regulations in this part shall be furnished in the manner and form prescribed in the regulations in this part or as directed by the supervisor. Copies of forms can be obtained from the supervisor and must be filled out completely and filed punctually with that official.

[19 F.R. 2660, May 8, 1954]

§ 250.91 Application for permit to drill, deepen, or plug back.

Applications for permits to drill, deepen, or plug back must be filed in triplicate on Form 9-331C. Prior to commencing such operations approval in writing must be received from the supervisor.

(a) Application for permit to drill.

(1) The application must give the surface location and projected bottom-hole location in feet from the lease boundaries; elevation of the derrick floor; water depth; depth to which the well is proposed to be drilled; estimated depths to the top of significant markers; depths at which water, oil, gas, and mineral deposits are expected; the proposed blow-out prevention and casing program, including the size, weight, grade, and setting depth of casing, and the quantity of cement to be used, together with all other information specified on Form 9-331C. Information also shall be furnished relative to the proposed plan for drilling other wells from the same platform, for coring at specified depths, and for electrical and other logging, together with any other information required by the supervisor.

(2) At least two copies of the application shall be accompanied by: (i) A certified plat drawn to a scale of 2,000 feet to the inch, showing surface and subsurface location of the well to be drilled and all wells theretofore drilled in the vicinity for which information is available, and (ii) information specified in § 250.34 to the extent not included in the application or previously furnished (reference must be made thereto).

(b) Application for permit to deepen or plug back.

The application must describe fully: (1) The present status of the well including the production string or last string of casing, well depth, present productive zones and productive capability, and other pertinent matters; and (2) the details of the proposed work and the necessity therefor.

[34 F.R. 13548, Aug. 22, 1969]

§ 250.92 Sundry notices and reports on wells.

All notices of intention to fracture treat, acidize, repair, multiple completions, abandon, change plans, and for other similar purposes, and all subsequent reports pertaining to such operations shall be submitted on Form 9-331 in triplicate in accordance with § 250.38(b). Prior to commencing such operations ap-

proval must be received from the supervisor in writing.

(a) *Notice of intention to change the condition of a well.* Form 9-331 shall contain a detailed statement of the proposed work for repairing (other than work incidental to ordinary well operation), acidizing or stimulating production by other methods, perforating, sidetracking, squeezing with mud or cement, or commencing any operations that will materially change the approved program for drilling a well or alter the condition of a completed well other than those operations covered by § 250.91.

(b) *Subsequent report of changing the condition of a well.* Form 9-331 shall contain a detailed report of all work done and the results obtained. The report shall set forth the amount and rate of production of oil, gas, and water before and after the work was completed and shall include a complete statement of the dates on which the work was accomplished and the methods employed.

(c) *Notice of intention to abandon well.* Form 9-331 shall contain a detailed statement of the proposed work for abandonment of any well, including a drilling well, a depleted producing well, an injection well, or a dry hole. The statement as to a producible well shall set forth the reasons for abandonment and the amount and date of last production and, as to all wells, shall describe the proposed work, including kind, location, and length of plugs (by depths), and plans for mudding, cementing, shooting, testing, removing casing, and other pertinent information.

(d) *Subsequent report of abandonment.* Form 9-331 shall contain a detailed report of the manner in which the abandonment or plugging work was accomplished, including the nature and quantities of materials used in plugging and the location and extent (by depths) of casing left in the well; and the volume of mud fluid used. If an attempt was made to part any casing, a description of the methods used and results obtained must be included.

[34 F.R. 13548, Aug. 22, 1969]

§ 250.93 Monthly report of operations.

A separate report of operations for each lease must be made on Form 9-152 for each calendar month, beginning with the month in which drilling operations are initiated, and must be filed in duplicate with the supervisor on or before the 20th day of the succeeding

month, unless an extension of time for the filing of such report is granted by the supervisor. The report on this form shall disclose accurately all operations conducted on each well during each month, the status of operations on the last day of the month, and a general summary of the status of operations on the leased lands, and the report must be submitted each month until the lease is terminated or until omission of the report is authorized by the supervisor. It is particularly necessary that the report shall show for each calendar month:

(a) Each well listed separately by number and its location shown if possible.

(b) The number of days each well produced, whether oil or gas, and the number of days each input well was in operation.

(c) The quantity of oil, gas, and water produced; the total amount of gasoline and other lease products recovered; and other required information. When oil and gas, or oil, gas, and gasoline, or other hydrocarbons are concurrently produced from the same lease, separate reports on this form should be submitted for oil and gas and gasoline, unless otherwise authorized or directed by the supervisor.

(d) The depth of each active or suspended well; the name, character, and depth of each formation drilled during the month; the date each such depth was reached; the date and reason for every shutdown; the names and depths of important formation changes and contents of formations; the amount and size of any casing run since last report; the dates and results of any tests such as production, water shutoff, or gasoline content; and any other noteworthy information on operations not specifically provided for in the form.

(e) If no runs or sales were made during the calendar month, the report must so state.

[19 F.R. 2661, May 8, 1954]

§ 250.94 Statement of oil and gas runs and royalties.

When directed by the supervisor, a monthly report shall be made by the lessee on Form 9-153, showing each run of oil; all sales of gas, gasoline, and other lease products; and the royalty accruing therefrom to the lessor.

[19 F.R. 2661, May 8, 1954, as amended at 34 F.R. 13548, Aug. 22, 1969]

§ 250.95 Well completion or recompletion report and log.

All reports and logs of well completions or recompletions shall be submitted on or attached to Form 9-330 in duplicate in accordance with § 250.38(b). The form shall contain a complete and accurate log and report of all operations conducted on the well as specified on the form. Duplicate copies of logs that may have been compiled for geologic information from cores or formation samples shall be filed in addition to the regular log. Geologic markers and all important zones of porosity and contents thereof; cored intervals; and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries shall be shown as provided therefor on Form 9-330 or on attachments thereto. If not previously furnished, duplicate copies of composites of multiple runs of all well bore surveys, including electric, radioactive, sonic and other logs, temperature surveys, and directional surveys shall be attached. (Such copies are in addition to field prints filed pursuant to § 250.38(d).)

[34 F.R. 13548, Aug. 22, 1969]

§ 250.96 Special forms or reports.

When special forms or reports other than those referred to in the regulations in this part may be necessary, instructions for the filing of such forms or reports will be given by the supervisor.

[19 F.R. 2661, May 8, 1954. Redesignated at 34 F.R. 13548, Aug. 22, 1969]

§ 250.97 Public inspection of records.

Geological and geophysical interpretations, maps, and data required to be submitted under this part shall not be available for public inspection without the consent of the lessee so long as the lease remains in effect or until such time as the supervisor determines that release of such information is required and necessary for the proper development of the field or area.

[34 F.R. 13548, Aug. 22, 1969]

MINERAL LEASES AFFECTED BY SECTION 6 OF OUTER CONTINENTAL SHELF LANDS ACT

§ 250.100 Effect of regulations on provisions of lease.

(a) As contemplated by section 6(b) of the act, the regulations in this part will supersede the provisions of any lease

which is determined to meet the requirements of section 6(a) of the act, to the extent that they cover the same subject matter, with the following exceptions: The provisions of a lease with respect to the area covered by the lease, the minerals covered by the lease, the rentals payable under the lease, the royalties payable under the lease (subject to the provisions of sections 6 (a) (8) and 6 (a) (9) of the act), and the term of the lease (subject to the provisions of section 6 (a) (10) of the act and, as to sulphur, subject to the provisions of section 6(b) (2) of the act) shall continue in effect and, in the event of any conflict or inconsistency, shall take precedence over the regulations in this part.

(b) A lease that meets the requirements of section 6 (a) of the act shall also be subject to the mineral leasing regulations applicable to the outer Continental Shelf,¹ as well as the regulations relating to geophysical and geological exploratory operations and to pipeline rights-of-way in the outer Continental Shelf, to the extent that those regulations are not contrary to or inconsistent with the provisions of the lease relating to the area covered, the minerals covered, the rentals payable, the royalties payable, and the terms of the lease.

[19 F.R. 2661, May 8, 1954]

NOTE: The record keeping or reporting requirements of this part have been approved by the Bureau of the Budget in accordance with the Federal Reports Act of 1942.

PART 270—GEOTHERMAL RESOURCES OPERATIONS ON PUBLIC, ACQUIRED, AND WITHDRAWN LANDS

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- 270.74 Monthly report of operations.
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- 270.76 Annual report of compliance with environmental protection requirements.
- 270.77 Annual report of expenditures for diligent exploration operations.
- 270.78 Notice of intent and permit to conduct exploration operations (other than drilling, see 43 CFR 3209.0-5 (a)).
- 270.79 Public inspection of records.

PROCEDURE IN CASE OF VIOLATION OF THE REGULATIONS OR LEASE TERMS

- 270.80 Noncompliance with regulations or lease terms.

APPEALS

- 270.90 Appeals.

AUTHORITY: Sec. 24, 84 Stat. 1573 (30 U.S.C. 1023).

SOURCE: 38 FR 35068, Dec. 21, 1973, unless otherwise noted.

GENERAL PROVISIONS

§ 270.1 Purpose and authority.

The Geothermal Steam Act enacted on December 24, 1970 (84 Stat. 1566) referred to in this part as "the Act", au-

thorizes the Secretary of the Interior to prescribe rules and regulations applicable to operations conducted under a lease granted pursuant to that Act, and for the development and conservation of geothermal steam and associated geothermal resources, the prevention of waste, the protection of the public interest, and the protection of water quality, and other environmental qualities. The regulations in this part shall be administered by the Director through the Chief, Conservation Division, or his duly appointed representative.

§ 270.2 Definitions.

As used in the regulations in this part, the term:

(a) "Secretary" means the Secretary of the Interior or any person duly authorized to exercise the powers vested in that officer.

(b) "Director" means the Director of the Geological Survey.

(c) "Supervisor" means a representative of the Secretary, subject to the direction and supervisory authority of the Director, the Chief, Conservation Division, Geological Survey, and the appropriate Regional Conservation Manager, Conservation Division, Geological Survey, authorized and empowered to regulate operations and to perform other duties prescribed in the regulations in this part or any subordinate of such a representative acting under his direction.

(d) "Geothermal lease" means a lease issued under 43 CFR Group 3200.

(e) "Lessee" means the individual, corporation, association, or municipality to which a geothermal lease has been issued and its successor in interest or assignee. It also means any agent of the lessee or an operator holding authority by or through the lessee.

(f) "Operator" means the individual, corporation, or association having control or management of operations on the leased lands or a portion thereof. The operator may be the lessee, designated operator, or agent of the lessee, or holder of rights under an approved operating agreement.

(g) "Geothermal resources" means (1) all products of geothermal processes, embracing indigenous steam, hot water, and hot brines; (2) steam and other gases, hot water, and hot brines, resulting from water, gas, or other fluids artificially introduced into geothermal formations; (3) heat or other associated

energy found in geothermal formations; and (4) any byproduct derived therefrom.

(h) "Byproduct" means (1) any mineral or minerals (exclusive of oil, hydrocarbon gas, and helium), which are found in solution or developed in association with geothermal steam and which have a value of less than 75 per centum of the value of the geothermal steam or are not, because of quantity, quality, or technical difficulties in extraction and production, of sufficient value to warrant extraction and production by themselves, and (2) commercially demineralized water.

(i) "Participating area" means that part of the unit area which is deemed to be productive from a horizon or deposit and to which production would be allocated in the manner described in the unit agreement assuming that all lands are committed to the unit agreement.

(j) "Waste" means (1) physical waste, as that term is generally understood; (2) waste of reservoir energy through inefficiency, improper use of or unnecessary dissipation of reservoir energy; (3) the location, spacing, drilling, equipping, operating, or producing of any geothermal well or wells in a manner which causes or tends to cause reduction in the quantity of geothermal energy ultimately recoverable from a reservoir under prudent and workmanlike operations or which tends to cause unnecessary or excessive surface or subsurface loss or destruction of geothermal energy; and (4) the inefficient transmission of geothermal energy from the source (wellhead) to point of utilization.

(k) "Directionally drilled well" means the deviation of a well bore from the vertical or from its normal course in an intended predetermined direction or course with respect to the points of the compass. Directionally drilled well shall not include a well deviated for the purpose of straightening a hole that has become crooked in the normal course of drilling or holes deviated at random without regard to compass direction in an attempt to sidetrack a portion of the hole on account of mechanical difficulty in drilling.

(l) "Geothermal resources operational order" or "GRO order" means a formal numbered order, issued by the Supervisor, with the prior approval of the Chief, Conservation Division, Geological Survey, which implements the regula-

tions in this part and applies to operations in an area, region, or any significant portion thereof.

(m) "Producible well" means a well which is capable of producing geothermal resources in commercial quantities.

(n) "Commercial quantities" means quantities sufficient to provide a return after all variable costs of production have been met.

(o) "Area of operations" means that area of the leased lands which is required for exploration, development, and producing operations, and which is delineated on a map or plat which is made a part of the approved plan of operations. It encompasses the area generally needed for wells, flow lines, separators, surge tanks, drill pads, mud pits, workshops, and other such facilities used for on-project geothermal resources field exploration, development, and production operations.

JURISDICTION AND FUNCTIONS OF SUPERVISOR

§ 270.10 Jurisdiction.

Drilling and production operations, handling and measurement of production, determination and collection of royalty and, in general, all operations conducted on a geothermal lease are subject to the regulations in this part and the applicable regulations contained in 43 CFR Group 3200, and are under the jurisdiction of the Supervisor for the area in which the leased land is situated, subject to the supervisory authority of the Secretary and the Director.

§ 270.11 General functions.

The Supervisor is authorized and directed to carry out the provisions of this part. He will require compliance with the terms of geothermal leases, with the regulations in this part and the applicable regulations in 43 CFR Group 3200, and with the applicable statutes. He shall act on all applications, requests, and notices required in this part. In executing his functions under this part the Supervisor shall ensure that all operations, within the area of operations, will conform to the best practice and are conducted in such manner as to protect the deposits of the leased lands and to result in the maximum ultimate recovery of geothermal resources, with minimum waste, and are consistent with the principles of the use of the land for other purposes and of the pro-

tection of the environment. Inasmuch as conditions in one area may vary widely from conditions in another area, the regulations in this part are intended to be general in nature. Detailed procedures hereunder in any particular area will be covered by GRO orders. The requirements to be set forth in GRO orders relating to surface resources or uses will be coordinated with the appropriate land management agency. The Supervisor may issue oral orders to govern lease operations, but such orders shall be confirmed in writing by the Supervisor as promptly as possible. The Supervisor may issue other orders and rules to govern the development and method for production of a deposit, field, or area. Prior to the issuance of GRO orders and other orders and rules and the approval of any plan of operations, the Supervisor shall, consult with, and receive comments from appropriate Federal and State agencies, lessees, operators, or interested parties. Before permitting other operations on the leased land, the Supervisor shall determine if the lease is in good standing, whether the lessee is authorized to conduct operations, has filed an acceptable bond, and has an approved plan of operations.

§ 270.12 Regulation of operations.

The Supervisor shall inspect and supervise operations performed under the regulations in this part to: (a) Prevent waste and damage to formations or deposits containing geothermal resources; (b) prevent unnecessary damage to other natural resources; (c) prevent degradation of the water quality; (d) protect air quality, water quality, and other environmental qualities; and (e) prevent injury to life or property. The Supervisor shall issue such GRO orders as are necessary to accomplish these purposes.

§ 270.13 Required samples, tests, and surveys.

When necessary or advisable, the Supervisor shall require that adequate samples be taken and tests or surveys be made using acceptable techniques, without cost to the lessor, to determine the identity and character of formations; the presence of geothermal resources, water, or reservoir energy; the quantity and quality of geothermal resources, water or reservoir energy; the amount and direction of deviation of any well from the vertical; formation, cas-

ing, and tubing pressures, temperatures, rate of heat and fluid flow, and whether operations are conducted in a manner looking to the protection of the interests of the lessor.

§ 270.14 Drilling and abandonment of wells.

The Supervisor shall require that drilling be conducted in accordance with the terms of the lease, GRO orders, and the regulations in this part and 43 CFR Group 3200; and shall require plugging and abandonment of any well or wells no longer necessary for operations in accordance with plans approved or prescribed by him. Upon the failure of a lessee to comply with any requirement under this section, the Supervisor is authorized to perform the work at the expense of the lessee and the surety.

§ 270.15 Well spacing and well casing.

The Supervisor shall approve proposed well-spacing and well-casing programs or prescribe such modifications to the programs as he determines necessary for proper development, giving consideration to such factors as: (a) Topographic characteristics of the area; (b) hydrologic, geologic and reservoir characteristics of the field; (c) the number of wells that can be economically drilled to provide the necessary volume of geothermal resources for the intended use; (d) protection of correlative rights; (e) minimizing well interference; (f) unreasonable interference with multiple use of lands; and (g) protection of the environment, including ground water quality.

§ 270.16 Values and payment for losses.

The Supervisor shall determine the value of production accruing to the lessor where there is loss through waste or failure to drill and produce protection wells on the lease, and the compensation due to the lessor as reimbursement for such loss. Payment for such losses will be paid when billed.

§ 270.17 Suspension of operations and production.

(a) On receipt of an application filed in accordance with 43 CFR 3205.3-8 for suspension of operations or production, or both, under a producing geothermal lease (or for relief from any drilling or producing requirements of such a lease), the Supervisor may, if he deems the suspension or relief warranted, approve the application.

(b) In the interest of conservation, the Supervisor may, on his own motion, suspend operations or production, or both, on any geothermal lease.

(c) Where operations or production, or both, under a lease, have been suspended, the Supervisor may approve resumption of operations or production either on his own motion or upon written request by the lessee or his agent.

(d) Whenever it appears from facts adduced by or furnished to the Supervisor that the interest of the lessor requires additional drilling or producing operations, he may, by written notice, order the beginning or resumption of such operations.

(e) See 43 CFR 3205.3-7 and 3205.3-8 for regulations concerning requests to waive, suspend, or reduce payments of rental or royalty, and extensions of leases on which operations or production have been suspended.

REQUIREMENTS FOR LESSEES (INCLUDING OPERATORS)

§ 270.30 Lease terms, regulations, waste, damage, and safety.

(a) The lessee shall comply with the lease terms, lease stipulations, applicable laws and regulations and any amendments thereof, GRO orders, and other written or oral orders of the Supervisor. All oral orders (to be confirmed in writing as provided in § 270.11) are effective when issued unless otherwise specified.

(b) The lessee shall take all reasonable precautions to prevent: (1) Waste; (2) damage to any natural resource including trees and other vegetation, fish and wildlife and their habitat; (3) injury or damage to persons, real or personal property; and (4) any environmental pollution or damage.

(c) Any significant effect on the environment created by the lessee's operations or failure to comply with environmental standards shall be reported to the Supervisor within 24 hours and confirmed in writing within 30 days.

§ 270.31 Designation of operator or agent.

In all cases where operations are not conducted by the lessee but are to be conducted under authority of an unapproved operating agreement, assignment or other arrangement, a "designation of operator" shall be submitted to the Supervisor, in a manner and form approved by him, prior to commencement of operations. Such a designation will be

accepted as authority of the operator or his local representative to act for the lessee and to sign any papers or reports required under the regulations in this part. All changes of address and any termination of the authority of the operator shall be immediately reported, in writing, to the Supervisor.

§ 270.32 Local agent.

When required by the Supervisor, the lessee shall designate a local representative empowered to receive notices and comply with orders of the Supervisor issued pursuant to the regulations in this part.

§ 270.33 Drilling and producing obligations.

(a) The lessee shall diligently drill and produce such wells as are necessary to protect the lessor from loss by reason of production on other properties, or in lieu thereof, with the consent of the Supervisor, shall pay a sum determined by the Supervisor as adequate to compensate the lessor for failure to drill and produce any such well.

(b) The lessee shall promptly drill and produce such other wells as the Supervisor may require in order that the lease be developed and produced in accordance with good operating practices. (See 43 CFR 3204.5.)

§ 270.34 Plan of operation.

Prior to commencing any operations on the leased lands or on any lands covered by a unit or cooperative agreement, the lessee shall submit in triplicate and obtain the approval of the Supervisor and the appropriate land management agency of a plan of operation for the area. Such plan shall include:

(a) The proposed location of each well including a layout showing the position of the mud tanks, reserve pits, cooling towers, pipe racks, etc.;

(b) Existing and planned access and lateral roads;

(c) Location and source of water supply and road building material;

(d) Location of camp sites, air-strips, and other supporting facilities;

(e) Other areas of potential surface disturbance;

(f) The topographic features of the land and the drainage patterns;

(g) Methods for disposing of waste material;

(h) A narrative statement describing the proposed measures to be taken for

protection of the environment, including, but not limited to, the prevention or control of (1) fires, (2) soil erosion, (3) pollution of the surface and ground water, (4) damage to fish and wildlife or other natural resources, (5) air and noise pollution, and (6) hazards to public health and safety during lease activities;

(i) All pertinent information or data which the Supervisor may require to support the plan of operations for the utilization of geothermal resources and the protection of the environment;

(j) Provisions for monitoring deemed necessary by the Supervisor to ensure compliance with these regulations for the operations under the plan; and

(k) A requirement for the collection of data concerning the existing air and water quality, noise, seismic and land subsidence activities, and ecological system of the leased lands covering a period of at least one year prior to the submission of a plan for production. The informations required for paragraphs (a) through (f) of this section may be shown on a map or maps available from State or Federal sources.

§ 270.35 Subsequent well operations.

After completion of all operations authorized under any previously approved notice or plan, the lessee shall not begin to redrill, repair, deepen, plug back, shoot, or plug and abandon any well, make casing tests, alter the casing or liner, stimulate production, change the method of recovering production, or use any formation or well for brine or fluid injection until he has submitted to the Supervisor in writing a new plan of operations and has received written approval from him. However, in an emergency a lessee may take action to prevent damage without receiving prior approval from the Supervisor, but in such cases the lessee shall report his action to the Supervisor as soon as possible.

§ 270.36 Well designations.

The lessee shall mark each derrick upon commencement of drilling operations and each producing or suspended well in a conspicuous place with his name or the name of the operator, the serial number of the lease, the number and location of the well. Whenever possible, the well location shall be described by section or tract, township, range, and by quarter-quarter section or lot. The lessee shall take all necessary means and precautions to preserve these markings.

§ 270.37 Well records.

(a) The lessee shall keep for each well at his field headquarters or at other locations conveniently available to the Supervisor, accurate and complete records of all well operations including production, drilling, logging, directional well surveys, casing, perforation, safety devices, redrilling, deepening, repairing, cementing, alterations to casing, plugging, and abandoning. The records shall contain a description of any unusual malfunction, condition or problem; all the formations penetrated; the content and character of mineral deposits and water in each formation; thermal gradients, temperatures, pressures, analyses of geothermal waters, the kind, weight, size, grade, and setting depth of casing; and any other pertinent information.

(b) The lessee shall, within 30 days after completion of any well, transmit to the Supervisor copies of the records of all operations in a form prescribed by the Supervisor.

(c) Upon request of the Supervisor, the lessee will furnish: (1) legible, exact copies of service company reports on cementing, perforating, acidizing, analyses of cores, electrical, and temperature logs, chemical analyses of steam and waters, or other similar services; (2) other reports and records of operations in the manner and form prescribed by the Supervisor.

§ 270.38 Samples, tests, and surveys.

(a) The lessee, when required by the Supervisor, will make adequate sampling, tests and/or surveys using acceptable techniques, to determine the presence, quantity, quality, and potential of geothermal resources, mineral deposits, or water; the amount and direction of deviation of any well from the vertical; and/or formation temperatures and pressures, casing, tubing, or other pressures and such other facts as the Supervisor may require. Such tests or surveys shall be made without cost to the lessor.

(b) The lessee shall, without cost to the lessor, take such formation samples or cores to determine the identity and character of any formation as are required and prescribed by the Supervisor.

§ 270.39 Directional survey.

The Supervisor may require an angular deviation and directional survey to be made of the finished hole of each directionally drilled well. The survey shall be made at the risk and expense of the

lessee unless requested by an offset lessee, and then, at the risk and expense of the offset lessee. A copy of the survey shall be furnished the Supervisor.

§ 270.40 Well control.

The lessee or operator shall: (a) Take all necessary precautions to keep all wells under control at all times; (b) utilize trained and competent personnel; (c) utilize properly maintained equipment and materials; and (d) use operating practices which insure the safety of life and property. The selection of the types and weights of drilling fluids and provisions for controlling fluid temperatures, blowout preventers, and other surface control equipment and materials, casing and cementing programs, etc., to be used shall be based on sound engineering principles and shall take into account apparent geothermal gradients, depths and pressures of the various formations to be penetrated and other pertinent geologic and engineering data and information about the area.

§ 270.41 Pollution.

The lessee shall comply with all Federal and State standards with respect to the control of all forms of air, land, water, and noise pollution, including, but not limited to, the control of erosion and the disposal of liquid, solid, and gaseous wastes. The Supervisor may, in his discretion, establish additional and more stringent standards, and, if he does so, the lessee shall comply with those standards. Plans for disposal of well effluents must take into account effects on surface and subsurface waters, plants, fish and wildlife and their habitats, atmosphere, or any other effects which may cause or contribute to pollution, and such plans must be approved by the Supervisor before action is taken under them.

§ 270.42 Noise abatement.

The lessee shall minimize noise during exploration, development and production activities. Welfare of the operating personnel and the public must not be affected as a consequence of the noise created by the expanding gases. The method and degree of noise abatement shall be as approved by the Supervisor.

§ 270.43 Land subsidence and seismic activity.

In the event subsidence or seismic activity results from the production of geothermal resources, as determined by

monitoring activities by the lessee or a government body, the lessee shall take such action as required by the lease or by the Supervisor.

§ 270.44 Pits and sumps.

The lessee shall provide and use pits and sumps of adequate capacity and design to retain all materials and fluids necessary to drilling, production, or other operations unless otherwise specified by the Supervisor. In no event shall the contents of a pit or sump be allowed to: (a) Contaminate streams, artificial canals or waterways, ground waters, lakes or rivers; (b) adversely affect environment, persons, plants, fish and wildlife and their habitats; or (c) damage the aesthetic values of the property or adjacent properties. When no longer needed, pits and sumps are to be filled and covered and the premises restored to a near natural state, as prescribed by the Supervisor.

§ 270.45 Well abandonment.

The lessee shall promptly plug and abandon any well on the leased land that is not used or useful. No well shall be abandoned until its lack of capacity for further profitable production of geothermal resources has been demonstrated to the satisfaction of the Supervisor. Before abandoning a producible well, the lessee shall submit to the Supervisor a statement of reasons for abandonment and his detailed plans for carrying on the necessary work. The detailed plans shall provide for the preservation of fresh water aquifers and for the prevention of intrusion into such aquifers of saline or polluted waters. A producible well may be abandoned only after receipt of written approval by the Supervisor. No well shall be plugged and abandoned until the manner and method of plugging have been approved or prescribed by the Supervisor. Equipment shall be removed, and premises at the well site shall be restored as near as reasonably possible to its original condition immediately after plugging operations are completed on any well except as otherwise authorized by the Supervisor. Drilling equipment shall not be removed from any suspended drilling well without taking adequate measures to close the well and protect the subsurface resources.

§ 270.46 Accidents.

The lessee shall take all reasonable precautions to prevent accidents and

shall notify the Supervisor within 24 hours of all accidents on the leased land, and shall submit a full report thereon within 15 days.

§ 270.47 Workmanlike operations.

The lessee shall carry on all operations and maintain the property at all times in a workmanlike manner, having due regard for the conservation of the property and the environment and for the health and safety of employees. The lessee shall remove from the property or store, in an orderly manner, all scrap or other materials not in use.

§ 270.48 Departure from orders.

The Supervisor may prescribe or approve either in writing or orally, with prompt written confirmation, variances from the requirements of GRO orders and other orders issued pursuant to these regulations, when such variances are necessary for the proper control of a well, conservation of natural resources, protection of human health and safety, property, or the environment. The Supervisor shall inform appropriate Federal and State agencies, of any action taken under this section.

§ 270.49 Sales contracts.

The lessee shall file with the Supervisor within 30 days after the effective date of the sales contract a copy of any contract for the disposal of geothermal resources from the lease.

§ 270.50 Royalty payments.

The lessee shall pay all royalties as due under the terms of the lease. Payments of royalties are due not later than the last day of the month following the month in which the resource is sold or utilized, and shall be by check, bank draft, or money order, drawn to the order of the United States Geological Survey.

MEASUREMENT OF PRODUCTION AND COMPUTATION OF ROYALTIES

§ 270.60 Measurement of geothermal resources.

The lessee shall measure or gauge all production in accordance with methods approved by the Supervisor. The quantity and quality of all production shall be determined in accordance with the standard practices, procedures, and specifications generally used in industry. All measuring equipment shall be tested periodically and, if found defective, the

Supervisor will determine the quantity and quality of production from the best evidence available.

§ 270.61 Determination of content of byproducts.

The lessee shall periodically furnish the Supervisor the results of periodic tests showing the content of byproducts in the produced geothermal fluid and gases. Such tests shall be taken as specified by the Supervisor and by the method of testing approved by him.

§ 270.62 Value of geothermal production for computing royalties.

(a) The value of geothermal production from the leased premises for the purpose of computing royalties shall be the reasonable value of the energy and the byproducts attributable to the lease as determined by the Supervisor. In determining the reasonable value of the energy and the byproducts the Supervisor shall consider:

- (1) The highest price paid for a majority of the production of like quality in the same field or area;
 - (2) The total consideration accruing to the lessee from any disposition of the geothermal production;
 - (3) The value of the geothermal production used by the lessee;
 - (4) The value and cost of alternate available energy sources and byproducts;
 - (5) The cost of exploration and production, exclusive of taxes;
 - (6) The economic value of the resource in terms of its ultimate utilization;
 - (7) Production agreements between producer and purchaser; and
 - (8) Any other matters which he may consider relevant.
- (b) Under no circumstances shall the value of any geothermal production for the purposes of computing royalties be less than:

- (1) The total consideration accruing to the lessee from the sale thereof in cases where geothermal resources are sold by the lessee to another party;
- (2) That amount which is the value of the end product attributable to the geothermal resource produced from a particular lease where geothermal resources are not sold by the lessee before being utilized, but are instead directly used in manufacturing, power production, or other industrial activity; or

(3) When a part of the resource only is utilized by the lessee and the remainder sold, the sum of the value of the end product attributable to the geothermal resource and the sales price received for the geothermal resources

§ 270.63 Computation of royalties.

(a) The value of geothermal production from a particular lease as determined pursuant to § 270.62 hereof, shall be apportioned between geothermal steam, heat, and other forms of energy and the byproducts.

(b) The royalties payable shall be the sum of (1) the amount resulting from the multiplication of the value attributable to the geothermal steam, heat, and other forms of energy by the royalty rate set for such forms of geothermal energy in the lease and (2) the amount resulting from the multiplication of the value attributable to byproducts by the royalty rate for byproducts set in the lease.

§ 270.64 Commingling production.

The supervisor may authorize a lessee to commingle production from wells on his lease with production from other leases held by him or by other lessees subjects to such conditions as he may prescribe.

REPORTS TO BE MADE BY ALL LESSEES (INCLUDING OPERATORS)

§ 270.70 General requirements.

Information required to be submitted in accordance with the regulations in this part shall be furnished as directed by the Supervisor. Copies of forms can be obtained from the Supervisor and must be filed with that official within the time limit prescribed.

When forms or reports other than those referred to in the regulations in this part may be necessary, instructions for the filing of such forms or reports will be given by the Supervisor.

§ 270.71 Application for permit to drill, redrill, deepen, or plug-back.

(a) A permit to drill, redrill, deepen, or plug-back a well on Federal lands must be obtained from the Supervisor before the work is begun. The application for the permit, which shall be filed in triplicate with the Supervisor, shall state the location of the well in feet, and direction from the nearest section or tract lines as shown on the official plat of survey or protracted surveys; the altitude of the ground and derrick floor above sea level

and how it was determined, and should be accompanied by a proposed plan of operations as required by these regulations.

(b) The proposed drilling and casing plan shall be outlined in detail under the heading "Details of Work" in the applications referred to herein, and shall describe the type of tools and equipment to be used, the proposed depth to which the well will be drilled, the estimated depths to the top of important markers, the estimated depths at which water, geothermal resources, or other mineral resources are expected, the proposed casing program (including the size and weight of casing), the depth at which each string is to be set, and the amount of cement and mud to be used, the drilling method and type of circulating media (water, mud, foam, air or combinations thereof), the type of blowout prevention equipment to be used, the proposed coring, logging, or other program (such as drilling time log and sample description) to be used to determine the formations penetrated and the proposed program for determining geothermal gradients and the sampling and analysis of geothermal resources.

(c) Each application shall be accompanied by a plat showing the surface and expected bottomhole locations and the distances from the nearest section or tract lines as shown on the official plat of survey or protracted surveys. The scale shall not be less than 2,000 feet to 1 inch.

(d) Each application should be accompanied by supporting structural and hydrologic information based on available geologic and geophysical data.

§ 270.72 Sundry notices and reports on wells.

(a) Any written notice of intention to do work or to change plans previously approved must be filed with the Supervisor in triplicate, unless otherwise directed, and must be approved by him before the work is begun. If, in case of emergency, any notice is given orally or by wire, and approval is obtained, the transaction shall be confirmed in writing. A subsequent report of the work performed must also be filed with the Supervisor.

(b) Casing test: Notice shall be given in advance to the Supervisor or his representative of the date and time when the operator expects to make a casing test. Later, by agreement, the exact time

shall be fixed. In the event of casing failure during the test, the casing must be repaired or replaced or recemented as required by the Supervisor or his representative. The results of the test must be reported within 30 days after making a casing test. The report must describe the test completely and state the amount of mud and cement used, the lapse of time between running and cementing the casing and making the test, and the method of testing.

(c) Repairs or conditioning of well: Before the repairing or conditioning of a well, a notice setting forth in detail the plan of work must be filed with, and approved by, the Supervisor. A detailed report of the work accomplished and the methods employed, including all dates, and the results of such work must be filed within 30 days after completion of the repair work.

(d) Well stimulation: Before the lessee commences stimulation of a well by any means, a notice, setting forth in detail the plan of work, must be filed with and approved by the Supervisor. The notice shall name the type of stimulant and the amount to be used. A report showing the amount of stimulant used and the production rate before and after stimulation must be filed within 30 days from completion of the work.

(e) Altering casing in a well: Notice of intention to run a liner or to alter the casing by pulling or perforating by any means must be filed with and approved by the Supervisor before the work is started. This notice shall set forth in detail the plan of work. A report must be filed within 30 days after completion of the work stating exactly what was done and the results obtained.

(f) Notice of intention to abandon well: Before abandonment work is begun on any well, whether a drilling well, geothermal resources well, water well, or so-called dry hole, notice of intention to abandon shall be filed with, and approved by, the Supervisor. The notice must be accompanied by a complete log, in duplicate, of the well to date, provided the complete log has not been filed previously, and must give a detailed statement of the proposed work, including such information as kind, location, and length of plugs (by depths), plans for mudding, cementing, shooting, testing, and removing casing, and any other pertinent information.

(g) Subsequent report of abandonment: After a well is abandoned or

plugged, a subsequent record of work done must be filed with the Supervisor. This report shall be filed separately within 30 days after the work is done. The report shall give a detailed account of the manner in which the abandonment or plugging work was carried out, including the nature and quantities of materials used in plugging and the location and extent (by depths) of the plugs of different materials; records of any tests or measurements made, and of the amount, size, and location (by depths) of casing left in the well; and a detailed statement of the volume of mud fluid used, and the pressure attained in mudding. If an attempt was made to part any casing, a complete report of the methods used and results obtained must be included.

§ 270.73 Log and history of well.

The lessee shall furnish in duplicate to the Supervisor, not later than 30 days after the completion of each well, a complete and accurate log and history, in chronological order, of all operations conducted on the well. A log shall be compiled for geologic information from cores or formations samples and duplicate copies of such log shall be filed. Duplicate copies of all electric logs, temperature surveys, water and steam analyses, hydrologic or heat flow tests, or direction surveys, if run, shall be furnished.

§ 270.74 Monthly report of operations.

A report of operations for each lease must be made for each calendar month, beginning with the month in which drilling operations are initiated. The report must be filed in duplicate with the Supervisor on or before the last day of the month following the month for which the report is filed unless an extension of time for the filing of the report is granted by the Supervisor. The report shall disclose accurately all operations conducted on each well during the month, the status of operations on the last day of the month, and a general summary of the status of operations on the leased lands. The report must be submitted each month until the lease is terminated or until omission of the report is authorized by the Supervisor. The report shall show for each calendar month:

(a) The lease serial number or the unit or communitization agreement number which shall be inserted in the upper right corner;

(b) Each well listed separately by number, and its location by 40-acre subdivision (quarter-quarter section or lot), section number, township, range, and meridian;

(c) The number of days each well was produced, whether steam or hot water or both were produced, and the number of days each input well was in operation, if any;

(d) The quantity of production and any byproducts obtained from each well, if any are recovered;

(e) The depth of each active or suspended well, and the name, character, and depth of each formation drilled during the month, the date and reason for every shutdown, the names and depths of important formation changes, the amount and size of any casing run since the last report, the dates and results of any tests or environmental monitoring conducted, and any other noteworthy information on operations not specifically provided for in the form.

(f) The footnote must be completely filled out as required by the Supervisor. If no sales were made during the calendar month, the report must so state.

§ 270.75 Monthly report of sales and royalty.

A report of sales and royalty for each productive lease must be filed each month once sales of production are made even though sales may be intermittent, unless otherwise authorized by the Supervisor. Total volumes of geothermal resources produced and sold, the value of production, and the royalty due the lessor must be shown. If byproducts are being recovered, the same requirement shall be applicable. This report is due on or before the last day of the month following the month in which production was obtained and sold or utilized, together with the royalties due the United States. Payment or royalty is to be made pursuant to § 270.50 unless otherwise authorized by the Supervisor.

§ 270.76 Annual report of compliance with environmental protection requirements.

The lessee shall submit annually a report giving a full account of the actions taken to comply with the appropriate Federal and State regulations or requirements of the Supervisor pertaining to the protection of the surface and subsurface environment. This report shall include but is not limited to such matters as:

- (a) Noise abatement;
- (b) Water quality;
- (c) Air quality;
- (d) Erosion control;
- (e) Subsidence and seismic activity;
- (f) Rehabilitation activities;
- (g) Waste disposal; and
- (h) Environmental effects on flora and fauna.

§ 270.77 Annual report of expenditures for diligent exploration operations.

A report of expenditures for exploration operations conducted during a lease year must be submitted annually to the Supervisor in order that such expenditures may be considered for qualification as diligent exploration pursuant to 43 CFR 3203.5.

§ 270.78 Notice of intent and permit to conduct exploration operations other than drilling, see 43 CFR 3209.0-5 (a)).

(a) A permit to conduct exploration operations on the leased lands or on any lands covered by a unit or cooperative agreement must be obtained from the Supervisor before the work is begun. The form used for exploration operations conducted pursuant to 43 CFR 3209 will be acceptable.

(b) The notice of intent shall be filed in triplicate with the Supervisor and shall include:

(1) The name and address, including zip code, both of the person, association, or corporation for whom the operations will be conducted and of the person who will be in charge of the actual exploration activities;

(2) A statement that the signers agree that exploration operations will be conducted pursuant to the terms and conditions listed on the approved form;

(3) A brief description of the type of operations which will be undertaken;

(4) The approximate dates of the commencement and termination of exploration operations; and

(5) A plan of operation as required by § 270.34 covering paragraphs (a) through (h), of this section.

(c) The lessee shall, within 30 days after completion of such operations, furnish the Supervisor two copies of the records of the operation.

§ 270.79 Public inspection of records.

Geologic and geophysical interpretations, maps, and data required to be submitted under this part shall not be

available for public inspection without the consent of the lessee so long as the lease remains in effect.

PROCEDURE IN CASE OF VIOLATION OF THE REGULATIONS OR LEASE TERMS

§ 270.80 Noncompliance with regulations or lease terms.

(a) Whenever a lessee or anyone acting under his authority fails to comply with the provisions of the regulations or lease terms, the Supervisor shall give the lessee notice to remedy any defaults or violations. Failure by the lessee to perform or commence the necessary remedial action pursuant to the notice may result in a shut down of operations and may result in referral of the matter to the authorized offices of the Bureau of Land Management for action pursuant to 43 CFR 3244.3.

(b) The Supervisor is authorized to shut down any operations which he determines are unsafe or are causing or can cause pollution.

APPEALS

§ 270.90 Appeals.

Appeals from final orders or decisions issued under the regulations in this part shall be made in the manner provided in 30 CFR Part 290.

PART 271—GEOTHERMAL RESOURCES UNIT PLAN REGULATIONS (INCLUDING SUGGESTED FORMS)

GENERAL PROVISIONS

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Sec.

271.17 Form of change in unit operator by assignment.

AUTHORITY: Section 18 of the Geothermal Steam Act of 1970, 84 Stat. 1566, (30 U.S.C. 1017) (see 43 CFR Subpart 3244).

SOURCE: 38 FR 35073, Dec. 21, 1973, unless otherwise noted.

§ 271.1 Introduction.

The regulations in this part prescribe the procedure to be followed and the requirements to be met by holders of Federal geothermal leases (see § 271.2d) and their representatives who wish to unite with each other, or jointly or separately with others, in collectively adopting and operating under a cooperative or unit plan for the development of any geothermal resources pool, field, or like area, or any part thereof. Such agreements may be initiated by lessees, or where in the interest of conserving natural resources they are deemed necessary they may be required by the Director.

§ 271.2 Definitions.

The following terms, as used in this part or in any agreement approved under the regulations in this part, shall have the meanings here indicated unless otherwise defined in such agreement:

(a) *Unit agreement.* An agreement or plan of development and operation for the production and utilization of separately owned interests in the geothermal resources made subject thereto as a single consolidated unit without regard to separate ownerships and which provides for the allocation of costs and benefits on a basis defined in the agreement or plan.

(b) *Cooperative agreement.* An agreement or plan of development and operations for the production and utilization of geothermal resources made subject thereto in which separate ownership units are independently operated without allocation of production.

(c) *Agreement.* For convenience, the term "agreement" as used in the regulations in this part refers to either a unit or a cooperative agreement as defined in paragraphs (a) and (b) of this section unless otherwise indicated.

(d) *Geothermal lease.* A lease issued under the act of December 24, 1970 (84 Stat. 1566), pursuant to the leasing regulations contained in 43 CFR Part 3200, and, unless the context indicates otherwise, "lease" means a geothermal lease.

(e) *Unit area.* The area described in a unit agreement as constituting the land logically subject to development under such agreement.

(f) *Unitized land.* The part of a unit area committed to a unit agreement.

(g) *Unitized substances.* Deposits of geothermal resources recovered from unitized land by operation under and pursuant to a unit agreement.

(h) *Unit operator.* The person, association, partnership, corporation, or other business entity designated under a unit agreement to conduct operations on unitized land as specified in such agreement.

(i) *Participating area.* That part of the Unit Area which is deemed to be productive from a horizon or deposit and to which production would be allocated in the manner described in the unit agreement assuming that all lands are committed to the unit agreement.

(j) *Working interest.* The interest held in geothermal resources or in lands containing the same by virtue of a lease, operating agreement, fee title, or otherwise, under which, except as otherwise provided in a unit or cooperative agreement, the owner of such interest is vested with the right to explore for, develop, produce, and utilize such resources. The right delegated to the unit operator as such by the unit agreement is not to be regarded as a working interest.

(k) *Secretary.* The Secretary of the Interior or any person duly authorized to exercise powers vested in that officer.

(l) *Director.* The Director of the U.S. Geological Survey.

(m) *Supervisor.* A representative of the Secretary, subject to the direction and supervisory authority of the Director, the Chief, Conservation Division, Geological Survey, and the appropriate Regional Conservation Manager, Conservation Division, Geological Survey, authorized and empowered to regulate operations and to perform other duties prescribed in the regulations in this part or any subordinate of such representative acting under his direction.

§ 271.3 Designation of area.

An application for designation of an area as logically subject to development and/or operation under a unit or cooperative agreement may be filed, in triplicate, by any proponent of such an agreement through the Supervisor. Each copy of the application shall be accompanied by a map or diagram on a scale of not less

than 1 inch to 1 mile, outlining the area sought to be designated under this section. The Federal, State, and privately owned land should be indicated on said map by distinctive symbols or colors and Federal geothermal leases and lease applications should be identified by serial number. Geological information, including the results of geophysical surveys, and such other information as may tend to show that unitization is necessary and advisable in the public interest should be furnished in triplicate. Geological and geophysical information and data so furnished will not be available for public inspection, as provided by 5 U.S.C. section 552(b), without the consent of the proponent. The application and supporting data will be considered by the Director and the applicant will be informed of the decision reached. The designation of an area, pursuant to an application filed under this section, shall not create an exclusive right to submit an executed agreement for such area, nor preclude the inclusion of such area or any part thereof in another unit area.

§ 271.4 Preliminary consideration of agreements.

The form of unit agreement set forth in § 271.12 is acceptable for use in unproved areas. The use of this form is not mandatory, but any proposed departure therefrom should be submitted with the application submitted under § 271.3 for preliminary consideration and for such revision as may be deemed necessary. In areas proposed for unitization in which a discovery of geothermal resources has been made, or where a cooperative agreement is contemplated, the proposed agreement should be submitted with the application submitted under § 271.3 for preliminary consideration and for such revision as may be deemed necessary. The proposed form of agreement should be submitted in triplicate and should be plainly marked to identify the proposed variances from the form of agreement set forth in § 271.12.

§ 271.5 State land.

Where State-owned land is to be included in the unit, approval of the agreement by appropriate State officials should be obtained prior to its submission to the Department for approval of the executed agreement. When authorized by the laws of the State in which the unitized land is situated, provisions may be made in the agreement accepting State law, to

the extent that they are applicable to non-Federal unitized land.

§ 271.6 Qualifications of unit operator.

A unit operator must qualify as to citizenship in the same manner as those holding interests in geothermal leases issued under the Geothermal Steam Act of 1970. The unit operator may be an owner of a working interest in the unit area or such other party as may be selected by the owners of working interests and approved by the Supervisor. The unit operator shall execute an acceptance of the duties and obligations imposed by the agreement. No designation of, or change in, a unit operator will become effective unless and until approved by the Supervisor, and no such approval will be granted unless the unit operator is deemed qualified to fulfill the duties and obligations prescribed in the agreement.

§ 271.7 Parties to unit or cooperative agreement.

The owners of any rights, title, or interest in the geothermal resources deposits to be developed and operated under an agreement can be regarded as proper parties to a proposed agreement. All such owners must be invited to join as parties to the agreement. If any owner fails or refuses to join the agreement, the proponent of the agreement should declare this to the Supervisor and should submit evidence of efforts made to obtain joinder of such owner and the reasons for nonjoinder.

§ 271.8 Approval of an executed unit or cooperative agreement.

(a) A duly executed unit or cooperative agreement will be approved by the Secretary, or his duly authorized representative, upon a determination that such agreement is necessary or advisable in the public interest and is for the purpose of properly conserving the natural resources. Taking into account the environmental consequences of the action. Such approval will be incorporated in a certificate appended to the agreement. No such agreement will be approved unless at least one of the parties is a holder of a Federal lease embracing lands being committed to the agreement and unless the parties signatory to the agreement hold sufficient interests in the area to give effective control of operations therein.

(b) Where a duly executed agreement is submitted for Departmental approval, a minimum of six signed counterparts should be filed. The same number of counterparts should be filed for documents supplementing, modifying, or amending an agreement, including change of operator, designation of new operator, and notice of surrender, relinquishment, or termination.

(c) The address of each signatory party to the agreement should be inserted below the party's signature. Each signature should be attested by at least one witness, if not notarized. Corporate or other signatures made in a representative capacity must be accompanied by evidence of the authority of the signatories to act unless such evidence is already a matter of record in the United States Geological Survey. (The parties may execute any number of counterparts of the agreement with the same force and effect as if all parties signed the same document, or may execute a ratification or consent in a separate instrument with like force and effect.)

(d) Any modification of an approved agreement will require approval of the Secretary or his duly authorized representative under procedures similar to those cited in paragraph (a) of this section.

§ 271.9 Filing of papers and number of counterparts.

(a) All proposals and supporting papers, instruments, and documents submitted under this part should be filed with the Supervisor, unless otherwise provided in this part or otherwise instructed by the Director.

(b) Plans of development and operation, plans of further development and operation, and proposed participating areas and revisions thereof should be submitted in quadruplicate.

(c) Each application for approval of a participating area, or revision thereof, should be accompanied by three copies of a substantiating geologic and engineering report, structure contour map or maps, cross-section or other pertinent data.

(d) Other instruments or documents submitted for approval should be submitted for approval in sufficient number to permit the approving official to return at least one approved counterpart.

§ 271.10 Bonds.

In lieu of separate bonds required for each Federal lease committed to a unit agreement, the unit operator may furnish and maintain a collective corporate surety bond or a personal bond conditioned upon faithful performance of the duties and obligations of the agreement and the terms of the leases subject thereto. Personal bonds shall be accompanied by a deposit of negotiable Federal securities in a sum equal at their par value to the amount of the bond and by a proper conveyance to the Secretary of full authority to sell such securities in case of default in the performance of the obligations assumed. The liability under the bond shall be for such amount as the Supervisor shall determine to be adequate to protect the interests of the United States. Additional bond coverage may be required whenever deemed necessary by the Supervisor. The bond must be filed with and accepted by the Bureau of Land Management before operations will be approved. A form of corporate surety bond is set forth in § 271.15. In case of changes of unit operator, a new bond must be filed or a consent of surety to the change in principal under the existing bond must be furnished.

§ 271.11 Appeals.

Appeals from final orders or decisions issued under the regulations in this part shall be made in the manner provided in 30 CFR Part 290.

§ 271.12 Form of unit agreement for unproved areas.

UNIT AGREEMENT FOR THE DEVELOPMENT AND OPERATION OF THE _____ UNIT AREA
COUNTY OF _____
STATE OF _____

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----- UNIT AGREEMENT
----- COUNTY -----

This Agreement entered into as of the _____ day of _____, 19___, by and between the parties subscribing, ratifying, or consenting hereto, and herein referred to as the "parties hereto".

WITNESSETH: Whereas the parties hereto are the owners of working, royalty, or other geothermal resources interests in land subject to this Agreement; and

Whereas the Geothermal Steam Act of 1970 (84 Stat. 1566), hereinafter referred to as the "Act", authorizes Federal lessees and their representatives to unite with each other, or jointly or separately with others, in collectively adopting and operating under a cooperative or unit plan of development or operation of any geothermal resources pool, field, or like area, or any part thereof, for the purpose of more properly conserving the natural resources thereof, whenever determined and certified by the Secretary of the Interior to be necessary or advisable in the public interest; and

Whereas the parties hereto hold sufficient interest in the _____ Unit Area covering the land herein described to effectively control operations therein; and

Whereas, it is the purpose of the parties hereto to conserve natural resources, prevent waste, and secure other benefits obtainable through development and operations of the area subject to this Agreement under the terms, conditions, and limitations herein set forth;

Now, therefore, in consideration of the premises and the promises herein contained, the parties hereto commit to this agreement their respective interests in the below-

defined Unit Area, and agree severally among themselves as follows:

ARTICLE I—ENABLING ACT AND REGULATIONS

1.1 The Act and all valid pertinent regulations, including operating and unit plan regulations, heretofore or hereafter issued thereunder are accepted and made a part of this agreement as to Federal lands.

1.2 As to non-Federal lands, the geothermal resources operating regulations in effect as of the effective date hereof governing drilling and producing operations, not inconsistent with the laws of the State in which the non-Federal land is located, are hereby accepted and made a part of this agreement.

ARTICLE II—DEFINITIONS

2.1 The following terms shall have the meanings here indicated:

(a) *Geothermal lease.* A lease issued under the act of December 24, 1970 (84 Stat. 1566), pursuant to the leasing regulations contained in 43 CFR Group 3200 and, unless the context indicates otherwise, "lease" shall mean a geothermal lease.

(b) *Unit area.* The area described in Article III of this Agreement.

(c) *Unit Operator.* The person, association, partnership, corporation, or other business entity designated under this Agreement to conduct operations on Unitized Land as specified herein.

(d) *Participating area.* That part of the Unit Area which is deemed to be productive from a horizon or deposit and to which production would be allocated in the manner described in the unit agreement assuming that all lands are committed to the unit agreement.

(e) *Working interest.* The interest held in geothermal resources or in lands containing the same by virtue of a lease, operating agreement, fee title, or otherwise, under which, except as otherwise provided in this Agreement, the owner of such interest is vested with the right to explore for, develop, produce and utilize such resources. The right delegated to the Unit Operator as such by this Agreement is not to be regarded as a Working Interest.

(f) *Secretary.* The Secretary of the Interior or any person duly authorized to exercise powers vested in that officer.

(g) *Director.* The Director of the U.S. Geological Survey.

(h) *Supervisor.* A representative of the Secretary, subject to the direction and supervisory authority of the Director, the Chief, Conservation Division, Geological Survey, and the appropriate Regional Conservation Manager, Conservation Division, Geological Survey, authorized and empowered to regulate operations and to perform other duties prescribed in the regulations in this part or any subordinate of such representative acting under his direction.

ARTICLE III—UNIT AREA AND EXHIBITS

3.1 The area specified on the map attached hereto marked "Exhibit A" is hereby designated and recognized as constituting the Unit Area, containing ----- acres, more or less.

The above-described Unit Area shall when practicable be expanded to include therein any additional lands or shall be contracted to exclude lands whenever such expansion or contraction is deemed to be necessary or advisable to conform with the purposes of this Agreement.

3.2 Exhibit A attached hereto and made a part hereof is a map showing the boundary of the Unit Area, the boundaries and identity of tracts and leases in said area to the extent known to the Unit Operator.

3.3 Exhibit B attached hereto and made a part hereof is a schedule showing to the extent known to the Unit Operator the acreage, percentage, and kind of ownership of geothermal resources interests in all lands in the Unit Area.

3.4 Exhibits A and B shall be revised by the Unit Operator whenever changes in the Unit Area render such revision necessary, or when requested by the Supervisor, and not less than five copies of the revised Exhibits shall be filed with the Supervisor.

ARTICLE IV—CONTRACTION AND EXPANSION OF UNIT AREA

4.1 Unless otherwise specified herein, the expansion and/or contraction of the Unit Area contemplated in Article 3.1 hereof shall be effected in the following manner:

(a) Unit Operator either on demand of the Director or on its own motion and after prior concurrence by the Director, shall prepare a notice of proposed expansion or contraction describing the contemplated changes in the boundaries of the Unit Area, the reasons therefore, and the proposed effective date thereof, preferably the first day of a month subsequent to the date of notice.

(b) Said notice shall be delivered to the Supervisor, and copies thereof mailed to the last known address of each Working Interest Owner, Lessee, and Lessor whose interests are affected, advising that 30 days will be allowed for submission to the Unit Operator of any objections.

(c) Upon expiration of the 30-day period provided in the preceding item (b) hereof, Unit Operator shall file with the Supervisor evidence of mailing of the notice of expansion or contraction and a copy of any objections thereto which have been filed with the Unit Operator, together with an application in sufficient number, for approval of such expansion or contraction and with appropriate joinders.

(d) After due consideration of all pertinent information, the expansion or contraction shall, upon approval by the Supervisor, be-

come effective as of the date prescribed in the notice thereof.

4.2 **Unitized Leases, insofar as they cover any lands which are excluded from the Unit Area under any of the provisions of this Article IV may be maintained and continued in force and effect in accordance with the terms, provisions, and conditions contained in the Act, and the lease or leases and amendments thereto, except that operations and/or production under this Unit Agreement shall not serve to maintain or continue the excluded portion of any lease.**

4.3 **All legal subdivisions of unitized lands (i.e., 40 acres by Governmental survey or its nearest lot or tract equivalent in instances of irregular surveys), no part of which is entitled to be within a Participating Area on the fifth anniversary of the effective date of the initial Participating Area established under this Agreement, shall be eliminated automatically from this Agreement effective as of said fifth anniversary and such lands shall no longer be a part of the Unit Area and shall no longer be subject to this Agreement unless diligent drilling operations are in progress on an exploratory well on said fifth anniversary, in which event such lands shall not be eliminated from the Unit Area for as long as exploratory drilling operations are continued diligently with not more than four (4) months time elapsing between the completion of one exploratory well and the commencement of the next exploratory well.**

4.4 **An exploratory well, for the purposes of this Article IV is defined as any well, regardless of surface location, projected for completion in a zone or deposit below any zone or deposit for which a Participating Area has been established and is in effect, or any well, regardless of surface location, projected for completion at a subsurface location under Unitized Lands not entitled to be within a Participating Area.**

4.5 **In the event an exploratory well is completed during the four (4) months immediately preceding the fifth anniversary of the initial Participating Area established under this Agreement, lands not entitled to be within a Participating Area shall not be eliminated from this Agreement on said fifth anniversary, provided the drilling of another exploratory well is commenced under an approved Plan of Operation within four (4) months after the completion of said well. In such event, the land not entitled to be in participation shall not be eliminated from the Unit Area so long as exploratory drilling operations are continued diligently with not more than four (4) months time elapsing between the completion of one exploratory well and the commencement of the next exploratory well.**

4.6 **With prior approval of the Supervisor, a period of time in excess of four (4) months may be allowed to elapse between the completion of one well and the commencement**

of the next well without the automatic elimination of nonparticipating acreage.

4.7 **Unitized lands proved productive by drilling operations which serve to delay automatic elimination of lands under this Article IV shall be incorporated into a Participating Area (or Areas) in the same manner as such lands would have been incorporated in such areas had such lands been proven productive during the year preceding said fifth anniversary.**

4.8 **In the event nonparticipating lands are retained under this Agreement after the fifth anniversary of the initial Participating Area as a result of exploratory drilling operations, all legal subdivisions of unitized land (i.e., 40 acres by Government survey or its nearest lot or tract equivalent in instances of irregular Surveys), no part of which is entitled to be within a Participating Area shall be eliminated automatically as of the 121 day, or such later date as may be established by the Supervisor, following the completion of the last well recognized as delaying such automatic elimination beyond the fifth anniversary of the initial Participating Area established under this Agreement.**

ARTICLE V—UNITIZED LAND AND UNITIZED SUBSTANCES

5.1 **All land committed to this Agreement shall constitute land referred to herein as "Unitized Land". All geothermal resources in and produced from any and all formations of the Unitized Land are unitized under the terms of this agreement and herein are called "Unitized Substances."**

ARTICLE VI—UNIT OPERATOR

6.1 ----- is hereby designated as Unit Operator and by signature hereto as Unit Operator agrees and consents to accept the duties and obligations of Unit Operator for the discovery, development, production, distribution and utilization of Unitized Substances as herein provided. Whenever reference is made herein to the Unit Operator, such reference means the Unit Operator acting in that capacity and not as an owner of interest in Unitized Substances, and the term "Working Interest Owner" when used herein shall include or refer to Unit Operator as the owner of a Working Interest when such an interest is owned by it.

ARTICLE VII—RESIGNATION OR REMOVAL OF UNIT OPERATOR

7.1 **Prior to the establishment of a Participating Area, hereunder, Unit Operator shall have the right to resign. Such resignation shall not become effective so as to release Unit Operator from the duties and obligations of Unit Operator or terminate Unit Operators rights, as such, for a period of six (6) months after notice of its intention to resign has been served by Unit Operator on all Working Interest Owners and the Su-**

ervisor, nor until all wells then drilled hereunder are placed in a satisfactory condition for suspension or abandonment whichever is required by the Supervisor, unless a new Unit Operator shall have been selected and approved and shall have taken over and assumed the duties and obligations of Unit Operator prior to the expiration of said period.

7.2 After the establishment of a Participating Area hereunder Unit Operator shall have the right to resign in the manner and subject to the limitations provided in 7.1 above.

7.3 The Unit Operator may, upon default or failure in the performance of its duties or obligations hereunder, be subject to removal by the same percentage vote of the owners of Working Interests as herein provided for the selection of a new Unit Operator. Such removal shall be effective upon notice thereof to the Supervisor.

7.4 The resignation or removal of Unit Operator under this Agreement shall not terminate its right, title, or interest as the owner of a Working Interest or other interest in Unitized Substances, but upon the resignation or removal of Unit Operator becoming effective, such Unit Operator shall deliver possession of all wells, equipment, material, and appurtenances used in conducting the unit operations to the new duly qualified successor Unit Operator or, if no such new unit operator is elected, to the common agent appointed to represent the Working Interest Owners in any action taken hereunder to be used for the purpose of conducting operations hereunder.

7.5 In all instances of resignation or removal, until a successor Unit Operator is selected and approved as hereinafter provided, the Working Interest Owners shall be jointly responsible for performance of the duties and obligations of Unit Operator, and shall not later than 30 days before such resignation or removal becomes effective appoint a common agent to represent them in any action to be taken hereunder.

7.6 The resignation of Unit Operator shall not release Unit Operator from any liability for any default by it hereunder occurring prior to the effective date of its resignation.

ARTICLE VIII—SUCCESSOR UNIT OPERATOR

8.1 If, prior to the establishment of a Participating Area hereunder, the Unit Operator shall resign as Operator, or shall be removed as provided in Article VII, a successor Unit Operator may be selected by vote of the owners of a majority of the Working Interests in Unitized Substances, based on their respective shares, on an acreage basis, in the Unitized Land.

8.2 If, after the establishment of a Participating Area hereunder, the Unit Operator shall resign as Unit Operator, or shall be removed as provided in Article VII, a successor Unit Operator may be selected by vote of the

owners of a majority of the Working Interests in Unitized Substances, based on their respective shares, on a participating acreage basis. Provided, that, if a majority but less than 60 percent of the Working Interest in the Participating Lands is owned by the party to this agreement, a concurring vote of one or more additional Working Interest Owners owning 10 percent or more of the Working Interest in the participating land shall be required to select a new Unit Operator.

8.3 The selection of a successor Unit Operator shall not become effective until

(a) The Unit Operator so selected shall accept in writing the duties, obligations and responsibilities of the Unit Operator, and

(b) The selection shall have been approved by the Supervisor.

8.4 If no successor Unit Operator is selected and qualified as herein provided, the Director at his election may declare this Agreement terminated.

ARTICLE IX—ACCOUNTING PROVISIONS AND UNIT OPERATING AGREEMENT

9.1 Costs and expenses incurred by Unit Operator in conducting unit operations hereunder shall be paid and apportioned among and borne by the owners of Working Interests; all in accordance with the agreement or agreements entered into by and between the Unit Operator and the owners of Working Interests, whether one or more, separately or collectively.

9.2 Any agreement or agreements entered into between the Working Interest Owners and the Unit Operator as provided in this Article, whether one or more, are herein referred to as the "Unit Operating Agreement".

9.3 The Unit Operating Agreement shall provide the manner in which the Working Interest Owners shall be entitled to receive their respective share of the benefits accruing hereto in conformity with their underlying operating agreements, leases, or other contracts, and such other rights and obligations, as between Unit Operator and the Working Interest Owners.

9.4 Neither the Unit Operating Agreement nor any amendment thereto shall be deemed either to modify any of the terms and conditions of this Agreement or to relieve the Unit Operator of any right or obligation established under this Agreement.

9.5 In case of any inconsistency or conflict between this Agreement and the Unit Operating Agreement, this Agreement shall govern.

9.6 Three true copies of any Unit Operating Agreement executed pursuant to this Article IX shall be filed with the Supervisor prior to approval of this Agreement.

ARTICLE X—RIGHTS AND OBLIGATIONS OF UNIT OPERATOR

10.1 The right, privilege, and duty of exercising any and all rights of the parties

hereto which are necessary or convenient for prospecting, producing, distributing or utilizing Unitized Substances are hereby delegated to and shall be exercised by the Unit Operator as provided in this Agreement in accordance with a Plan of Operations approved by the Supervisor.

10.2 Upon request by Unit Operator, acceptable evidence of title to geothermal resources interests in the Unitized Land shall be deposited with the Unit Operator, and together with this Agreement shall constitute and define the rights, privileges, and obligations of Unit Operator.

10.3 Nothing in this Agreement shall be construed to transfer title to any land or to any lease or operating agreement, it being understood that the Unit Operator, in its capacity as Unit Operator shall exercise the rights of possession and use vested in the parties hereto only for the purposes specified in this Agreement.

10.4 The Unit Operator shall take such measures as the Supervisor deems appropriate and adequate to prevent drainage of Unitized Substances from Unitized Land by wells on land not subject to this Agreement.

10.5 The Director is hereby vested with authority to alter or modify from time to time, in his discretion, the rate of prospecting and development and the quantity and rate of production under this Agreement.

ARTICLE XI—PLAN OF OPERATION

11.1 Concurrently with the submission of this Agreement for approval, Unit Operator shall submit an acceptable Initial Plan of Operation. Said plan shall be as complete and adequate as the Supervisor may determine to be necessary for timely exploration and/or development and to insure proper protection of the environment and conservation of the natural resources of the Unit Area.

11.2 Prior to the expiration of the Initial Plan of Operation, or any subsequent Plan of Operation, Unit Operator shall submit for approval of the Supervisor an acceptable subsequent Plan of Operation for the Unit Area which, when approved by the Supervisor, shall constitute the exploratory and/or development drilling and operating obligations of Unit Operators under this Agreement for the period specified therein.

11.3 Any plan of Operation submitted hereunder shall

(a) Specify the number and locations of any wells to be drilled and the proposed order and time for such drilling, and

(b) To the extent practicable, specify the operating practices regarded as necessary and advisable for proper conservation of natural resources and protection of the environment in compliance with section 1.1.

11.4 The Plan of Operation submitted concurrently with this Agreement for approval shall prescribe that within six (6) months after the effective date hereof, the

Unit Operator shall begin to drill an adequate test well at a location approved by the Supervisor, unless on such effective date a well is being drilled conformably with the terms, hereof, and thereafter continue such drilling diligently until the ----- formation has been tested or until at a lesser depth unitized substances shall be discovered which can be produced in paying quantities (i.e., quantities sufficient to repay the costs of drilling, completing, and producing operations, with a reasonable profit) or the Unit Operator shall at any time establish to the satisfaction of the Supervisor that further drilling of said well would be unwarranted or impracticable, provided, however, that Unit Operator shall not in any event be required to drill said well to a depth in excess of ----- feet.

11.5 The Initial Plan of Operation and/or subsequent Plans of Operation submitted under this article shall provide that the Unit Operator shall initiate a continuous drilling program providing for drilling of no less than one well at a time, and allowing no more than six (6) months time to elapse between completion of one well and the beginning of the next well, until a well capable of producing Unitized Substances in paying quantities is completed to the satisfaction of the Supervisor or until it is reasonably proved that the Unitized Land is incapable of producing Unitized Substances in paying quantities in the formations drilled under this Agreement.

11.6 When warranted by unforeseen circumstances, the Supervisor may grant a single extension of any or all of the critical dates for exploratory drilling operations cited in the initial or subsequent Plans of Operation. No such extension shall exceed a period of four (4) months for each well, required by the Initial Plan of Operation.

11.7 Until there is actual production of Unitized Substances, the failure of Unit Operator to timely drill any of the wells provided for in Plans of Operation required under this Article XI or to timely submit an acceptable subsequent Plan of Operations, shall, after notice of default or notice of prospective default to Unit Operator by the Supervisor and after failure of Unit Operator to remedy any actual default within a reasonable time (as determined by the Supervisor), result in automatic termination of this Agreement effective as of the date of the default, as determined by the Supervisor.

11.8 Separate Plans of Operations may be submitted for separate productive zones, subject to the approval of the Supervisor. Also subject to the approval of the Supervisor, Plans of Operation shall be modified or supplemented when necessary to meet changes in conditions or to protect the interest of all parties to this Agreement.

ARTICLE XII—PARTICIPATING AREAS

12.1 Prior to the commencement of production of Unitized Substances, the Unit Oper-

ator shall submit for approval by the Supervisor a schedule (or schedules) of all land then regarded as reasonably proved to be productive from a pool or deposit discovered or developed; all lands in said schedule (or schedules), on approval of the Supervisor, will constitute a Participating Area (or Areas) effective as of the date production commences or the effective date of this Unit Agreement, whichever is later. Said schedule (or schedules) shall also set forth the percentage of Unitized Substances to be allocated, as herein provided, to each tract in the Participating Area (or Areas) so established and shall govern the allocation of production commencing with the effective date of the Participating Area.

12.2 A separate Participating Area shall be established for each separate pool or deposit of Unitized Substances or for any group thereof which is produced as a single pool or deposit and any two or more Participating Areas so established may be combined into one, on approval of the Supervisor. The effective date of any Participating Area established after the commencement of actual production of Unitized Substances shall be the first of the month in which is obtained the knowledge or information on which the establishment of said Participating Area is based, unless a more appropriate effective date is proposed by the Unit Operator and approved by the Supervisor.

12.3 Any Participating Area (or Areas) established under 12.1 or 12.2 above shall, subject to the approval of the Supervisor, be revised from time to time to include additional land then regarded as reasonably proved to be productive from the pool or deposit for which the Participating Area was established or to include lands necessary to unit operations, or to exclude land then regarded as reasonably proved not to be productive from the pool or deposit for which the Participating Area was established or to exclude land not necessary to unit operations and the schedule (or schedules) of allocation percentages shall be revised accordingly.

12.4 Subject to the limitation cited in 12.1 hereof, the effective date of any revision of a Participating Area established under Articles 12.1 or 12.2 shall be the first of the month in which is obtained the knowledge or information on which such revision is predicated, provided, however, that a more appropriate effective date may be used if justified by the Unit Operator and approved by the Supervisor.

12.5 No land shall be excluded from a Participating Area on account of depletion of the Unitized Substances, except that any Participating Area established under the provisions of this Article XIII shall terminate automatically whenever all operations are abandoned in the pool or deposit for which the Participating Area was established.

12.6 Nothing herein contained shall be construed as requiring any retroactive adjustment for production obtained prior to the effective date of the revision of a Participating Area.

ARTICLE XIII—ALLOCATION OF UNITIZED SUBSTANCES

13.1 All Unitized Substances produced from a Participating Area, established under this Agreement, shall be deemed to be produced equally on an acreage basis from the several tracts of Unitized Land within the Participating Area established for such production.

13.2 For the purpose of determining any benefits accruing under this Agreement, each Tract of Unitized Land shall have allocated to it such percentage of said production as the number of acres in the Tract included in the Participating Area bears to the total number of acres of Unitized Land in said Participating Area.

13.3 Allocation of production hereunder for purposes other than for settlement of the royalty obligations of the respective Working Interest Owners, shall be on the basis prescribed in the Unit Operating Agreement whether in conformity with the basis of allocation set forth above or otherwise.

13.4 The Unitized Substances produced from a Participating Area shall be allocated as provided herein regardless of whether any wells are drilled on any particular part or tract of said Participating Area.

ARTICLE XIV—RELINQUISHMENT OF LEASES

14.1 Pursuant to the provisions of the Federal leases and 43 CFR 3244.1, a lessee of record shall, subject to the provisions of the Unit Operating Agreement, have the right to relinquish any of its interests in leases committed hereto, in whole or in part; provided, that no relinquishment shall be made of interests in land within a Participating Area without the prior approval of the Director.

14.2 A Working Interest Owner may exercise the right to surrender, when such right is vested in it by any non-Federal lease, sublease, or operating agreement, provided that each party who will or might acquire the Working Interest in such lease by such surrender or by forfeiture is bound by the terms of this Agreement, and further provided that no relinquishment shall be made of such land within a Participating Area without the prior written consent of the non-Federal Lessor.

14.3 If as the result of relinquishment, surrender, or forfeiture the Working Interests become vested in the fee owner or lessor of the Unitized Substances, such owner may:

(1) Accept those Working Interest rights and obligations subject to this Agreement and the Unit Operating Agreement; or

(2) Lease the portion of such land as is included in a Participating Area established hereunder, subject to this Agreement and the Unit Operating Agreement; and provide for the independent operation of any part of such land that is not then included within a Participating Area established hereunder.

14.4 If the fee owner or lessor of the Unitized Substances does not, (1) accept the Working Interest rights and obligations subject to this Agreement and the Unit Operating Agreement, or (2) lease such lands as provided in 14.3 above within six (6) months after the relinquished, surrendered, or forfeited Working Interest becomes vested in said fee owner or lessor, the Working Interest benefits and obligations accruing to such land under this Agreement and the Unit Operating Agreement shall be shared by the owners of the remaining unitized Working Interests in accordance with their respective Working Interest ownerships, and such owners of Working Interests shall compensate the fee owner or lessor of Unitized Substances in such lands by paying sums equal to the rentals, minimum royalties, and royalties applicable to such lands under the lease or leases in effect when the Working Interests were relinquished, surrendered, or forfeited.

14.5 Subject to the provisions of 14.4 above, an appropriate accounting and settlement shall be made for all benefits accruing to or payments and expenditures made or incurred on behalf of any surrendered or forfeited Working Interest subsequent to the date of surrender or forfeiture, and payment of any moneys found to be owing by such an accounting shall be made as between the parties within thirty (30) days.

14.6 In the event no Unit Operating Agreement is in existence and a mutually acceptable agreement cannot be consummated between the proper parties, the Supervisor may prescribe such reasonable and equitable conditions of agreement as he deems warranted under the circumstances.

14.7 The exercise of any right vested in a Working Interest Owner to reassign such Working Interest to the party from whom obtained shall be subject to the same conditions as set forth in this Article XIV in regard to the exercise of a right to surrender.

ARTICLE XV—RENTALS AND MINIMUM ROYALTIES

15.1 Any unitized lease on non-Federal land containing provisions which would terminate such lease unless drilling operations are commenced upon the land covered thereby within the time therein specified or rentals are paid for the privilege of deferring such drilling operations, the rentals required thereby shall, notwithstanding any other provisions of this Agreement, be deemed to accrue as to the portion of the lease not included within a Participating

Area and become payable during the term thereof as extended by this Agreement, and until the required drillings are commenced upon the land covered thereby.

15.2 Rentals are payable on Federal leases on or before the anniversary date of each lease year; minimum royalties accrue from the anniversary date of each lease year and are payable at the end of the lease year.

15.3 Beginning with the lease year commencing on or after ----- and for each lease year thereafter, rental or minimum royalty for lands of the United States subject to this Agreement shall be made on the following basis:

(a) An advance annual rental in the amount prescribed in unitized Federal leases, in no event creditable against production royalties, shall be paid for each acre or fraction thereof which is not within a Participating Area.

(b) A minimum royalty shall be charged at the beginning of each lease year (such minimum royalty to be due as of the last day of the lease year and payable within thirty (30) days thereafter) of \$2 an acre or fraction thereof, for all Unitized Acreage within a Participating Area as of the beginning of the lease year. If there is production during the lease year the deficit, if any, between the actual royalty paid and the minimum royalty prescribed herein shall be paid.

15.4 Rental or minimum royalties due on leases committed hereto shall be paid by Working Interest Owners responsible therefor under existing contracts, laws, and regulations, or by the Unit Operator.

15.5 Settlement for royalty interest shall be made by Working Interest Owners responsible therefor under existing contracts, laws, and regulations, or by the Unit Operator, on or before the last day of each month for Unitized Substances produced during the preceding calendar month.

15.6 Royalty due the United States shall be computed as provided in the operating regulations and paid in value as to all Unitized Substances on the basis of the amounts thereof allocated to unitized Federal land as provided herein at the royalty rate or rates specified in the respective Federal leases.

15.7 Nothing herein contained shall operate to relieve the lessees of any land from their respective lease obligations for the payment of any rental, minimum royalty, or royalty due under their leases.

ARTICLE XVI—OPERATIONS ON NONPARTICIPATING LAND

16.1 Any party hereto owning or controlling the Working Interest in any Unitized Land having thereon a regular well location may, with the approval of the Supervisor and at such party's sole risk, costs, and expense, drill a well to test any formation of deposit

for which a Participating Area has not been established or to test any formation or deposit for which a Participating Area has been established if such location is not within said Participating Area, unless within 30 days of receipt of notice from said party of his intention to drill the well, the Unit Operator elects and commences to drill such a well in like manner as other wells are drilled by the Unit Operator under this Agreement.

16.2 If any well drilled by a Working Interest Owner other than the Unit Operator proves that the land upon which said well is situated may properly be included in a Participating Area, such Participating Area shall be established or enlarged as provided in this Agreement and the well shall thereafter be operated by the Unit Operator in accordance with the terms of this Agreement and the Unit Operating Agreement.

**ARTICLE XVII—LEASES AND CONTRACTS
CONFORMED AND EXTENDED**

17.1 The terms, conditions, and provisions of all leases, subleases, and other contracts relating to exploration, drilling, development, or utilization of geothermal resources on lands committed to this Agreement, are hereby expressly modified and amended only to the extent necessary to make the same conform to the provisions hereof, otherwise said leases, subleases, and contracts shall remain in full force and effect.

17.2 The parties hereto consent that the Secretary shall, by his approval hereof, modify and amend the Federal leases committed hereto and the regulations in respect thereto to the extent necessary to conform said leases and regulations to the provisions of this Agreement.

17.3 The development and/or operation of lands subject to this Agreement under the terms hereof shall be deemed full performance of any obligations for development and operation with respect to each and every separately owned tract subject to this Agreement, regardless of whether there is any development of any particular tract of the Unit Area.

17.4 Drilling and/or producing operations performed hereunder upon any tract of Unitized Lands will be accepted and deemed to be performed upon and for the benefit of each and every tract of Unitized Land.

17.5 Suspension of operations and/or production on all Unitized Lands pursuant to direction or consent of the Secretary or his duly authorized representative shall be deemed to constitute such suspension pursuant to such direction or consent as to each and every tract of Unitized Land. A suspension of operations and/or production limited to specified lands shall be applicable only to such lands.

17.6 Subject to the provisions of Article XV hereof and 17.10 of this Article, each lease,

sublease, or contract relating to the exploration, drilling, development, or utilization of geothermal resources of lands other than those of the United States committed to this Agreement, is hereby extended beyond any such term so provided therein so that it shall be continued for and during the term of this Agreement.

17.7 Subject to the lease renewal and the readjustment provision of the Act, any Federal lease committed hereto may, as to the Unitized Lands, be continued for the term so provided therein, or as extended by law. This subsection shall not operate to extend any lease or portion thereof as to lands excluded from the Unit Area by the contraction thereof.

17.8 Each sublease or contract relating to the operations and development of Unitized Substances from lands of the United States committed to this Agreement shall be continued in force and effect for and during the term of the underlying lease.

17.9 Any Federal lease heretofore or hereafter committed to any such unit plan embracing lands that are in part within and in part outside of the area covered by any such plan shall be segregated into separate leases as to the lands committed and the lands not committed as of the effective date of unitization.

17.10 In the absence of any specific lease provision to the contrary, any lease, other than a Federal lease, having only a portion of its land committed hereto shall be segregated as to the portion committed and the portion not committed, and the provisions of such lease shall apply separately to such segregated portions commencing as of the effective date hereof. In the event any such lease provides for a lump-sum rental payment, such payment shall be prorated between the portions so segregated in proportion to the acreage of the respective tracts.

17.11 Upon termination of this Agreement, the leases covered hereby may be maintained and continued in force and effect in accordance with the terms, provisions, and conditions of the Act, the lease or leases, and amendments thereto.

ARTICLE XVIII—EFFECTIVE DATE AND TERM

18.1 This Agreement shall become effective upon approval by the Secretary or his duly authorized representative and shall terminate five (5) years from said effective date unless,

(a) Such date of expiration is extended by the Director, or

(b) Unitized Substances are produced or utilized in commercial quantities in which event this Agreement shall continue for so long as Unitized Substances are produced or utilized in commercial quantities, or

(c) This Agreement is terminated prior to the end of said five (5) year period as heretofore provided.

18.2 This Agreement may be terminated at any time by the owners of a majority of the Working Interests, on an acreage basis, with the approval of the Supervisor. Notice of any such approval shall be given by the Unit Operator to all parties hereto.

ARTICLE XIX—APPEARANCES

19.1 Unit Operator shall, after notice to other parties affected, have the right to appear for and on behalf of any and all interests affected hereby before the Department of the Interior, and to appeal from decisions, orders or rulings issued under the regulations of said Department, or to apply for relief from any of said regulations or in any proceedings relative to operations before the Department of the Interior or any other legally constituted authority: *Provided, however,* That any interested parties shall also have the right, at its own expenses, to be heard in any such proceeding.

ARTICLE XX—NO WAIVER OF CERTAIN RIGHTS

20.1 Nothing contained in this Agreement shall be construed as a waiver by any party hereto of the right to assert any legal or constitutional right or defense pertaining to the validity or invalidity of any law of the State wherein lands subject to this Agreement are located, or of the United States, or regulations issued thereunder, in any way affecting such party or as a waiver by any such party of any right beyond his or its authority to waive.

ARTICLE XXI—UNAVOIDABLE DELAY

21.1 The obligations imposed by this Agreement requiring Unit Operator to commence or continue drilling or to produce or utilize Unitized Substances from any of the land covered by this Agreement, shall be suspended while, but only so long as, Unit Operator, despite the exercise of due care and diligence, is prevented from complying with such obligations, in whole or in part, by strikes, Acts of God, Federal or other applicable law, Federal or other authorized governmental agencies, unavoidable accidents, uncontrollable delays in transportation, inability to obtain necessary materials in open market, or other matters beyond the reasonable control of Unit Operator, whether similar to matters herein enumerated or not.

21.2 No unit obligation which is suspended under this section shall become due less than thirty (30) days after it has been determined that the suspension is no longer applicable.

21.3 Determination of creditable "Unavoidable Delay" time shall be made by the Unit Operator subject to approval of the Supervisor.

ARTICLE XXII—POSTPONEMENT OF OBLIGATIONS

22.1 Notwithstanding any other provisions of this Agreement, the Director, on his own

initiative or upon appropriate justification by Unit Operator, may postpone any obligation established by and under this Agreement to commence or continue drilling or to operate on or produce Unitized Substances from lands covered by this Agreement when in his judgement, circumstances warrant such action.

ARTICLE XXIII—NONDISCRIMINATION

23.1 In connection with the performance of work under this Agreement, the Operator agrees to comply with all of the provisions of section 202 (1) to (7) inclusive, of Executive Order 11246 (30 F.R. 12319), as amended by Executive Order 11375 (32 F.R. 14303), which are hereby incorporated by reference in this Agreement.

ARTICLE XXIV—COUNTERPARTS

24.1 This Agreement may be executed in any number of counterparts no one of which needs to be executed by all parties, or may be ratified or consented to by separate instruments in writing specifically referring hereto, and shall be binding upon all parties who have executed such a counterpart, ratification or consent hereto, with the same force and effect as if all such parties had signed the same document.

ARTICLE XXV—SUBSEQUENT JOINDER

25.1 If the owner of any substantial interest in geothermal resources under a tract within the Unit Area fails or refuses to subscribe or consent to this Agreement, the owner of the Working Interest in that tract may withdraw said tract from this Agreement by written notice delivered to the Supervisor and the Unit Operator prior to the approval of this Agreement by the Supervisor.

25.2 Any geothermal resources interests in lands within the Unit Area not committed hereto prior to approval of this Agreement may thereafter be committed by the owner or owners thereof subscribing or consenting to this Agreement, and, if the interest is a Working Interest, by the owner of such interest also subscribing to the Unit Operating Agreement.

25.3 After operations are commenced hereunder, the right of subsequent joinder, as provided in this Article XXV, by a working Interest Owner is subject to such requirements or approvals, if any, pertaining to such joinder, as may be provided for in the Unit Operating Agreement. Joinder to the Unit Agreement by a Working Interest Owner, at any time, must be accompanied by appropriate joinder to the Unit Operating Agreement, if more than one committed Working Interest Owner is involved, in order for the interest to be regarded as committed to this Unit Agreement.

25.4 After final approval hereof, joinder by a nonworking interest owner must be consented to in writing by the Working Interest

Owner committed hereto and responsible for the payment of any benefits that may accrue hereunder in behalf of such nonworking interest. A nonworking interest may not be committed to this Agreement unless the corresponding Working Interest is committed hereto.

25.5 Except as may otherwise herein be provided, subsequent joinders to this Agreement shall be effective as of the first day of the month following the filing with the Supervisor of duly executed counterparts of all or any papers necessary to establish effective commitment of any tract to this Agreement unless objection to such joinder is duly made within sixty (60) days by the Supervisor.

ARTICLE XXVI—COVENANTS RUN WITH THE LAND

26.1 The covenants herein shall be construed to be covenants running with the land with respect to the interest of the parties hereto and their successors in interest until this Agreement terminates, and any grant, transfer, or conveyance, of interest in land or leases subject hereto shall be and hereby is conditioned upon the assumption of all privileges and obligations hereunder by the grantee, transferee, or other successor in interest.

26.2 No assignment or transfer of any Working Interest or other interest subject hereto shall be binding upon Unit Operator until the first day of the calendar month after Unit Operator is furnished with the original, photostatic, or certified copy of the instrument of transfer.

ARTICLE XXVII—NOTICES

27.1 All notices, demands or statements required hereunder to be given or rendered to the parties hereto shall be deemed fully given if given in writing and personally delivered to the party or sent by postpaid registered or certified mail, addressed to such party or parties at their respective addresses set forth in connection with the signatures hereto or to the ratification or consent hereof or to such other address as any such party may have furnished in writing to party sending the notice, demand or statement.

ARTICLE XXVIII—LOSS OF TITLE

28.1 In the event title to any tract of Unitized Land shall fail and the true owner cannot be induced to join in this Agreement, such tract shall be automatically regarded as not committed hereto and there shall be such readjustment of future costs and benefits as may be required on account of the loss of such title.

28.2 In the event of a dispute as to title as to any royalty, Working Interest, or other interests subject hereto, payment or delivery on account thereof may be withheld without liability for interest until the dispute is finally settled: *Provided*, That, as to Federal

land or leases, no payments of funds due the United States shall be withheld, but such funds shall be deposited as directed by the Supervisor to be held as unearned money pending final settlement of the title dispute, and then applied as earned or returned in accordance with such final settlement.

ARTICLE XXIX—TAXES

29.1 The Working Interest Owners shall render and pay for their accounts and the accounts of the owners of nonworking interests all valid taxes on or measured by the Unitized Substances in and under or that may be produced, gathered, and sold or utilized from the land subject to this Agreement after the effective date hereof.

29.2 The Working Interest Owners on each tract may charge a proper proportion of the taxes paid under 29.1 hereof to the owners of nonworking interests in said tract, and may reduce the allocated share of each royalty owner for taxes so paid. No taxes shall be charged to the United States or the State of ----- or to any lessor who has a contract with his lessee which requires the lessee to pay such taxes.

ARTICLE XXX—RELATION OF PARTIES

30.1 It is expressly agreed that the relation of the parties hereto is that of independent contractors and nothing in this Agreement contained, expressed, or implied, nor any operations conducted hereunder, shall create or be deemed to have created a partnership or association between the parties hereto or any of them.

ARTICLE XXXI—SPECIAL FEDERAL LEASE STIPULATIONS AND/OR CONDITIONS

31.1 Nothing in this Agreement shall modify special lease stipulations and/or conditions applicable to lands of the United States. No modification of the conditions necessary to protect the lands or functions of lands under the jurisdiction of any Federal agency is authorized except with prior consent in writing whereby the authorizing official specifies the modification permitted.

In witness whereof, the parties hereto have caused this Agreement to be executed and have set opposite their respective names the date of execution.

Witnesses:

Witnesses:

Witnesses:

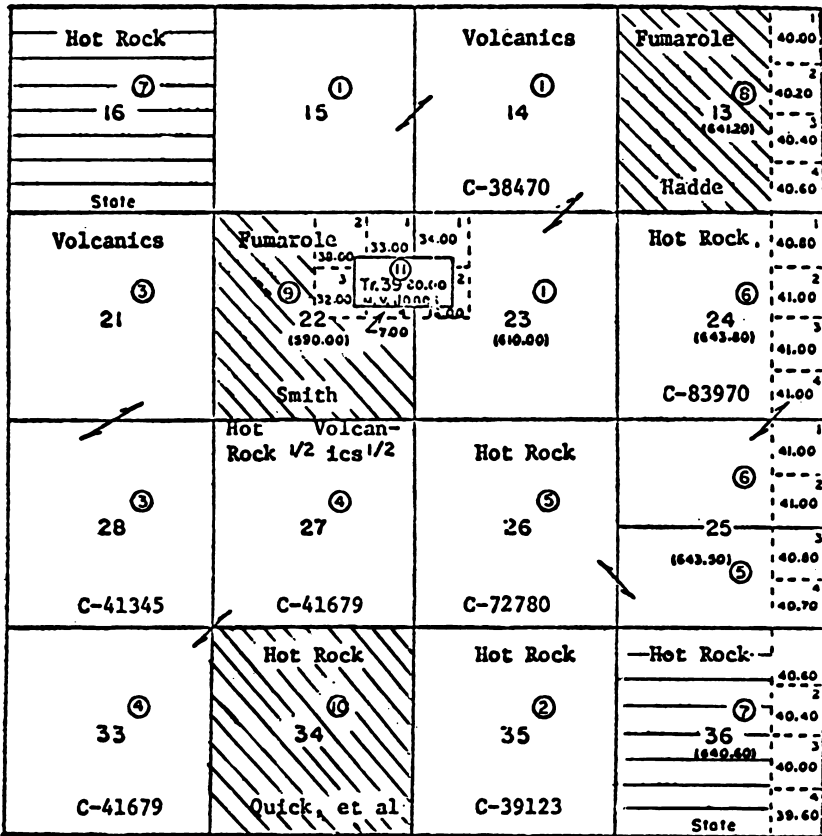
Unit operator (as unit operator and as working interest owner)
By -----
Working Interest Owners:

By -----
Other Interest Owners:

By -----




§ 271.13 Sample form of Exhibit A of unit agreement.

EXHIBIT A—BIG VAPOR UNIT AREA, T. 13 N., R. 10 W., M.D.M., California
R. 1 W.



T.
13
N.

① Means tract number as listed on Exhibit B

-  PUBLIC LAND
-  STATE LAND
-  PATENTED LAND

§ 271.14 Sample form of Exhibit B of unit agreement.

EXHIBIT B—BIG VAPOR UNIT AREA, NAPA COUNTY, CALIF., T. 13 N., R. 10 W.

| Tract No. | Description of land | No. of acres | Serial No. and expiration date of lease | Basic royalty and ownership percentage | Lessee of record | Working interest and percentage |
|--|--|--------------|---|--|---------------------------------------|--|
| <i>Federal land</i> | | | | | | |
| 1..... | Sec. 14: All. Sec. 15: All. Sec. 23: Lots 1, 2, S½, NE¼, E½NW¼. | 1,890.00 | 38470 July 31, 1982... | United States: All... | Volcanics, Inc..... | Volcanics, Inc: All. |
| 2..... | Sec. 35: All..... | 640.00 | 39123 July 31, 1982, | do..... | D. H. Boiler..... | Hot Rock Co.: All. |
| 3..... | Sec. 21: All..... | 1,280.00 | 41345 July 31, 1982, | do..... | C. S. Waters—50% D. F. Mann—50%... | Volcanics, Co.: 50%. Hot Rock Co.: 50%. |
| 4..... | Sec. 27: All..... | 1,280.00 | 41679 | do..... | H. C. Pipes..... | Fumarole Ltd.: All. |
| 5..... | Sec. 33: All. Sec. 26: All..... | 961.50 | 71278 Sept. 31, 1982, | do..... | Hot Rock Co..... | Hot Rock Co.: All. |
| 6..... | Sec. 25: S½. Sec. 24: All..... Sec. 25: N½. | 965.80 | 83970 Application. | do..... | H. C. Pipes..... | Do. |
| 6 Federal tracts 7,017.30 acres or 68.47% of unit area. | | | | | | |
| <i>California State land</i> | | | | | | |
| 7..... | Sec. 16: All. Sec. 36: All. | 1,280.60 | 65-67430..... | State of California: All. | Hot Rock Co..... | Hot Rock Co.: All. |
| 1 State tract 1,280.60 acres or 12.49% of unit area. | | | | | | |
| <i>Patented land</i> | | | | | | |
| 8..... | Sec. 13: All..... | 641.20 | June 30, 1979.. | I. B. Hadde: All..... | Fumarole, Ltd..... | Fumarole, Ltd.: All. |
| 9..... | Sec. 22: Lots 1, 2, 3, 4, S½, NW¼. | 590.00 | Feb. 28, 1981.. | J. P. Smith: All..... | do..... | Do. |
| 10..... | Sec. 34: All..... | 640.00 | Mar. 31, 1981.. | A. G. Quick: 75% P. T. Land: 25%. | Hot Rock Co..... | Hot Rock Co.: All. |
| 11..... | Tract 39..... | 80.00 | Apr. 30, 1981.. | M. V. Jones: All..... | Unleased..... | M. V. Jones: All. |
| 3 Patented tracts 1,951.20 acres or 19.04% of unit area. | | | | | | |
| Total... 11 tracts 10,249.10 acres in entire unit area. | | | | | | |

§ 271.15 Form of collective bond.

COLLECTIVE CORPORATE SURETY

Known all men by these presents, That we, _____ signing as Principal, for and on behalf of the record owners of unitized substances now or hereafter covered by the unit agreement for this _____, approved _____, (Name of Unit) _____, (Date) _____, as Surety are (Name and address of Surety) jointly and severally held and firmly bound unto the United States of America in the sum of _____ Dollars, (Amount of bond) lawful money of the United States, for the use and benefit of and to be paid to the United States and any entryman or patentee of any portion of the unitized land, heretofore entered or patented with the reservation of the geothermal resources deposits to the United States, for which payment well and truly to be made, we bind ourselves, and each of us, and each of our heirs, executors, administrators, successors, and assigns by these presents.

The condition of the foregoing obligation is such that, whereas the Secretary on _____ approved under the provisions (Date) of the Geothermal Steam Act of 1970, a unit agreement for the development and operation of the _____; (Name of Unit and State) and

Whereas said Principal and record owners of unitized substances, pursuant to said unit agreement, have entered into certain covenants and agreements as set forth therein, under which operations are to be conducted; and

Whereas said Principal as Unit Operator has assumed the duties and obligations of the respective owners of unitized substances as defined in said unit agreement; and

Whereas said Principal and surety agree to remain bound in the full amount of the bond for failure to comply with the terms of the unit agreement, and the payment of rentals, minimum royalties, and royalties due under the Federal leases committed to said unit agreement; and

Whereas the Surety hereby waives any right of notice of and agrees that this bond

may remain in force and effect notwithstanding:

(a) Any additions to or change in the ownership of the unitized substances herein described.

(b) Any suspension of the drilling or producing requirements or waiver, suspension or reduction of rental or minimum royalty payments or reduction of royalties pursuant to applicable laws or regulations thereunder; and

Whereas said Principal and Surety agree to the payment of compensatory royalty under the regulations of the Interior Department in lieu of drilling necessary offset wells in the event of drainage; and

Whereas nothing herein contained shall preclude the United States from requiring an additional bond at any time when deemed necessary:

Now, therefore, if the said Principal shall faithfully comply with all of the provisions of the above-identified unit agreement and with the terms of the leases committed thereto, when the above obligation is to be of no effect; otherwise to remain in full force and virtue.

Signed, sealed, and delivered this _____ day of _____, 19____, in the presence of:

Witnesses:

(Principal)

(Surety)

§ 271.16 Form of designation of successor unit operator by working interest owners.

Designation of successor Unit Operator _____, Unit Area, County of _____ State of _____, No. _____

This indenture, dated as of the _____ day of _____, 19____, by and between _____ hereinafter designated as "First Party," and the owners of unitized working interest, hereinafter designated as "Second Parties."

Witnesseth: Whereas under the provisions of the Geothermal Steam Act of December 24, 1970, 84 Stat. 1566, the Secretary on the _____ day of _____, 19____, approved a unit agreement for the _____ Unit Area, wherein _____ is designated as Unit Operator; and

Whereas said _____ has resigned as such Operator,¹ and the designation of a successor Unit Operator is now required pursuant to the terms thereof; and

Whereas First Party has been and hereby is designated by Second Parties as a Unit Operator, and said First Party desires to assume all the rights, duties, and obligations of Unit Operator under the said unit agreement.

¹ Where the designation of a successor Unit Operator is required for any reason other than resignation, such reason shall be substituted for the one stated.

Now, therefore, in consideration of the premises hereinbefore set forth and the promises hereinafter stated, the First Party hereby covenants and agrees to fulfill the duties and assume the obligations of Unit Operator under and pursuant to all the terms of the _____ unit agreement, and the Second Parties covenant and agree that, effective upon approval of this indenture by the Supervisor, of the Geological Survey, First Party shall be granted the exclusive right and privilege of exercising any and all rights and privileges and Unit Operator, pursuant to the terms and conditions of said unit agreement; said unit agreement being hereby incorporated herein by references and made a part hereof as fully and effectively as though said unit agreement were expressly set forth in this instrument.

In witness whereof, the parties hereto have executed this instrument as of the date hereinabove set forth.

(First Party)

(Witnesses)

(Second Party)

(Witnesses)

I hereby approve the foregoing indenture designating _____ as Unit Operator under the unit agreement for the _____ Unit Area, this _____ day of _____, 19____.

Supervisor,
U.S. Geological Survey.

§ 271.17 Form of change in unit operator by assignment.

Change in Unit Operator _____ unit Area, County of _____, State of _____, No. _____

This indenture, dated as of the _____ day of _____, 19____, by and between _____ hereinafter designated as "First Party," and _____ hereinafter designated as "Second Party."

Witnesseth: Whereas under the provisions of the Geothermal Steam Act of December 24, 1970, 84 Stat. 1566, the Secretary on the _____ day of _____, 19____, approved a unit agreement for the _____ Unit Area, wherein the First Party is designated as Unit Operator; and

Whereas the First Party desires to transfer, assign, release, and quitclaim, and the Second Party desires to assume all the rights, duties, and obligations of Unit Operator under the unit agreement; and

Whereas for sufficient and valuable consideration, the receipt whereof is hereby acknowledged, the First Party has transferred, conveyed and assigned all his/its rights under certain operating agreements involving lands within the area set forth in said unit agreement unto the Second Party:

Now, therefore, in consideration of the premises hereinbefore set forth, the First Party does hereby transfer, assign, release, and quitclaim unto Second Party all of First Party's rights, duties and obligations as Unit Operator under said unit agreement; and

Second Party hereby accept this assignment and hereby covenants and agrees to fulfill the duties and assume the obligations of Unit Operator under and pursuant to all the terms of said unit agreement to the full extent set forth in this assignment, effective upon approval of this indenture by the Supervisor of the Geological Survey; said unit agreement being hereby incorporated herein by reference and made a part hereof as fully and effectively as though said unit agreement were expressly set forth in this instrument.

In witness whereof, the parties hereto have executed this instrument as of the date hereinabove set forth.

(First Party)

(Witnesses)

(Second Party)

(Witnesses)

I hereby approve the foregoing indenture designated _____ as Unit Operator under the unit agreement for the _____ Unit Area, this _____ day of _____, 19____.

Supervisor, U.S.
Geological Survey

PART 290—APPEALS PROCEDURES

- Sec.
- 290.1 Scope.
- 290.2 Who may appeal.
- 290.3 Appeals to Director.
- 290.4 Oral argument.
- 290.5 Time limitations.
- 290.6 Appeals to the Commission of Indian Affairs.
- 290.7 Appeals to the Board of Land Appeals.

AUTHORITY: R.S. 463, 25 U.S.C. 2; R.S. 465, 25 U.S.C. 9; sec. 32, 41 Stat. 450, 30 U.S.C. 189; sec. 5, 44 Stat. 1058, 30 U.S.C. 285; sec. 10, 61 Stat. 915, 30 U.S.C. 359; sec. 5, 6, 67 Stat. 464, 465, 43 U.S.C. 1334, 1335; sec. 24, 84 Stat. 1573, 30 U.S.C. 1023.

SOURCE: 38 FR 10001, Apr. 23, 1973, unless otherwise noted.

§ 290.1 Scope.

The rules and procedures set forth herein apply to appeals to the Director, Geological Survey (and the Commissioner of Indian Affairs when Indian lands are involved) from final orders or decisions of officers of the Conservation Division, Geological Survey, issued under authority of the regulations in chapter II of this title, 43 CFR part 23, 43 CFR

subtitle B, chapter II, and 25 CFR part 177. This part also provides for the further right of appeal to the Board of Land Appeals in the Office of Hearings and Appeals, Office of the Secretary, from adverse decisions of the Director (and the Commissioner of Indian Affairs when Indian lands are involved) rendered under this part.

§ 290.2 Who may appeal.

Any party to a case adversely affected by a final order or decision of an officer of the Conservation Division of the Geological Survey shall have a right to appeal to the Director, Geological Survey, unless the decision was approved by the Secretary or the Director prior to promulgation.

§ 290.3 Appeals to Director.

(a) An appeal to the Director, Geological Survey, may be taken by filing a notice of appeal in the office of the official issuing the order or decision within 30 days from service of the order or decision. The notice of appeal shall incorporate or be accompanied by such written showing and argument on the facts and laws as the appellant may deem adequate to justify reversal or modification of the order or decision. Within the same 30-day period, the appellant will be permitted to file in the office of the official issuing the order or decision additional statements of reasons and written arguments or briefs.

(b) The officer with whom the appeal is filed shall transmit the appeal and accompanying papers to the Director, Geological Survey, with a full report and his recommendation on the appeal.

(c) The Director will review the record and render a decision in the case.

§ 290.4 Oral argument.

Oral argument in any case pending before the Director, Geological Survey, will be allowed on motion in the discretion of such officer and at a time to be fixed by him.

§ 290.5 Time limitations.

With the exception of the time fixed for filing a notice of appeal, the time for filing any document in connection with an appeal may be extended by the Director, Geological Survey. A request for an extension of time must be filed within the time allowed for filing of the document and must be filed in the same office in which the document in connection

with which the extension is requested must be filed.

§ 290.6 Appeals to the Commissioner of Indian Affairs.

The procedure for appeals under this part shall be followed for permits and leases on Indian land except that with respect to such permits and leases, the Commissioner of Indian Affairs will exercise the functions vested in the Director, Geological Survey.

§ 290.7 Appeals to the Board of Land Appeals.

Any party to a case adversely affected by a final decision of the Director, Geological Survey, or the Commissioner of Indian Affairs under this part shall have a right of appeal to the Board of Land Appeals in the Office of Hearings and Appeals, Office of the Secretary, in accordance with the procedures provided in 43 CFR, "Part 4, Department Hearings and Appeals Procedures."

CHAPTER III—BOARD OF MINE OPERATIONS APPEALS, DEPARTMENT OF THE INTERIOR

Part

301 Procedures under Federal Coal Mine Health and Safety Act of 1969.

302 Procedures under Federal Metal and Nonmetallic Mine Safety Act of 1966.

PART 301—PROCEDURES UNDER FEDERAL COAL MINE HEALTH AND SAFETY ACT OF 1969

§ 301.1 Cross reference.

For special rules applicable to hearings, appeals and other review procedures relating to mine health and safety, within the jurisdiction of the Board of Mine Operations Appeals, Office of Hearings and Appeals, see Subpart F of Part 4 of Subtitle A—Office of the Secretary of the Interior, of title 43 of the Code of Federal Regulations. Subpart A of Part 4 and all of the general rules in Subpart B of Part 4 not inconsistent with the special rules in Subpart F of Part 4 are also applicable to such hearings, appeals, and other review procedures.

(Sec. 508, Public Law 91-173, 83 Stat. 803, 30 U.S.C. section 957) [36 F.R. 17336, Aug. 23, 1971]

PART 302—PROCEDURES UNDER FEDERAL METAL AND NONMETALLIC MINE SAFETY ACT OF 1966

§ 302.1 Cross reference.

For special rules applicable to hearings, appeals and other review procedures relating to mine health and safety, within the jurisdiction of the Board of Mine Operations Appeals, Office of Hearings and Appeals, see Subpart F of Part 4 of Subtitle A—Office of the Secretary of the Interior, of title 43 of the Code of Federal Regulations. Subpart A of Part 4 and all of the general rules in Subpart B of Part 4 not inconsistent with the special rules in Subpart F of Part 4 are also applicable to such hearings, appeals, and other review procedures.

[36 F.R. 7185, Apr. 15, 1971]

CHAPTER IV—FEDERAL METAL AND NONMETALLIC MINE SAFETY BOARD OF REVIEW

Part 400 Procedural regulations.

PART 400—PROCEDURAL REGULATIONS

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| 400.70 | Appeals. |

AUTHORITY: The provisions of this Part 400 issued under subsection 10(h) of the "Federal Metal and Nonmetallic Mine Safety Act" of 1966 (80 Stat. 779; 30 U.S.C. 729(h);

SOURCE: The provisions of this Part 400 appear at 36 F.R. 20730, Oct. 28, 1971, unless otherwise noted.

Subpart A—General

§ 400.1 Definitions.

As used in this chapter:

"Act" means the Federal Metal and Nonmetallic Mine Safety Act of 1966 (80 Stat. 772; 30 U.S.C. 721-40). Section numbering used in the text of these regulations is as in Statutes at Large. U.S.C. citations are included parenthetically.

"Applicant" means the operator filing an application.

"Application" means an application of an operator to have an order made pursuant to section 8 or section 9 of the act (30 U.S.C. 727, 728) reviewed by the Board.

"Board" means Federal Metal and Nonmetallic Mine Safety Board of Review.

"Mine" has the meaning set out in section 2 of the act (30 U.S.C. 721).

"Operator" has the meaning set out in section 2 of the act (30 U.S.C. 721).

"Operator appointee" means an appointee to the Board whose background and experience made him representative of the viewpoint of metal and nonmetal-

lic mine operators, as required by subsection 10(c) of the act (30 U.S.C. 729(c)).

"Respondent" means the Secretary responding to the filing of an application.

"Secretary" has the meaning set out in section 2 of the act (30 U.S.C. 721).

"Worker appointee" means an appointee to the Board whose background and experience made him representative of the viewpoint of metal and nonmetallic mine workers as required by subsection 10(c) of the act (30 U.S.C. 729(c)).

§ 400.2 Scope and descriptive guidelines.

(a) These regulations shall govern proceedings under section 11 of the act (30 U.S.C. 730) to have orders issued pursuant to section 8 or section 9 of the act (30 U.S.C. 727, 728) reviewed by the Board.

(b) These regulations are to be construed and applied to achieve the objectives set forth in subsection 11(d) of the act (30 U.S.C. 730(d)) which provides *inter alia*, "In view of the need for prompt decision * * * all action * * * shall be taken as rapidly as practicable consistent with adequate consideration of the issues involved."

§ 400.3 Parties; intervention.

(a) The parties to any proceeding shall be the operator, who shall be designated as the applicant, and the Secretary, who shall be the respondent.

(b) The Board may in its discretion grant to any interested person, worker, or the collective bargaining agent affected by an order being reviewed the right to intervene and to participate in the review proceeding to the extent and in the manner the Board deems proper. However, issues may not be enlarged beyond those established by the operator's application, nor shall unreasonable delay or prolonging of proceedings be permitted. Intervention may be permitted at any time on motion, but an opportunity to meet all evidence presented will be given.

§ 400.4 Filing and form of documents.

(a) *Where to file.* All initial pleadings or documents in a proceeding described in this part shall be filed with the Federal Metal and Nonmetallic Mine Safety Board of Review, 1875 Connecticut Avenue NW., Suite 707, Washington, DC 20009. If a proceeding has been assigned for hearing, as these regulations else-

where provide, the parties may be notified of a different filing address; however, in any event, any papers filed at the above address will be promptly forwarded, and either address will be a proper place of filing.

(b) *When filed.* A document is filed only when received at a proper place of filing before 5 p.m.

(c) *Number of copies.* Except as otherwise provided, a party shall furnish an original and two copies of all documents filed.

(d) *Caption, title, and signature.* (1) All documents filed shall be captioned in the name of the operator of the mine to which the proceeding relates and in the name of the mine. After a docket number has been assigned to the proceeding, the caption shall contain such docket number. The caption may include the other information appropriate for identification of the proceeding.

(2) After the caption each such document shall contain a title which shall be descriptive of the document and which shall identify the party by whom the document is submitted.

(3) The original of all documents filed shall be signed at the end by the parties submitting the document, or, if the party is represented by an attorney, by such attorney. The address of the party or the attorney shall appear beneath the signature.

(e) *Retention of documents.* All documents, books, records, papers, etc., received in evidence in a hearing or submitted for the record in any proceeding will be retained with the official record of the proceeding. However, the withdrawal of original documents may be permitted while the case is pending before the Board upon the submission of true copies in lieu thereof. When a decision has become final and no longer appealable, the Board may, upon request and after notice to the other party, in its discretion permit the withdrawal of original exhibits or any part thereof, by the party entitled thereto. The substitution of true copies of exhibits or any part thereof may be required by the Board in its discretion as condition of granting permission for such withdrawal.

§ 400.5 Service; posting.

(a) The application for review shall be served upon the respondent by sending a copy of said document by registered or certified mail, return receipt requested, to the Secretary of the Interior, c/o Of-

file of the Solicitor, 18th and C Streets NW., Washington, DC 20240 and a copy to the District Director of the Metal and Nonmetal Mine Safety District Office of the district where the mine is located.

(b) Copies of all documents filed in any proceeding shall be served on the parties. All documents filed subsequent to the application for review may be served by personal service or by first class mail, unless otherwise ordered by the Board. Service by mail is complete upon mailing.

(c) Whenever a party is represented by an attorney who has signed a document filed on behalf of such party or otherwise enters an appearance on behalf of such party, service thereafter shall be made on the attorney.

(d) A copy of any application for review filed by an operator shall be posted on the bulletin board at the mine affected at the time it is filed, and all notices of time and place of hearing shall be similarly posted by the operator promptly on their receipt; if there is no mine bulletin board, the above documents shall be posted at a conspicuous place in the mine area.

(e) An operator initiating proceedings under these rules shall file return receipts as proof of service of the original application for review. A certificate of service shall accompany all documents filed; the certificate accompanying an application shall also include a statement that the application has been posted, as required by paragraph (d) of this section.

§ 400.6 Motions.

(a) Oral motions may be permitted during the course of a hearing, otherwise motions shall be in writing. Motions may be supported with documentary evidence including affidavits, transcripts of oral deposition, and answers to interrogatories.

(b) Unless otherwise ordered by the Board, a statement of opposition to a motion, supported by documentary evidence if desired, may be filed and served within 10 days of date of service. Unless requested by the Board, oral arguments on motions will not be permitted.

§ 400.7 Transcripts of hearings.

Hearings will be recorded verbatim and transcripts thereof shall be made when requested, costs of transcripts to be borne by the requesting person(s). If the reporting is done pursuant to contract

between the reporter and the Board, fees for transcripts will be at rates established by the contract.

§ 400.8 Subpoena power and witnesses.

(a) Any member of the Board may sign and issue subpoenas for the attendance and testimony of witnesses and the production of relevant papers, books, and documents. The Executive Secretary may sign and/or issue subpoenas as provided in § 400.56(c).

(b) Subpoenas may be served by any person who is not a party and is not less than 18 years of age. The original subpoena bearing a certificate of service shall be filed with the Board.

(c) Fees payable to witnesses:

(1) Witnesses subpoenaed by any party shall be paid the same fees and mileage as are paid for like service in the district courts of the United States. The witness fees and mileage shall be paid by the party at whose instance the witness appears.

(2) Any witness who attends any hearing or the taking of any deposition at the request of either party to the controversy without having been subpoenaed to do so shall be entitled to the same mileage and attendance fees, to be paid by such party, to which he would have been entitled if he had been first duly subpoenaed as a witness on behalf of such party. This paragraph does not apply to Government employees who are called as witnesses by the Government.

§ 400.9 Time.

(a) *Computation of time for filing and service.* Except as otherwise provided by law, in computing any period of time prescribed for filing and serving a document, the day upon which the decision or document to be appealed from or answered was served, or the day of any other event after which the designated period of time begins to run, is not to be included. The last day of the period so computed is to be included, unless it is a Saturday, Sunday, Federal legal holiday, or other nonbusiness day, in which event the period runs until the end of the next day which is not a Saturday, Sunday, Federal legal holiday, or other nonbusiness day. When the time prescribed or allowed is 7 days or less, intermediate Saturdays, Sundays, Federal legal holidays and other nonbusiness days shall be excluded in the computation.

(b) *Extensions of time.* A hearing date or the time for filing or serving any document may, on good cause shown, be extended by the Board, except for the time for filing a notice of appeal. A request for an extension of time must be filed within the time allowed for the filing or serving of the document.

Subpart B—Initiation of Proceedings and Preliminary Matters

§ 400.20 Application of operators.

(a) An operator notified of an order made pursuant to section 8 of the act (30 U.S.C. 727) may apply to the Board for annulment or revision of such order without seeking its annulment or revision under section 9 of the act (30 U.S.C. 728). An operator notified of an order made pursuant to section 9 of the act (30 U.S.C. 728) may apply to the Board for annulment or revision of such order. The operator must apply in writing and the application must meet the requirements of these rules as to filing, form, and manner of service and posting.

(b) The operator shall be designated as the applicant in such proceeding and the Secretary as the respondent. The application shall recite the order complained of and other facts sufficient to advise the Board of the nature of the proceeding. He may allege in such application:

(1) That danger as set out in such order does not exist at the time of filing of such application,

(2) That violation of a mandatory safety standard, as set out in such order, has not occurred,

(3) That such violation has been totally or partially abated,

(4) That the period of time within which such violation should be totally abated, as fixed in the findings upon which such order was based, was not reasonable, or

(5) That the area of the mine described in such order is not so affected at the time of the filing of such application.

§ 400.21 Time and place of hearing.

Immediately upon the filing of an application, the Board shall fix the time for the prompt hearing thereof. As soon thereafter as necessary arrangements are completed, the Board shall fix the place for such hearing. Prompt notice of the time and place of the hearing will be given the parties.

§ 400.22 Answer.

Within 10 days of service of an application on him, unless otherwise ordered by the Board, the respondent shall file and serve upon the applicant an answer to applicant's application. The answer shall be in sufficient factual detail to informatively meet the allegations contained in the application.

§ 400.23 Temporary relief.

Pending a hearing on the merits, the applicant may file with the Board a written request that the Board grant such temporary relief from an order issued pursuant to section 8 or section 9 of the act (30 U.S.C. 727, 728) as the Board may deem just and proper. Such temporary relief may be granted by the Board only after a hearing by the Board at which both the parties were afforded an opportunity to be heard, and only after ample notice was given to respondent of the filing of applicant's request and of the time and place of the hearing thereon as fixed by the Board.

§ 400.24 Accelerated procedure.

The applicant may file a written request based on extreme urgency to have proceedings under these rules accelerated and have the Board undertake to have the applicant's application heard and determined without regard to its normal position on the docket. Said request shall set forth:

(a) The reasons for urgency which shall include the number of workers, if any, which have been withdrawn from an affected area of the mine pursuant to the order under review and who are not at work elsewhere in the mine.

(b) How soon the applicant will be prepared to appear at a hearing on the merits, and (1) does the applicant wish to take oral depositions or serve interrogatories and (2) does the applicant feel that the filing of an answer by the respondent is necessary to his adequate preparation, and will he waive the filing of an answer.

(c) Such other matter as the applicant wishes to put in his petition. Proceedings will be accelerated to the extent the Board in its discretion feels the objectives of the act will be furthered, but no case will be unreasonably delayed to accelerate another and in no case will there be a hearing on the merits with less than 5 days' notice to the parties.

§ 400.25 Depositions.

(a) *When permitted:* The Board may, for good cause shown, order the taking of testimony of any person by deposition upon oral examination or written interrogatories for use as evidence for the purpose of discovery.

(b) *Order on depositions:* Unless otherwise stipulated by the parties when a deposition of a party is taken, the time, place, and manner of taking depositions shall be governed by the order of the Board.

(c) Written notice of the name of a witness and the time and place of taking his deposition must be served by the party taking such deposition on the other party 5 days prior to taking such deposition unless a different time is ordered by the Board.

§ 400.26 Interrogatories and production of documents.

(a) Either party may serve written interrogatories or a request for admission of facts upon the other party to a proceeding brought under these rules.

(b) A party served with written interrogatories shall answer such interrogatories within 15 days of service unless the proponent of the interrogatories agrees to a longer time or unless the Board by order specifies a different time or excuses the party from answering on good cause shown.

(c) For good cause shown, the Board may order a party to produce and permit inspection and copying or photographing of designated documents relevant to the proceeding.

Subpart C—Hearings

§ 400.36 General.

Hearings shall be conducted by the Board, or a panel of one or more members of the Board, at such time and place as the Board may order.

§ 400.37 Nature of hearings.

All hearings held under this act shall be public. Hearings will be recorded verbatim, and concise opening and closing statements may be made, before and after the presentation of evidence, and will be recorded. Briefs, and/or oral arguments (in addition to the aforementioned closing statements) may be presented to the Board prior to its rendering a decision only if the Board in its discretion so permits.

§ 400.38 Panel.

(a) The Chairman of the Board, with the concurrence of at least two members, including one worker appointee and one operator appointee, may order that a hearing be conducted by a panel of one or more members of the Board. The hearing will be conducted in a manner similar to a hearing before the Board, and the panel may:

(1) Rule on offers of proof and receive relevant evidence,

(2) Take depositions or have depositions taken when the ends of justice would be served,

(3) Regulate the course of the hearing,

(4) Hold conferences for settlement or simplification of the issues,

(5) Dispose of procedural request or similar matters,

(6) Rule on motions to intervene.

(b) The panel shall submit the transcript of such hearing to the entire Board for its action thereon.

(c) The order appointing the panel to hear a case shall designate the member of the panel who is to preside at a hearing.

(d) If a hearing is being conducted by the Board and all of its members are not present, it may at any time declare itself to be a panel and proceed accordingly.

§ 400.39 Preliminary rulings; different filing address.

(a) At any time after the filing of an application by an operator, the Chairman, with the concurrence of two other members of the Board, may designate a member of the Board to rule on preliminary matters related to the conducting of any hearing in that case, including motions for the taking of depositions, requests for the production of documents, requests for pretrial conferences, and the granting of continuances.

(b) If the Board believes that proceedings will be expedited, it may designate an address for the filing of documents different from that set out in § 400.4(a).

§ 400.40 Evidence and official notice.

(a) Any relevant evidence may be received in a hearing; however, the Board in its discretion may exclude evidence which is unreliable or unduly repetitious.

(b) The Board shall not make or cause to be made any inspection of a mine for the purpose of determining any pending application for review; however, the Board may require or receive evidence

in addition to that offered by the parties. Such evidence must be presented at a public hearing in the particular case in which it is to be considered and all parties shall be given a chance to cross-examine or rebut such evidence.

(c) Any party shall have the right to present his case or defense by oral or documentary evidence, to submit rebuttal evidence, and to conduct such cross-examination as may be required for a full disclosure of the facts.

(d) Official notice may be taken of any matter of which courts take judicial notice or any matter which is of general knowledge within a mining industry or trade or profession thereof and such general matter as is capable of being readily verified.

(e) The Board shall not be bound by any previous findings of fact by the respondent. If the respondent claims that imminent danger or violation of a mandatory safety standard, as set out in such order, existed at the time of the filing of the application, the burden of proving the then existence of such danger or violation shall be upon the respondent, and the respondent shall present his evidence first to prove the then existence of such danger or violation. Following presentation of respondent's evidence, the applicant may present his evidence, and thereupon the respondent may present evidence to rebut the applicant's evidence.

§ 400.41 Consolidation of proceedings.

The Board may at any time, with the concurrence of the parties, order a proceeding described in these rules consolidated with any other such proceeding then pending before the Board which involves the same applicant or similar issues of law or fact.

§ 400.42 Waiver of hearing upon the stipulation of the parties.

A hearing may be waived and the case submitted to the Board for decision upon the record, including any stipulation of facts entered into by the parties; however, if the Board determines that the case presents factual issues which require a hearing, the case will again be set for a hearing.

§ 400.43 Summary decision.

At any time prior to a hearing on the merits, a party may file a written motion for a summary decision disposing of all or part of a pending case. Such motion must clearly show that there is no issue

of fact for the Board to decide and the Board's decision shall be based on the entire record of the case, including any documents filed with such motion and any that may be filed with a statement in opposition to the motion.

Subpart D—Operation of the Board and the Making of Final Orders

§ 400.53 Principal office.

The principal office of the Board shall be at 1875 Connecticut Avenue NW., Suite 707, Washington, DC 20009. Whenever the Board deems that the convenience of the public or of the parties may be promoted or delay or expenses may be minimized, it may hold hearings or conduct proceedings at any other place.

§ 400.54 Members and staff.

(a) The Board consists of a Chairman and four (4) other members appointed by the President with the advice and consent of the Senate.

(b) The staff of the Board shall consist of an Executive Secretary and such legal counsel and other personnel the Board deems necessary in exercising its powers and duties.

§ 400.55 Quorum; convening; records.

(a) Three members of the Board shall constitute a quorum, and official actions of the Board shall be taken on the affirmative vote of at least three members.

(b) The Board shall convene with such frequency and at such time and place as is required to efficiently handle the cases before it. The Chairman of the Board will convene the Board, and, when present, will preside at all proceedings or appoint another member to do so. The Chairman will convene the Board at a time and place that a quorum may be assembled and on such notice, if any, he believes the exigencies of the situation permit. Notice of the time, place, and purpose of convening will be given promptly to all members of the Board by the Executive Secretary pursuant to instructions from the Chairman. When any two members call for a meeting of the Board, the Chairman will attempt to convene the Board as herein described.

(c) Except for the purpose of making such findings and orders as are described in subsections 11(f) and 11(g) of the act (30 U.S.C. 730(f), 730(g)), or for the

holding of a hearing, the Chairman may convene the Board via telephone by placing a long distance conference call to all members of the Board. At least a quorum of the Board must be in simultaneous communication for the Board to be convened and meetings will be conducted similarly to those when the members are in each other's physical presence.

(d) Every official act of the Board shall be entered of record, and its records shall be open to the public.

§ 400.56 Executive secretary.

The Executive Secretary of the Board:

(a) Shall keep custody of, and an adequate index system for, the case files and other records of the Board.

(b) Shall keep the members of the Board informed of the pending business before the Board as such is filed.

(c) May:

(1) Fix the time and/or place for hearings,

(2) Rule on motions for the taking of depositions or production of documents and make any order necessary to effectuate such ruling,

(3) Order parties to appear at preliminary conferences prior to hearing,

(4) Sign and/or issue subpoenas.

The above powers shall be exercised only pursuant to instructions from the Board, but the Executive Secretary may consult with individual members of the Board concerning matters necessary for scheduling or relating to personal availability for a hearing date.

(d) Shall answer correspondence.

(e) Shall take custody of the official seal of the Board and perform such administrative or clerical functions as are necessary for the operation of the Board. The foregoing powers and duties shall be exercised by an alternate designated by the Board when the Executive Secretary is unavailable to exercise them.

§ 400.57 Findings; orders and opinions.

(a) The Board in any proceedings before it may make such findings and orders as are described in subsections 11(f) and 11(g) of the act (30 U.S.C. 730(f), 730(g)). Each finding and order made by the Board shall be in writing. It shall show the date on which it is made, and shall bear the signatures of the members of the Board who concur therein. Upon making a finding and order, the Board shall cause a true copy thereof to be sent by registered mail to all parties or their attorneys of record. The Board shall cause each such finding and order to be entered on its official record, together with any written opinion prepared by any members in support of, or dissenting from, any such finding or order.

(b) Before reaching a final decision, the Board in its discretion may submit a tentative decision to the parties for comment, request filing of briefs and/or oral argument, or may order that further hearings be held.

(c) Unless the Board orders otherwise, the filing of a petition for reconsideration shall not stay the effect of any decision or order and shall not affect the finality of any decision or order for purposes of judicial review.

Subpart E—Appeals

§ 400.70 Appeals.

Any final order issued by the Board shall be subject to judicial review by the U.S. Court of Appeals for the circuit in which the mine affected is located, upon the filing in such court of a notice of appeal by the Secretary or the operator aggrieved by such final order within 30 days from the date of the making of such final order. The procedure for making such appeal is set forth in section 12 of the act (30 U.S.C. 731).

CHAPTER V—INTERIM COMPLIANCE PANEL (COAL MINE HEALTH AND SAFETY)

SUBCHAPTER A—COAL MINE HEALTH

Part

- 501 Permits for noncompliance.
502 Permits for noncompliance with 2.0 mg./m.³ respirable dust standard.

SUBCHAPTER B—COAL MINE SAFETY

- 503 Permits for noncompliance with the electric face equipment standard—nongassy mines below the watertable and certain nongassy mines above the watertable.
504 Permits for noncompliance with the electric face equipment standard for underground coal mines above the watertable.

SUBCHAPTER C—GENERAL ADMINISTRATION

- 505 Practice and procedure for hearings under subchapters A and B of this chapter.

SUBCHAPTER A—COAL MINE HEALTH

PART 501—PERMITS FOR NONCOMPLIANCE

- Sec.
501.1 Application of part.
501.2 Definitions.
501.3 Filing procedures.
501.4 Contents of applications for initial permits.
501.5 Issuance of initial permits.
501.6 Applications for renewal permits.
501.7 Request for hearing on renewal permit by applicant.

AUTHORITY: The provisions of this Part 501 issued under sec. 508, 83 Stat. 808; 30 U.S.C. 957.

SOURCE: The provisions of this Part 501 appear at 35 F.R. 5343, Mar. 31, 1970, unless otherwise noted.

§ 501.1 Application of part.

This part applies to applications for permits for noncompliance and renewals thereof submitted in accordance with the provisions of Title II of the Federal Coal Mine Health and Safety Act of 1969,

and to requests for hearings conducted with respect to such applications.

§ 501.2 Definitions.

As used in this part:

(a) "Act" means the Federal Coal Mine Health and Safety Act of 1969 (Public Law 91-173);

(b) "Panel" means the Interim Compliance Panel established by section 5 of the Act;

(c) "Applicant" means any operator of an underground coal mine who files an application with the panel for an initial or renewal permit for noncompliance with the respirable dust standard set forth in section 202(b) (1) of the Act;

(d) Unless otherwise specified in this part, "permit" means an initial permit for noncompliance issued to an applicant, or a subsequent renewal thereof, which entitles the applicant to exceed the respirable dust standard set forth in section 202(b) (1) of the Act with respect

to working places designated in such permit or renewal;

(e) "Respirable dust standard" means the average concentration of respirable dust prescribed by section 202(b)(1) of the Act;

(f) "Average concentration of respirable dust" means the average concentration of respirable dust, expressed in milligrams per cubic meter of air, as measured by an MRE instrument or an equivalent concentration if measured with another device approved by the Secretary of the Interior and the Secretary of Health, Education, and Welfare.

(g) "Working places" means those areas in a single working section which are at any given time in by the last open crosscut;

(h) "Working section" means all areas of the coal mine in by the loading point of the section to and including the working faces;

(i) "Qualified person" means a person who has satisfactorily completed a course in sampling and evaluation of respirable coal mine dust concentrations approved by the Secretary of the Interior with sampling devices approved by the Secretary of the Interior and the Secretary of Health, Education, and Welfare;

(j) "Certified engineer" means an engineer certified or registered by the State in which the coal mine is located to perform duties prescribed by title II of the Act, except that, in a State where no program of certification or registration is provided or where the program does not meet at least minimum Federal standards established by the Secretary of the Interior, such certification or registration shall be by the said Secretary;

(k) "Respirable dust level" means the average concentration of respirable dust in the mine atmosphere during each shift to which each miner in the active workings of the mine is exposed;

(l) "Engineering survey" means a determination by a certified engineer of the respirable dust levels of the working places of the mine with respect to which an application is filed together with a statement of the applicant's ability to reduce the dust levels therein.

§ 501.3 Filing procedures.

(a) Applicants shall file an application on ICP Form 1 for each mine which shall include a Statement of Working Section information on ICP Form 1(a) for the

working places in each section for which a permit is requested. Except as provided in § 501.4(d), one copy of each form shall be filed on or before May 1, 1970, with the Interim Compliance Panel, Suite 800, 1730 K Street NW., Washington, D.C. 20006, in the form and content prescribed in § 501.4.

(b) The original of each ICP Form 1 shall be signed by the applicant and the original of each ICP Form 1(a) shall be signed by the applicant and by the certified engineer responsible for the engineering survey.

(c) At the time an application is mailed or delivered to the panel, the applicant shall post on the mine bulletin board a notice that such application has been filed and that the application and all related ICP Forms 1(a) are available at the mine office for inspection by any interested person during usual working hours. In addition, the applicant shall furnish a copy of the application to the union or other representative of the miners of the mine to which such application applies.

(d) A copy of each application and all related ICP Forms 1(a) received by the panel will be available at the office of the panel in Washington, D.C., for inspection by any person during usual working hours.

(e) Application forms may be obtained from Coal Mine Safety Offices of the U.S. Bureau of Mines or from the Interim Compliance Panel, Suite 800, 1730 K Street NW., Washington, D.C. 20006.

§ 501.4 Contents of applications for permits.

(a) Each application for a permit (ICP Form 1) shall contain the name and address of the mine and the operator thereof and a list of working sections with respect to which such permit is requested.

(b) Each Statement of Working Section information (ICP Form 1(a)) shall contain a representation by the applicant and the certified engineer conducting the engineering survey as defined in § 501.2 (1) that the applicant is unable to comply with the respirable dust standard in those working places within each working section identified in the application:

(1) Because technology for reducing the respirable dust level at such places is not available; or

(2) Because of the lack or other effective control techniques or methods; or,

(3) Because of any combination of such reasons.

The representation shall be accompanied by an explanation of the reasons therefor.

(c) Each statement of working section information shall include the following:

(1) Identification of each working section in which are located the working places for which a permit is requested;

(2) The number of men regularly employed on each production shift and the usual number of production shifts per day;

(3) The type and method of mining, including haulage;

(4) The results of an engineering survey as defined in § 501.2 (1). The determination of respirable dust levels included in such a survey shall be made in accordance with the procedures set forth in this subparagraph (4).

(i) All measurements of respirable dust levels shall be conducted by a qualified person using an MRE instrument or other dust sampling device approved by the Secretary of the Interior and the Secretary of Health, Education, and Welfare in accordance with the provisions of Part 74 of this title.

(ii) One sample of respirable dust shall be taken in each working section on the same production shift on each of 5 consecutive working days at the following locations:

(a) Where conventional mining methods are employed, the sample shall be taken on the cutting machine operator or on the cutting machine within 36 inches in by the operator's normal working position;

(b) Where continuous mining methods are employed, the sample shall be taken on the continuous miner operator or on the continuous miner within 36 inches in by the operator's normal working position;

(c) Where long wall mining methods are employed, samples shall be taken on the miner who works nearest the return air side of the long wall face or on the return-air side of the long wall face no farther than 48 inches from the corner;

(d) Where hand loading methods are employed, samples shall be taken on 10 percent of the hand loaders, but in no case less than one hand loader, or at a site which represents the average con-

centration of respirable dust to which all hand loaders are exposed;

(e) Where two or more mechanized mining operations are engaged in the production of coal in a single working section, each such mechanized mining operation shall be considered a separate working section. Samples of respirable dust shall be taken from each such mechanized mining operation in accordance with the provisions of this subparagraph.

(f) A sixth sample shall be taken in the intake air of each working section at a location within 200 feet outby the working faces of the section within one working day of the completion of the sampling cycle required in this subparagraph.

(iii) Each sample of respirable dust taken in accordance with the provisions of subdivision (ii) of this subparagraph shall be weighed and the results found shall be converted and reported in accordance with the methods set forth in (a) and (b) of this subdivision.

(a) Approved sampling devices shall be operated at a flow rate of 2.0 liters of air per minute and the MRE instrument shall be operated at a flow rate of 2.5 liters of air per minute.

(b) The respirable dust level shall be determined by dividing the weight in milligrams of dust collected on the filter during a full production shift by the volume of air in cubic meters passing through the filter. To convert a concentration of respirable dust as measured with an approved sampling device to an equivalent concentration of respirable dust as measured with an MRE instrument, the concentration measured by the approved sampling device shall be multiplied by a constant factor of 1.6 and the product shall constitute the equivalent concentration as measured with an MRE instrument.

(5) A description of the ventilation system of the working section and its capacity;

(6) The quantity and velocity of air regularly reaching the working faces;

(7) The amount and pressure of water, if any, reaching the working faces;

(8) The number, location and type of sprays, if any;

(9) A description of any action taken to reduce the respirable dust level;

(10) A description by the applicant and the certified engineer who conducted the engineering survey under subparagraph (4) of this paragraph of the means

and methods to be employed to achieve compliance with the respirable dust standard, the progress made to date, and an estimate of the date when compliance can be achieved.

(d) Where an applicant is unable to comply with all of the requirements set forth in paragraph (c) (4) and (10) of this section on or before May 1, 1970, with respect to any working place for which a permit for noncompliance has been requested, he shall specifically state the reasons for his failure to comply and indicate the date on which he expects to meet such requirements and complete his application.

(e) All applications timely filed in accordance with the provisions of this part shall be considered by the panel in the order in which completed applications are received and the panel shall make its determination on the basis of the evidence of record. Each applicant shall, however, upon written request by the panel, submit such additional evidence as the panel deems necessary to its determination, including, but not limited to, evidence in support of representations made under the provision of paragraph (b) of this section or evidence in support of claims that the survey required under the provisions of paragraph (c) (4) of this section cannot be completed on or before May 1, 1970.

[35 F.R. 5343, Mar. 31, 1970; 35 F.R. 6003, Apr. 11, 1970, as amended at 35 F.R. 6390, Apr. 21, 1970; 35 F.R. 10268, June 24, 1970]

§ 501.5 Issuance of initial permits.

(a) The panel will issue initial permits for working places within working sections based upon applications which are timely filed and complete in all material respects in accordance with §§ 501.3 and 501.4.

(b) No initial permit will be issued for working places in a working section (1) that is not in existence on June 30, 1970, and (2) for which a completed application has not been filed on or before August 15, 1970.

(c) Each initial permit will be issued for the period specified by the panel but in no case for more than 1 year. Each permit will specify the average concentration of respirable dust which the applicant will be entitled to maintain, but in no case shall the level be greater than 4.5 mg/m.³.

(d) If a permit is issued, such permit will be forwarded to the applicant. If a permit is denied, the panel will advise the applicant in writing of the reasons therefor and give the applicant an opportunity for a public hearing.

(e) A copy of every permit for non-compliance shall be posted by the applicant in the manner and place prescribed by section 107(a) of the Act.

(f) No initial permit or renewal thereof shall be valid beyond June 30, 1971, or the date on which section 202(b)(1) is superseded by improved mandatory health standards, whichever first occurs. [35 F.R. 5343, Mar. 31, 1970, as amended at 35 F.R. 10268, June 24, 1970]

§ 501.6 Applications for renewal permits.

(a) To be considered by the panel, every application for a renewal permit must be:

(1) Filed with the panel not more than 90 days, nor less than 30 days prior to the expiration date of a permit;

(2) Submitted on the forms and in the manner prescribed in §§ 501.3 and 501.4.

(b) When an application for a renewal of a permit for noncompliance is received, the panel shall cause to be published in the FEDERAL REGISTER a notice giving any interested person an opportunity to file with the panel a request for a public hearing.

(c) On or before the 15th day after publication of notice in the FEDERAL REGISTER that an application for renewal has been accepted for consideration, any interested person may file a request with the panel for a public hearing.

(d) Requests for hearing shall be submitted in triplicate to the panel, shall be in writing, and signed by the person making the request.

(e) A request for hearing shall be accepted only if:

(1) It states the interest in the application of the person making the request;

(2) It alleges specific facts which raise a substantial issue and, if established at the hearing, would result in the denial or modification of the permit.

(f) If the request for hearing is denied, the panel shall inform the person making the request in writing of the reasons therefor.

(g) If the request for hearing is granted, the panel shall publish in the FEDERAL REGISTER a notice of hearing

which sets forth the date, time and place of such hearing. Notice of such hearing will be mailed to the person requesting the hearing. Notice of hearing will also be mailed to the applicant at his last known address together with a copy of the request for hearing.

(h) After public hearing, or if no hearing has been requested pursuant to paragraph (c) of this section, the panel shall make its determination.

§ 501.7 Request for hearing on renewal permit by applicant.

(a) Where the panel has not received a timely and sufficient request for hearing by an interested person and has reason to believe that it will deny a renewal permit on the basis of the evidence of record, it will, prior to the denial of such permit, give notice in writing, to the applicant, of its intention to deny the permit, the reasons therefor, and an opportunity to request a public hearing.

(b) On or before the 15th day after such notice, the applicant may file a request with the panel for a public hearing.

(c) Requests for hearing shall be submitted in triplicate to the panel, shall be in writing, and signed by the applicant.

(d) A request for hearing shall be accepted only if it contains allegations which, if established, would result in the issuance of the renewal permit at a respirable dust level greater than that shown in the application to be possible.

PART 502—PERMITS FOR NONCOMPLIANCE WITH 2.0 mg./m.³ RESPIRABLE DUST STANDARD

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| Sec. | |
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| 502.2 | Definitions. |
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| 502.6 | Processing of applications—additional evidence. |
| 502.7 | Issuance of initial permits—limitation. |
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| 502.11 | Filing of requests for hearing—contents. |
| 502.12 | Public hearings—practice and procedure. |

AUTHORITY: The provisions of this Part 502 issued under Title V, sec. 508, Public Law 91-173, 30 U.S.C. 957.

SOURCE: 37 FR 14526, July 20, 1972, unless otherwise noted.

§ 502.1 Application of this Part 502.

This Part 502 applies to applications for permits and renewals thereof allowing operators of underground coal mines to operate areas of a coal mine inby the last open crosscuts in noncompliance with the 2.0 mg./m.³ respirable dust standard set forth in section 202(b)(2) (30 U.S.C. 842(b)(2)) of the Federal Coal Mine Health and Safety Act of 1969, and to requests for hearings conducted with respect to such applications.

§ 502.2 Definitions.

As used in this Part:

(a) "Act" means the Federal Coal Mine Health and Safety Act of 1969 (Public Law 91-173, 30 U.S.C. 801 through 960);

(b) "Panel" means the Interim Compliance Panel, an independent agency established by section 5 of the Act (30 U.S.C. 804);

(c) "U.S.B.M." means the U.S. Bureau of Mines, Department of the Interior;

(d) "2.0 mg./m.³ standard" means the average concentration of respirable dust prescribed by section 202(b)(2) of the Act (30 U.S.C. 842(b)(2));

(e) "Operator" means any owner, lessee, or other person who operates, controls, or supervises an underground coal mine and who files an application with the Panel for an initial permit or renewal for noncompliance with the 2.0 mg./m.³ standard with respect to a mine designated in such application;

(f) "Application" means a request by an operator for an initial permit or renewal for noncompliance filed in accordance with and containing all of the information required by this Part 502;

(g) "Permit" means an initial permit for noncompliance issued to an operator, or a renewal thereof, which entitles the operator to exceed the 2.0 mg./m.³ standard with respect to all working places in an individual coal mine except for those expressly excluded;

(h) "Working place" means the area of a coal mine inby the last open crosscut;

(i) "Working section" means all areas of the coal mine from the loading point of the section to and including the working faces;

(j) "U.S.B.M. respirable dust series" means an up-to-date series of respirable dust samples taken and submitted to the U.S.B.M. pursuant to the provisions of U.S.B.M. regulations, 30 CFR Part 70 Subpart C, or subsequent revision thereof; and

(k) "Certified engineer" means a person certified or registered by the U.S.B.M. for the purpose of conducting a survey of the respirable dust conditions of a mine.

§ 502.3 Filing procedures.

(a) Application forms may be obtained upon request to the Interim Compliance Panel, Room 800, 1730 K Street NW., Washington, DC 20006.

(b) Each application shall contain the information specified hereinafter and should be submitted on the form provided by the Panel. The original and one copy of each application shall be filed by mail or by personal delivery to the Interim Compliance Panel, Room 800, 1730 K Street NW., Washington, DC 20006. In order to meet the filing deadline established by the Act applications must be received by the Panel no later than October 31, 1972, or bear a postmark date no later than October 31, 1972. Postage meter dates will not be accepted as verification of date of mailing.

(c) The accuracy of the information set forth in each application submitted shall be attested by the operator and the certified engineer as evidenced by their signatures. The certified engineer shall also set forth his U.S.B.M. certification number.

(d) Prior to the time an application is mailed or delivered to the Panel, the operator or his agent shall post on the mine bulletin board a notice that such application is being filed and that a copy of the application is available at the mine office for inspection by any interested person during regular working hours. The notice shall remain posted until the operator is informed of the Panel's action on the application.

(e) A copy of each application received by the Panel will be available at the office of the Panel in Washington,

D.C., for inspection by any person during official working hours.

§ 502.4 Information required—responsibility of operator.

The operator shall include in his application a report of the engineering survey described in § 502.5 and each of following items of information:

(a) The name, address, and U.S.B.M. identification number of the mine with respect to which a permit is requested;

(b) The name, address, and telephone number of the operator;

(c) A statement that notice of the application has been posted on the bulletin board of such mine;

(d) A description of the methods of mining used in the mine;

(e) A description of the ventilation system of the mine and its capacity;

(f) A list of all working sections identified by name and by U.S.B.M. identification number;

(g) A statement that the operator is unable to comply with the 2.0 mg./m.³ standard at specified working places because the technology for reducing the concentration of respirable dust at such places is not available, or because of the lack of other effective control techniques or methods, or because of any combination of such reasons; and

(h) A statement of the means and methods which will be employed to achieve compliance with the 2.0 mg./m.³ standard, the progress made toward achieving compliance, and an estimate of the date on which compliance can be achieved.

[37 FR 14526, July 20, 1972; 37 FR 14876, July 26, 1972]

§ 502.5 Information required—engineering survey.

A certified engineer shall conduct a survey of the respirable dust conditions of each working place of the mine with respect to which an application is filed. The application shall contain a report of the results of such survey, including each of the following items of information:

(a) A description of the available technology used in the mine to control dust including:

(1) The quantity and velocity of air reaching the working faces;

(2) The amount and pressure of water, if any, reaching the working faces;

(3) The number, location, and type of sprays, if any; and

(4) Other dust control methods and techniques, if any.

(b) A statement of the engineer's professional opinion as to the operator's current ability to maintain the respirable dust in the working places at or below the 2.0 mg./m.³ standard;

(c) A list of the names and the U.S.B.M. numbers of the working sections in which compliance with the 2.0 mg./m.³ standard cannot be maintained;

(d) A statement of the engineer's professional opinion detailing the specific factors preventing compliance with the 2.0 mg./m.³ standard and the means and methods deemed necessary to achieve compliance with the 2.0 mg./m.³ standard; and

(e) A statement of the means and methods to be employed to achieve compliance with the 2.0 mg./m.³ standard, the progress made toward achieving compliance, and an estimate of the date when compliance can be achieved.

§ 502.6 Processing of applications—additional evidence.

All applications timely filed in accordance with the provisions of this Part will be processed by the Panel in the order in which completed applications are received. The Panel will consider the respirable dust sampling data of record with the U.S.B.M. for the mine, but will not issue a permit unless a U.S.B.M. respirable dust series has been established for the mine. The Panel will make its determination on the basis of the application, the respirable dust sampling records on file with the U.S.B.M., and such additional evidence as the Panel deems necessary to its determination, including, but not limited to, evidence in support of representations made in the application. Each applicant shall, upon written request by the Panel, submit such additional evidence in writing.

§ 502.7 Issuance of initial permits—limitation.

(a) The Panel may issue an initial permit to cover working places of the mine in by the last open crosscuts based upon an application which is timely filed

and complete in all material respects in accordance with §§ 502.3 to 502.6, inclusive.

(b) When the application and the U.S.B.M. respirable dust series do not furnish a basis for a determination that the operator is unable to comply in the working places of certain working sections, the Panel may exclude such working places from the coverage of a permit.

(c) Each initial permit will be issued for the period specified by the Panel but in no case for more than 1 year. Each permit will specify the average concentration of respirable dust which the operator will be entitled to maintain, but in no case shall the level be greater than 3.0 mg./m.³.

(d) If a permit is issued, such permit will be forwarded to the operator. If a permit is denied, the Panel will advise the operator in writing of the reasons therefor, and the operator shall be entitled to request a public hearing pursuant to the provisions of §§ 502.10 and 502.11.

(e) The permit and one copy will be mailed to the operator at the address specified in the application. A copy of the permit shall immediately be posted on the bulletin board of the affected mine by the operator or his agent.

(f) No permit shall be valid beyond December 30, 1975, or the date which the 2.0 mg./m.³ standard is superseded by improved mandatory health standards, whichever first occurs.

§ 502.8 Applications for renewal of permits.

(a) To be considered by the Panel, every application for renewal of a permit must be:

(1) Filed with the Panel not more than 90 days nor less than 30 days prior to the expiration date of the permit in effect; and

(2) Submitted on the form and in the manner prescribed in §§ 502.3 through 502.6 inclusive, specifically setting forth the actions which have been taken to achieve compliance since the date of filing the previous application, and new plans, if any.

(b) When an application for renewal of a permit for noncompliance is received, the Panel shall cause to be published in the FEDERAL REGISTER a notice

giving any interested person an opportunity to file with the Panel a request for a public hearing.

(c) On or before the 15th day after publication of notice in the FEDERAL REGISTER that an application for renewal has been accepted for consideration, any interested person may file pursuant to provisions of §§ 502.10 and 502.11 a request for a public hearing.

(d) After public hearing, or after the expiration of the aforementioned 15-day period if no hearing has been requested pursuant to paragraph (c) of this section, the Panel shall make its determination on the merits of the application for a renewal.

§ 502.9 Renewal of permits—limitation.

(a) The Panel may renew a permit when an application for renewal has been timely filed and is complete in all material respects in accordance with § 502.8.

(b) When the renewal application and the U.S.B.M. respirable dust series do not furnish a basis for a determination that the operator is unable to comply in the working places of certain working sections, the Panel may exclude such working places from the coverage of a permit.

(c) In order for a renewal application to be considered, an operator must provide information in his application which will enable the Panel to determine that he will be unable to comply with the 2.0 mg./m.³ standard upon the expiration date of his existing permit.

(d) The Panel will obtain from the U.S.B.M. and consider the respirable dust sampling data which is on file with the U.S.B.M.

(e) Each renewal will be issued for the period specified by the Panel, but in no case for a period longer than 1 year. The period of noncompliance authorized by renewal shall not extend beyond December 30, 1975. Each renewal will specify the average concentration of respirable dust which the operator will be entitled to maintain in the working places of the mine, but in no case shall the level be greater than 3.0 mg./m.³.

(f) If a renewal is granted, it will be forwarded to the operator. If a renewal is denied, the Panel will advise the operator in writing of the reasons therefor, and the operator may be entitled to request a public hearing pursuant to the provisions of §§ 502.10 and 502.11.

(g) The renewal and one copy will be mailed to the operator at the address

specified in the application. A copy of the renewal shall immediately be posted on the bulletin board of the affected mine by the operator or his agent.

[37 FR 14526, July 20, 1972; 37 FR 14876, July 26, 1972]

§ 502.10 Requests for hearing.

Any person interested in an application for a permit, including the operator or a representative of the miners of an affected mine, may request a public hearing. The request must satisfy the requirements of § 502.11 and be filed with the Panel:

(a) Where the application is for an initial permit, within 15 days after the mailing of the Panel's decision on the application; or

(b) Where the application is for renewal of a permit, within 15 days after the notice of opportunity for public hearing is published in the FEDERAL REGISTER pursuant to § 502.8(b). However, an operator may file a request for a hearing on an application for the renewal of a permit within 15 days after the date of mailing of the Panel's decision on the application provided that no hearing has previously been conducted concerning the application for renewal.

§ 502.11 Filing of requests for hearing—contents.

(a) Requests for public hearings shall be submitted by letter mailed or delivered to the Panel. If such a request is made by a person other than the operator, the person making the request shall mail a copy of the request to the operator.

(b) Requests for hearings shall be in writing, signed by the person making the request and shall:

(1) State the interest, in the application or in the decision of the Panel, of the person making the request;

(2) State whether the person making the request seeks the issuance, denial, or modification of the permit; and

(3) Allege specific facts which are claimed to raise a substantial issue and which, if established at the hearing, would result in the issuance, denial, or modification of the permit.

§ 502.12 Public hearings—practice and procedure.

Public hearings will be conducted pursuant to the Panel's regulation governing practice and procedure for hearings, 30 CFR Part 505 (35 F.R. 11296, July 15, 1970).

SUBCHAPTER B—COAL MINE SAFETY

PART 503—PERMITS FOR NONCOMPLIANCE WITH THE ELECTRIC FACE EQUIPMENT STANDARD—NON-GASSY MINES BELOW THE WATERTABLE AND CERTAIN NONGASSY MINES ABOVE THE WATERTABLE

Sec.

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- 503.2 Definitions.
- 503.3 Filing procedures.
- 503.4 Contents of applications for permits.
- 503.5 Issuance of initial permits.
- 503.6 Applications for renewal permits.
- 503.7 Issuance of renewal permits.
- 503.8 Requests for hearing.
- 503.9 Filing of requests for hearing—contents.

AUTHORITY: The provisions of this Part 503 issued under sec. 508, 83 Stat. 803; 30 U.S.C. 957.

SOURCE: The provisions of this Part 503 appear at 35 F.R. 18274, Dec. 1, 1970, unless otherwise noted.

§ 503.1 Application of part.

This part applies to applications for permits for noncompliance and renewals thereof submitted in accordance with the provisions of sections 305(a)(6) and 305(a)(7) of the Federal Coal Mine Health and Safety Act of 1969 and to requests for hearings conducted with respect to such applications. A permit for noncompliance may be issued to an operator only for electric face equipment used by the operator on March 30, 1970, in connection with mining operations in (a) an underground coal mine which has never been classified as gassy under any provision of law and which is located below the watertable, or (b) an underground coal mine which has never been classified as gassy under any provision of law and which is located above the watertable and in which one or more openings were made on or after December 30, 1969. [35 F.R. 18593, Dec. 8, 1970]

§ 503.2 Definitions.

As used in this part:

- (a) "Act" means the Federal Coal Mine Health and Safety Act of 1969 (Public Law 91-173);
- (b) "Panel" means the Interim Compliance Panel established by section 5 of the Act;
- (c) "Operator" means any owner, lessee, or other person who operates, controls, or supervises a coal mine and who

files an application with the Panel for an initial or renewal permit for noncompliance with the electrical equipment standard set forth in section 305(a)(1)(D) of the Act;

(d) "Permit" means an initial permit for noncompliance or a subsequent renewal thereof issued by the Panel to an operator of a nongassy coal mine located below the watertable entitling the operator to use an item of nonpermissible electric face equipment in connection with mining operations in such mine for the period of time specified in the permit.

(e) "Electric face equipment" means:

(1) Electrical equipment with an electrical rating exceeding 2,250 watts (3 horsepower) which is taken into or used in by the last open crosscut, and

(2) All electrical rock dusting equipment which is taken into or used in by the last open crosscut;

(f) "Below the watertable," as it applies to a coal mine means an underground coal mine any part of which is operated in one or more coal seams located below the elevation of the surface of a river or a tributary of a river into which a local surface water system naturally drains;

(g) "Permissible" or "permissible status" means equipment which has been approved as permissible by the U.S. Bureau of Mines.

(h) "Application" means a request for a permit for noncompliance, or renewal thereof, filed with the Panel in accordance with §§ 503.3, 503.4, and 503.6.

(i) "Above the watertable" as it applies to a coal mine means an underground coal mine which is operated entirely in coal seams which are located at an elevation above a river or the tributary of a river into which a local surface water system naturally drains.

[35 F.R. 18274, Dec. 1, 1970, as amended at 35 F.R. 18593, Dec. 8, 1970]

§ 503.3 Filing procedures.

(a) A separate application on ICP Form 2 shall be filed for each coal mine. The application shall be accompanied by ICP Form 2(a), Statement of Electric Face Equipment Information, for each item of equipment for which a permit is requested. The original and one copy of each form shall be filed on or before March 1, 1971, with the Interim Compliance Panel, Suite 800, 1730 K Street

NW., Washington, DC 20006, in the form and content prescribed in § 503.4. Applications filed by mail shall be mailed so as to bear a postmark date no later than March 1, 1971.

(b) The original of each ICP Form 2 and 2(a) shall be affirmed and signed by the operator.

(c) At the time an application is mailed or delivered to the Panel, the operator shall post on the mine bulletin board a notice that such application has been filed and that the complete application, ICP Forms 2 and 2(a) and all attachments, are available at the mine office for inspection by any interested person during the usual working hours.

(d) A copy of each application, ICP Forms 2 and 2(a) and all attachments, received by the Panel will be available at the office of the Panel in Washington, D.C., for inspection by any person during usual working hours.

(e) Application forms may be obtained from the Interim Compliance Panel, Suite 800, 1730 K Street NW., Washington, DC 20006.

§ 503.4 Contents of applications for permits.

(a) Each Noncompliance Permit Application (ICP Form 2) shall contain:

(1) The name, address, and telephone number of the mine with respect to which such permit is requested; the name, address, and telephone number of the operator; and the name of the owner;

(2) The name and address of a representative of the miners of such mine;

(3) A statement that notice of the application has been posted on the bulletin board of such mine;

(4) A statement whether or not the mine has ever been classified as gassy under any provision of Federal or State law;

(5) A statement whether such mine is above or below the watertable. In the event that it is above the watertable, a statement whether or not the original opening of such mine was made during the 3-month period between December 30, 1969 and March 30, 1970, inclusive; and

(6) A list of all nonpermissible electric face equipment for which a permit is requested, identified by type and manufacturer's serial number or other

permanently marked identification number.

(b) Each ICP Form 2(a), Statement of Electric Face Equipment Information, shall contain:

(1) A statement by the operator that he is unable to comply with paragraph (1)(D) of section 305(a), Public Law 91-173;

(2) A description by type (e.g., loader, cutter, etc.), model, manufacturer, and manufacturer's serial number or permanently marked identification number, of a single item of electric face equipment as defined in § 503.2 for which a permit is requested;

(3) A statement whether or not this item of equipment was nonpermissible and was being used in connection with mining operations in the mine on March 30, 1970;

(4) A statement whether or not this item of equipment is being used in connection with mining operations in the mine on the date of this application;

(5) A statement whether or not the electric rating of this equipment exceeds 2,250 watts (3 horsepower) or a statement that it is rock dusting equipment;

(6) A statement whether or not this item of equipment has ever been permissible; and

(7) A statement of steps taken to achieve compliance with the electrical equipment requirement of the Act since March 30, 1970, and a plan setting forth a schedule for achieving compliance for the item of equipment for which the permit is sought and describing the means and methods to be employed. This plan must contain information responsive to one of the following subdivisions as applicable:

(i) If the operator plans to replace the item of equipment for which a permit is requested with permissible equipment, he must furnish the name of the firm from which the replacement equipment will be obtained and the scheduled date of delivery. A copy of the contract or order must be submitted to satisfy the requirements of this subparagraph.

(ii) If the operator plans to convert to permissible status the item of equipment for which a permit is requested, he must furnish the name of the firm which will perform the conversion and the date upon which the conversion is scheduled for completion. A copy of the contract or order must be submitted to fulfill the requirements of this subpara-

graph. In the event that the operator plans to use his own employees to convert this item of equipment to permissible status, he must furnish a copy of each contract or order for component parts and materials, the scheduled dates when these parts and materials will be delivered, and an estimated date when the conversion to permissible status will be completed.

(iii) If no specific arrangements to replace the item with permissible equipment or to convert the item to permissible status have been made before the date of the application, the operator shall provide a statement in detail of the actions taken between March 30, 1970, and the date of the application to make arrangements for the replacement with permissible equipment or the conversion of the equipment to permissible status, and a statement describing the specific steps which will be taken by the operator to replace or convert this item of equipment to permissible status. The description of specific steps to be taken shall include the names of firms which will be contacted to obtain replacement equipment, conversion work, or component parts and materials, and shall include the dates on which such firms will be contacted.

(c) All applications timely filed in accordance with the provisions of this part shall be processed by the Panel in the order in which completed applications are received. Each operator shall, upon request by the Panel, submit such additional information as the Panel considers necessary to make its determination, including, but not limited to, evidence in support of representations made in connection with the application.

[35 F.R. 18274, Dec. 1, 1970, as amended at 35 F.R. 18593, Dec. 8, 1970]

§ 503.5 Issuance of initial permits.

(a) The Panel will issue initial permits for equipment based upon applications which are timely filed and complete in all material respects in accordance with §§ 503.3 and 503.4.

(b) In order to qualify for the issuance of a permit the operator must show in his application:

(1) That the mine has never been classified as gassy under any provision of Federal or State law, and

(i) That it is below the watertable, or

(ii) In the event that such mine is above the watertable, that the original

opening of such mine was made on or after December 30, 1969;

(2) That the item of electric face equipment for which a permit is sought was, at the time of the application and on March 30, 1970, nonpermissible and being used by the operator in connection with mining operations in the coal mine to which the application pertains;

(3) That the electric rating of such equipment exceeds 2,250 watts (3 horsepower) or that such equipment is rock dusting equipment; and

(4) That steps have been taken to achieve compliance with the provisions of section 305(a)(1)(D) of the Act since March 30, 1970, and that the operator has adopted an adequate plan including a schedule for achieving compliance by replacement of such nonpermissible equipment with permissible equipment or by conversion of such nonpermissible equipment to permissible status.

(c) Each initial permit will be issued for the period specified by the Panel, but in no case for more than 1 year. Each permit will specify the individual item of equipment which the operator will be entitled to use in a nonpermissible status.

(d) The permit and one copy will be mailed to the operator at the address specified in the application. A copy of the permit shall immediately be posted on the bulletin board of the affected mine by the operator or his agent.

(e) The Panel shall immediately mail a copy of any permit granted under this section to a representative of the miners of the mine to which it pertains, and to the public official or agency of the State charged with administering State laws relating to coal mine health and safety in such mine.

[35 F.R. 18274, Dec. 1, 1970, as amended at 35 F.R. 18593, Dec. 8, 1970]

§ 503.6 Applications for renewal permits.

(a) To be considered by the Panel, every application for a renewal permit must:

(1) Be filed with the Panel not more than 90 days nor less than 30 days prior to the expiration date of a permit or renewal;

(2) Be submitted on the forms and in the manner prescribed in §§ 503.3 and 503.4, specifically setting forth new plans, if any, and the actions which have been taken to achieve compliance since the

date of filing the previous application for this item of equipment; and

(3) Certify that the item of equipment has not received a major overhaul on or after March 30, 1971, or if it has, the operator shall furnish a copy of a written opinion by the Secretary of the Interior or his authorized representative stating that such equipment or replacement parts were not available at the time of such major overhaul to convert the item to permissible status.

(b) When an application for a renewal of a permit for noncompliance is received, the Panel shall cause to be published in the FEDERAL REGISTER a notice giving any interested person an opportunity to file with the Panel a request for a public hearing.

(c) On or before the 15th day after publication in the FEDERAL REGISTER that an application for renewal has been received, any interested person may file pursuant to the provisions of § 503.9 a request for a public hearing.

(d) After public hearing, or if no hearing has been requested pursuant to paragraph (c) of this section, the Panel shall make a determination on the merits of the application for a renewal permit.

§ 503.7 Issuance of renewal permits.

(a) The Panel may renew a permit when an application for renewal has been timely filed and is complete in all material respects in accordance with § 503.6.

(b) In order to qualify for the issuance of a renewal permit, an operator must provide information in his application which will enable the Panel to determine that despite diligent efforts he will be unable to comply with the provisions of section 305(a) (1) (D) of the Act on or before the expiration date of his existing permit. The operator must also show in his application that steps have been taken to achieve compliance since the date of filing the previous application for this item of equipment and that he has an adequate plan which includes a schedule for achieving compliance by replacement of such nonpermissible equipment with permissible equipment or by conversion of such nonpermissible equipment to permissible status.

(c) Each renewal permit will be issued for the period specified by the Panel, but in no case for a period longer than 1 year. The period of noncompliance authorized by permit shall not extend beyond December 30, 1973. Each permit will

specify the individual item of equipment which the operator will be entitled to use in a nonpermissible status.

(d) The permit and one copy will be mailed to the operator at the address specified in the application. A copy of the renewal permit shall immediately be posted on the bulletin board of the affected mine by the operator or his agent.

(e) The Panel shall immediately mail a copy of any renewal permit granted under this section to a representative of the miners of the mine to which it pertains and to the public official or agency of the State charged with administering State laws relating to coal mine health and safety in such mine.

§ 503.8 Requests for hearing.

Hearings pursuant to the Practice and Procedure for Hearings regulation of the Interim Compliance Panel (Part 505 of this chapter (35 F.R. 11296, July 15, 1970)) will be granted:

(a) To any person interested in an application including the operator or a representative of the miners of an affected mine aggrieved by the Panel's decision on an application for an initial permit where sufficient request for hearing meeting the requirements of § 503.9 is filed within 15 days after the date of the mailing of the initial permit by the Panel;

(b) To any person interested in an application for a renewal permit including the operator or a representative of the miners of an affected mine who files a sufficient request meeting the requirements of § 503.9 within 15 days after a notice of opportunity for public hearing is published in the FEDERAL REGISTER pursuant to § 503.6 (b) and (c); and

(c) To an operator who files a sufficient request for hearing in those instances where no hearing has been held pursuant to paragraph (b) of this section. This request must meet the requirements of § 503.9 and be filed within 15 days after the date of mailing by the Panel of its decision on the application for a renewal permit.

§ 503.9 Filing of requests for hearing—contents.

(a) Requests for public hearings shall be filed in triplicate with the Panel. If such a request is made by a person other than the operator, the person making the request shall serve a copy of the request upon the operator.

(b) Requests for hearings shall be in writing, signed by the person making the request and shall:

(1) State the interest in the application or in the decision of the Panel, of the person making the request;

(2) State whether the person making the request seeks the issuance, denial, or modification of the permit; and

(3) Allege specific facts which are claimed to raise a substantial issue, and which if established at the hearing, would result in the issuance, denial, or modification of the permit.

PART 504—PERMITS FOR NONCOMPLIANCE WITH THE ELECTRIC FACE EQUIPMENT STANDARD FOR UNDERGROUND COAL MINES ABOVE THE WATERTABLE

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AUTHORITY: Sec. 508, Pub. L. 91-173, 83 Stat. 803 (30 U.S.C. 957)

SOURCE: 38 FR 29292, Oct. 23, 1973, unless otherwise noted.

§ 504.1 Application of this Part 504.

This part applies to applications for permits for noncompliance submitted in accordance with the provisions of section 305 of the Federal Coal Mine Health and Safety Act of 1969 (30 U.S.C. 865(a) (2) and (10)) and to requests for public hearings with respect to such applications. A permit for noncompliance may be issued to an operator only for electric face equipment used in an underground coal mine which: (a) Is operated entirely in coal seams located above the watertable; (b) was not classified as a gassy mine prior to March 30, 1970; and (c) was opened prior to December 30, 1969. However, no permit for noncompliance will be issued for any nonpermissible electric face equipment unless such equipment was being used by an operator in connection with the mining operations in the coal mine on March 30, 1970.

[38 FR 29292, Oct. 23, 1973; 38 FR 29881, Oct. 30, 1973]

§ 504.2 Definitions.

As used in this part:

(a) "Act" means the Federal Coal Mine Health and Safety Act of 1969 (Public Law 91-173, 30 U.S.C. 801 through 960);

(b) "Panel" means the Interim Compliance Panel, an independent agency established by section 5 of the Act (30 U.S.C. 804);

(c) "Application" means a request for a permit for noncompliance filed with the Panel in accordance with this Part 504;

(d) "Operator" means any owner, lessee, or other person who operates, controls, or supervises a coal mine and who files an application with the Panel for a permit for noncompliance with the electrical equipment standard as set forth in section 305(a) (2) of the Act (30 U.S.C. 865(a) (2));

(e) "M.E.S.A." means the Mining Enforcement and Safety Administration, U.S. Department of the Interior;

(f) "Permissible" equipment means equipment which has been approved as permissible by the M.E.S.A.;

(g) "Electric face equipment" means:

(1) Electrical equipment with an electrical rating exceeding 2,250 watts (3 horsepower) which is taken into or used in by the last open crosscut, and

(2) All electrical rock dusting equipment which is taken into or used in by the last open crosscut;

(h) "Above the watertable," as it applies to a coal mine means that all of the coal seams of such a mine are located above the elevation of the surface of a river or a tributary of a river into which a local surface water system naturally drains; and

(i) "Permit" means an initial permit for noncompliance, or a renewal thereof, issued by the Panel to an operator to use an item of nonpermissible electric face equipment in by the last open crosscut in connection with mining operations in the designated mine located above the watertable for the period of time specified in the permit.

§ 504.3 Submitting applications for permits.

(a) Application forms may be obtained upon requests to the Interim Compliance Panel, Room 800, 1730 K Street NW., Washington, D.C. 20006.

(b) Each application shall contain the information specified herein and should be submitted on the form provided by the

Panel. The original and one copy of each application shall be filed by mail or by personal delivery to the Interim Compliance Panel, Room 800, 1730 K Street, N.W., Washington, D.C. 20006. In order to meet the filing deadline established by the Act, applications must be received by the Panel no later than December 30, 1973, or bear a postmark date no later than December 30, 1973. Postage meter dates will not be accepted as verification of date of mailing.

(c) The accuracy of the information set forth in each application submitted shall be attested by the operator as evidenced by his signature.

(d) Prior to the time an application is mailed or delivered to the Panel, the operator or his agent shall post on the mine bulletin board a notice that an application is being filed and that a copy of the application is available at the mine office for inspection by any interested person during regular working hours. The notice shall remain posted until the operator is informed of the Panel's action on the application.

(e) A copy of each application received by the Panel will be available at the office of the Panel in Washington, D.C., for inspection by any person during official working hours.

§ 504.4 Information required.

The operator shall include in his application each of the following items of information:

(a) The name, address, telephone number, and M.E.S.A. identification number of the mine in which the electric face equipment for which a permit is requested is being used;

(b) The name, address, and telephone number of the operator;

(c) The name and address of a representative of the miners of such mine;

(d) A statement that notice of the application has been posted on the bulletin board of such mine;

(e) A statement that the mine has never been classified as gassy under any provision of Federal or State law;

(f) A statement that the mine is above the watertable;

(g) A statement that the mine was opened prior to December 30, 1969;

(h) A statement that the operator is unable to comply with the electric face equipment standard required by paragraph (2) of section 305(a) of the Act (30 U.S.C. 865(a)(2));

(i) A list of the nonpermissible electric face equipment for which a permit is requested, identified by type and manufacturer's serial number or other permanently marked identification number;

(j) A statement as to whether the item of equipment had ever been rated as permissible;

(k) A statement that the item of equipment was nonpermissible and was being used in connection with mining operations in the mine on March 30, 1970;

(l) A statement that this item of equipment is being used in connection with mining operations in the mine on the date of this application;

(m) A statement that the electric rating of the equipment exceeds 2,250 watts (3 horsepower) or a statement that it is rock dusting equipment;

(n) A statement as to whether the item of equipment had a major overhaul on or after March 30, 1971;

(o) A statement of the specific actions taken with respect to each item of equipment to achieve compliance with the electric face equipment requirements of the Act since March 30, 1970; and

(p) A plan setting forth a schedule for achieving compliance for the item of equipment for which the permit is sought and describing the means and measures to be employed. This plan must contain information regarding one of the following:

(1) If the operator plans to replace the item of equipment for which a permit is requested with permissible equipment, he must furnish the name of the firm from which the replacement equipment will be obtained and the scheduled date of delivery. A copy of the contract or order must be submitted to satisfy this requirement;

(2) If the operator plans to have the item of equipment for which a permit is requested converted to permissible condition, he must furnish the name of the firm which will perform the conversion and the scheduled completion date. A copy of the contract or order must be submitted to satisfy this requirement; or

(3) If the operator plans to use his own employees to convert this item of equipment to permissible status, he must furnish a copy of each contract or order for component parts and materials, the scheduled dates when these materials will be delivered, and an estimated date

when the conversion to permissible status will be completed.

(4) Estimated date of compliance.

§ 504.5 Processing of applications.

(a) All applications timely filed in accordance with the provisions of this part will be processed by the Panel in the order in which completed applications are received.

(b) When an application for a permit for noncompliance is received, the Panel shall cause to be published in the FEDERAL REGISTER a notice giving any interested person an opportunity to file with the Panel a request for a public hearing.

(c) On or before the 15th day after publication of notice in the FEDERAL REGISTER that an application has been accepted for consideration, any interested person may file pursuant to provisions of 30 CFR Part 505, as amended, a request for a public hearing.

(d) After public hearing, or after the expiration of the aforementioned 15-day period if no hearing has been requested, the Panel shall make its determination on the merits of the application and such additional evidence as the Panel deems necessary to its determination, including, but not limited to, evidence in support of representations made in the application.

§ 504.6 Issuance of initial permits.

(a) If the Panel determines, after notice to all interested persons and an opportunity for a public hearing, that an application satisfies the provisions of §§ 504.3 and 504.4 and that the applicant operator, despite his diligent efforts, will be unable to comply with the electric face equipment standards of the Act, the Panel may issue to such an operator an initial permit for noncompliance.

(b) Each initial permit will be issued for the period specified by the Panel. Each permit will specify the individual item of equipment which the operator will be entitled to use in nonpermissible status.

(c) The initial permit and one copy plus a metal plate evidencing the permit will be mailed to the operator at the address specified in the application. A copy of the permit shall immediately be posted on the bulletin board of the affected mine by the operator or his agent and the metal plate evidencing the permit shall immediately be affixed to the

item of equipment for which the permit was issued.

(d) The Panel shall immediately mail a copy of any initial permit granted under this section to a representative of the miners of the mine to which it pertains, and to the public official or agency of the State charged with administering State laws relating to coal mine health and safety in such mine.

§ 504.7 Applications for renewal of permits.

(a) To be considered by the Panel, every application for renewal of a permit must:

(1) Be filed with the Panel not more than 90 days nor less than 30 days prior to the expiration date of the permit in effect;

(2) Be submitted on the form and in the manner prescribed in §§ 504.3 and 504.4;

(3) Specifically set forth the actions which have been taken to achieve compliance since the date of filing the previous application; and

(4) Include a detailed schedule for achieving compliance by replacement of such nonpermissible equipment with permissible equipment or by conversion of such nonpermissible equipment to permissible status.

(b) When an application for renewal of a permit for noncompliance is received, the Panel shall cause to be published in the FEDERAL REGISTER a notice giving any interested person an opportunity to file with the Panel a request for a public hearing.

(c) On or before the 15th day after publication of notice in the FEDERAL REGISTER that an application for renewal has been accepted for consideration, any interested person may file a request for a public hearing.

(d) After public hearing, or after the expiration of the 15-day period if no hearing has been requested, the Panel shall make its determination on the merits of the application for a renewal.

§ 504.8 Renewal of permits.

(a) If the Panel determines after notice to all interested persons and an opportunity for a public hearing that the renewal application satisfies the provisions of § 504.7 of this part and that the applicant-operator, despite his diligent efforts, will be unable to comply with the electric face equipment standard of the

Act, the Panel may issue to such an operator a renewal permit for noncompliance.

(b) Each renewal permit will be issued for the period specified by the Panel. The period of noncompliance authorized by the permit shall not extend beyond March 30, 1976. Each permit will specify the individual item of equipment which the operator will be entitled to use in a nonpermissible status.

(c) The renewal permit and one copy plus a metal plate evidencing the permit will be mailed to the operator at the address specified in the application. A copy of the permit shall immediately be posted on the bulletin board of the affected mine by the operator or his agent and the metal plate evidencing the permit shall immediately be affixed to the item of equipment for which the permit was issued.

(d) The Panel shall immediately mail a copy of any renewal permit granted under this section to a representative of the miners of the mine to which it pertains, and to the public official or agency of the State charged with administering State laws relating to coal mine health and safety in such mine.

§ 504.9 Additional evidence.

Each operator shall, upon request by the Panel, submit such additional infor-

mation as the Panel considers necessary to make its determination, including, but not limited to, evidence in support of representations made in connection with the application.

§ 504.10 Public hearing requests.

Requests for public hearings will be considered by the Panel only if such requests are filed with the Panel by the following persons:

(a) Any person interested in the application after publication in the FEDERAL REGISTER of a Notice of Opportunity for Public Hearing on an application for the renewal of any permit or an application for an initial permit under section 305(a)(2) of the Act (30 U.S.C. 865(a)(2)).

(b) Any interested person, including the applicant or a representative of the miners at the applicant's mine, after the Panel's decision on an application for an initial permit provided that no public hearing was held on an application for which Notice of Opportunity for Public Hearing was published.

§ 504.11 Public Hearings—practice and procedure.

Public hearings will be conducted pursuant to the Panel's regulation governing practice and procedure for hearings, 30 CFR Part 505, as amended.

SUBCHAPTER C—GENERAL ADMINISTRATION

PART 505—PRACTICE AND PROCEDURE FOR HEARINGS UNDER SUBCHAPTERS A AND B OF THIS CHAPTER

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AUTHORITY: The provisions of this Part 505 issued under sec. 506, 83 Stat. 803; 30 U.S.C. 957.

SOURCE: The provisions of this Part 505 appear at 35 F.R. 11296, July 15, 1970, unless otherwise noted.

Subpart A—General Information

§ 505.1 Scope of rules.

The provisions of this part are applicable to public hearings held by the Interim Compliance Panel pursuant to the provisions of the Federal Coal Mine Health and Safety Act of 1969.

§ 505.2 Definitions.

As used in this Part 505:

(a) "Act" means the Federal Coal Mine Health and Safety Act of 1969 (P.L. 91-173);

(b) "Panel" means the Interim Compliance Panel established by section 5 of the Act;

(c) "Applicant" means any operator of an underground coal mine who files an application with the Panel for an initial or renewal permit for noncompliance under the provisions of Title II or Title III of the Act;

(d) "Presiding officer" means the administrative law judge or members of the Panel designated pursuant to § 505.40;

(e) "Permit" means a permit for non-compliance with the Interim Mandatory Health or Safety Standards set forth in Title II or Title III of the Act; and

(f) "Proceeding" means any public hearing or part thereof held or directed to be held by the Panel pursuant to the Act. [35 FR 11296, July 15, 1970, as amended at 38 FR 10927, May 3, 1973]

§ 505.3 Records to be public.

All pleadings, correspondence, exhibits, transcripts of testimony, exceptions, briefs, decisions, and other documents filed in the docket in any proceeding may be inspected and copied in the office of the Correspondence Control Officer, Interim Compliance Panel, Suite 800, 1730 K Street NW., Washington, D.C. 20006. Inquiries concerning public records may be made to the Correspondence Control Officer.

§ 505.4 Use of gender and number.

As used in this part, words importing the singular number may extend and be applied to several persons or things, and vice versa. Words importing the masculine gender may be applied to females or organizations.

§ 505.5 Suspension of rules.

Upon notice to all parties, the Panel or the presiding officer with respect to matters pending before them, may modify or waive any rule in this part upon determination that no party will be unduly prejudiced and the ends of justice will thereby be served.

§ 505.6 Permits pending final agency action.

After granting a request for a public hearing, the Panel, upon petition therefor or upon its own motion, may extend an existing permit within lawful limits for such period as the Panel determines will serve the interests of justice. The Panel may reconsider and alter any action taken pursuant to the provisions of this § 505.6.

Subpart B—Requests for Public Hearings, Participants

§ 505.10 Persons who may file requests.

Requests for public hearings will be considered by the Panel only if such requests are filed with the Panel by the following persons:

(a) Any person interested in the application after publication in the **FEDERAL REGISTER** of a Notice of Opportunity for Public Hearing on an application for the renewal of any permit or an application for an initial permit under section 305(a)(2) of the Act (30 U.S.C. 865(a)(2)).

(b) Any interested person, including the applicant or a representative of the miners at the applicant's mine, after the Panel's decision on an application for an initial permit *Provided*, That no public hearing was held on an application for which Notice of Opportunity for Public Hearing was published.

[38 FR 29076, Oct. 19, 1973]

§ 505.11 Filing of requests.

Requests for public hearings shall be filed in triplicate with the Panel. If such a request is made by a person other than the applicant, the person making the request shall serve a copy of the request upon the applicant.

§ 505.12 Time for filing of requests.

The Panel will consider a request for a public hearing:

(a) On an application for an initial permit or for a renewal permit if such a request is filed within 15 days after publication in the **FEDERAL REGISTER** of a Notice of Opportunity for Public Hearing.

(b) On its decision on an application for an initial permit if such request is filed within 15 days after the date of mailing by the Panel of notice of such decision *Provided*, That no public hearing was held on an application for which Notice of Opportunity for Public Hearing was published.

[38 FR 30259, Nov. 2, 1973]

§ 505.13 Contents of requests.

Requests for hearings shall be in writing, signed by the person making the request, and shall:

(a) State the interest in the application or in the decision or intended decision of the Panel, of the person making the request,

(b) State whether the person making the request seeks the issuance, denial or modification of the permit, and

(c) Allege specific facts which are claimed to raise a substantial issue, and which if established at the hearing, would result in the issuance, denial, or modification of the permit.

§ 505.14 Panel action on requests.

(a) A request for public hearing filed by the applicant or the representative of the miners of the affected coal mine pursuant to §§ 505.10 through 505.13, inclusive, shall be granted when no public hearing has been held on the application.

(b) If the Panel determines that the person (other than the applicant or representative of the miners) requesting the hearing has no interest in the proceeding or that the request does not raise a substantial factual issue, it may deny the request by written notice to the person making the request, which notice shall set forth the specific reasons for the denial.

(c) If the Panel determines to grant the request for a public hearing, it will publish a notice of the hearing in the **FEDERAL REGISTER** and give written notice to the person making the request and to the applicant.

§ 505.15 Posting of notice of hearing on mine bulletin board.

Upon receipt of a notice of hearing the applicant shall immediately post a copy on the bulletin board of the affected coal mine and shall certify by written notice to the Panel the date of such posting.

§ 505.16 Petitions to intervene or participate in hearings.

Any person desiring to participate as a party or otherwise in a proceeding shall file a petition for leave to intervene at least 10 days prior to the hearing. The petition shall (a) set forth the reasons for the desired participation, (b) indicate how the petitioner's participation will assist the presiding officer in the determination of the issues in question, and (c) be accompanied by an affidavit by a person with personal knowledge verifying the facts set forth in the petition. The presiding officer shall have discretion to grant or deny such petition or to limit the intervention of the petitioner to specific issues or a particular stage of the proceeding.

Subpart C—Appearance and Practice**§ 505.20 Appearance.**

A party may appear in person or by counsel and participate fully in any proceeding. A State agency or a corporation may appear by any of its officers or by any employee it authorizes to appear on its behalf. Counsel must be members in good standing of the bar of a State, Territory, or possession of the United States or of the District of Columbia or the Commonwealth of Puerto Rico.

§ 505.21 Authority for representation.

Any individual acting in a representative capacity in any proceeding may be required to show his authority to act in such capacity.

§ 505.22 Exclusion from hearing for misconduct.

Disrespectful, disorderly, or contumacious language or contemptuous conduct, refusal to comply with directions of the presiding officer, or continued use of dilatory tactics by any person at any hearing shall constitute grounds for immediate exclusion of such person from the hearing by the presiding officer.

§ 505.23 Ex parte communications: separation of functions.

(a) There shall be no communication or consultation between any party and the presiding officer or any Panel member concerning the merits of any proceeding pending before the Panel unless, prior thereto, there is notice and opportunity for all parties to participate.

(b) An employee or agent of the Panel engaged in the performance of an investigative function for the Panel in a case may not, in that or a factually related case, participate or advise in the decision or recommended decision except as counsel or witness in public proceedings. This paragraph does not apply to the members of the Panel.

§ 505.24 Filing of ex parte communications.

A prohibited communication in writing received by the Panel or by the presiding officer, shall be made public by placing it in the correspondence file of the docket in the case and will not be considered as part of the record for decision. If the prohibited communication is received orally, a memorandum setting forth its substance shall be made and

filed in the correspondence section of the docket in the case. A person referred to in such memorandum may file a comment for inclusion in the docket if he considers the memorandum to be incorrect.

§ 505.25 Expeditious treatment.

Requests for expeditious treatment of matters pending before the Panel or the presiding officer are deemed communications on the merits, and are improper except when served upon each party. Such communications should be in the form of a motion.

§ 505.26 Matters not prohibited.

A request for information which merely inquires about the status of a proceeding without discussing issues or expressing points of view is not deemed as ex parte communication. Such requests should be directed to the Correspondence Control Officer of the Panel. Communications with respect to minor procedural matters or inquiries or emergency requests for extensions of time are not deemed ex parte communications prohibited by § 505.25. Where feasible, however, such communications should be by letter with copies to all parties.

Subpart D—Form, Execution, Service, and Filing of Documents: Time**§ 505.30 Form of documents to be filed.**

Documents to be filed under the rules in this part shall be dated, the original signed in ink, shall show the docket description and title of the proceeding, and shall show the title, if any, and address of the signatory. Copies need not be signed but the name of the person signing the original shall be reproduced. Documents shall be legible and shall not be more than 8½ inches wide and 13 inches long.

§ 505.31 Signature of documents.

The signature of a party, authorized officer, employee, or attorney on a document, other than on an affidavit required or authorized hereunder to be filed, constitutes a certification that he has read the document, that to the best of his knowledge, information, and belief there is good ground to support it, and that it is not interposed for delay. If a document is not signed or is signed with intent to defeat the purpose of this section, it may be stricken as sham and false and the proceeding may proceed as though the

document had not been filed. Similar action may be taken if scandalous or indecent matter is inserted.

§ 505.32 Filing of documents.

Documents required or permitted to be filed with the Panel shall be filed in triplicate, personally during regular business hours or by first-class mail, addressed to the Correspondence Control Officer, Interim Compliance Panel, Suite 800, 1730 K Street NW., Washington, D.C. 20006, and where filed by mail shall be considered to be complete upon mailing. Regular business hours are every Monday through Friday (legal holidays in the District of Columbia excepted) from 9 a.m. to 5 p.m., eastern standard or daylight saving time, whichever is effective in the District of Columbia at the time. Originals only of exhibits and transcripts of testimony need be filed.

§ 505.33 Service—how made.

Service shall be made by personal delivery of one copy to each person to be served or by mailing by first-class mail, properly addressed with postage prepaid. When a party has appeared by attorney service upon such attorney will be deemed service upon the party. Documents served by mail shall be air mailed if the addressee is more than 300 miles distant.

§ 505.34 Date of service.

The date of service shall be the day when the matter is deposited in the U.S. mail or is delivered in person.

§ 505.35 Certificate of service.

The original of every document filed and required to be served upon parties to a proceeding shall be endorsed with a certificate of service signed by the party making service or by his attorney or representative, stating that such service has been made, the date of service, and the manner of service, whether by mail or personal delivery, and stating when and how filing was accomplished.

§ 505.36 Computation of time.

In computing any period of time under the rules in this part or in an order issued hereunder, the time begins with the day following the act, event, or default, and includes the last day of the period, unless it is a Saturday, Sunday, or legal holiday observed in the District of Columbia, in which event it includes the next following business day. When the period of time prescribed or allowed is

less than 7 days, intermediate Saturdays, Sundays, and legal holidays shall be excluded from the computation.

§ 505.37 Extension of time or postponement.

Requests for extension of time should be served on all parties and should set forth the reasons for the request. Requests may be granted upon a showing of good cause. From the designation of a presiding officer until the issuance of his decision such requests should be addressed to him. Answers to such requests are permitted, if made promptly. If a request for extension of time would result in delaying completion of the hearing beyond the 30th day following the appointment of the presiding officer, or if such request would result in delay in the issuance of an initial or recommended decision by the presiding officer beyond the 30th day following the completion of the hearing, the request must be addressed to the Panel. The mere filing of such a request with the Panel shall not extend either of the aforementioned 30-day periods unless an appropriate order is issued by the Panel.

§ 505.38 Reduction of time to file documents.

For good cause, the Panel or the presiding officer, with respect to matters pending before them, may reduce any time limit prescribed by the rules in this part, except as provided by law or in the applicable substantive regulations of the Panel under Subchapters A and B of this title.

Subpart E—Presiding Officer

§ 505.40 Who presides.

Hearings shall be conducted before one or more members of the Panel or before an administrative law judge appointed under 5 U.S.C. 3105 or 3344. A presiding officer for the hearing will be designated by the Chairman of the Panel or, in his absence, by the Acting Chairman.

[35 FR 11296, July 15, 1970, as amended at 38 FR 10927, May 3, 1973]

§ 505.41 Designation of presiding officer.

The designation of the presiding officer shall be in writing, and shall specify whether he is to make an initial decision or to certify the entire record including his recommended findings, conclusions and proposed decision to the Panel, and

may also fix the time and place of hearing. A copy of such order shall be served on the applicant and every other party to the proceeding. After service of an order designating a presiding officer and until such presiding officer makes his decision, motions and petitions shall be submitted to him. In the case of the death, illness, disqualification or unavailability of the designated presiding officer, another presiding officer may be designated to take his place.

§ 505.42 Authority of presiding officer.

The presiding officer shall have the duty to conduct a fair hearing, to take all necessary action to avoid delay, and to maintain order. He shall have all powers necessary to these ends, including (but not limited to) the power to:

(a) Arrange and issue notice of the date, time, and place of hearings, or, upon due notice to the parties, to change the date, time, and place of hearings previously set: *Provided, however*, That the hearing shall be completed within 30 days from the date of the designation of the presiding officer unless upon good cause shown the Panel extends such period.

(b) Hold conferences to settle, simplify, or fix the issues in a proceeding, or to consider other matters that may aid in the expeditious disposition of the proceeding.

(c) Require parties and interested persons to state their position with respect to the various issues in the proceeding.

(d) Consolidate actions pending for hearing.

(e) Administer oaths and affirmations.

(f) Rule on motions, and other procedural items on matters pending before him.

(g) Regulate the course of the hearing and conduct of counsel and all other persons therein.

(h) Examine witnesses and direct witnesses to testify.

(i) Receive, rule on, exclude or limit evidence.

(j) Fix the time for filing motions, petitions, briefs, or other items in matters pending before him.

(k) Issue initial or recommended decisions within 30 days from the completion of the hearing unless upon good cause shown the Panel extends such period.

(l) Take any action authorized by the rules in this part and in conformance with the provisions of 5 U.S.C. 551-559 (the Administrative Procedure Act).

Subpart F—Hearing Procedures

§ 505.50 Motions.

Motions and petitions shall state the relief sought, the authority relied upon, and the facts alleged. If made before or after the hearing, these matters shall be in writing. If made at the hearing, they may be stated orally, but the presiding officer may require that they be reduced to writing and filed and served on all parties in the same manner as a formal motion. Motions, answers, and replies shall be addressed to the presiding officer, if the case is pending before him. A repetitious motion will not be entertained.

§ 505.51 Responses to motions and petitions.

Within 5 days after a written motion or petition is served, or such other period as the Panel or the presiding officer may fix, any party may file a response thereto. An immediate oral response may be made to an oral motion.

§ 505.52 Disposition of motions and petitions.

The Panel or the presiding officer may not sustain or grant a written motion or petition prior to expiration of the time for filing responses thereto, but may overrule or deny such motion or petition without awaiting response: *Provided, however*, That prehearing conferences, hearings and decisions need not be delayed pending disposition of motions or petitions. Oral motions and petitions may be ruled on immediately. Motions and petitions submitted to the Panel or the presiding officer, respectively, and not disposed of in separate rulings or in their respective decisions will be deemed denied. Oral arguments shall not be held on written motions or petitions unless the presiding officer in his discretion expressly so orders.

§ 505.53 Order of proceeding: Panel may participate.

The applicant shall have the burden of proof and shall proceed first at the hearing. The Panel may, through a Panel member or an authorized representative, participate at the hearing for the purpose of presenting evidence or examining witnesses.

[38 FR 29076, Oct. 19, 1973]

§ 505.54 Evidentiary purpose.

The hearing is directed to receiving factual evidence and expert opinion testimony related to the issues in the proceeding. Argument will not be received in evidence; rather it should be presented in statements, memoranda, or briefs, as determined by the presiding officer. Brief opening statements, which shall be limited to a statement of the party's position and what he intends to prove, may be made at hearings.

§ 505.55 Testimony.

Testimony shall be given orally under oath or affirmation by witnesses at the hearing; but the presiding officer, in his discretion, may require or permit that the direct testimony of any witness be prepared in writing and served on all parties in advance of the hearing. Such testimony may be adopted by the witness at the hearing, and filed as part of the record thereof. Unless authorized by the presiding officer, witnesses will not be permitted to read prepared testimony into the record. Except as provided in § 505.57, witnesses shall be available at the hearing for cross-examination.

§ 505.56 Exhibits.

Proposed exhibits shall be exchanged at the prehearing conference, or otherwise prior to the hearing if the presiding officer so requires. Proposed exhibits not so exchanged may be denied admission as evidence.

§ 505.57 Affidavits.

An affidavit is not inadmissible as such. Unless the presiding officer fixes other time periods affidavits shall be filed and served on the parties not later than 15 days prior to the hearing; and not less than 7 days prior to hearing a party may file and serve written objection to any affidavit on the ground that he believes it necessary to test the truth of assertions therein at the hearing. In such event the assertions objected to will not be received in evidence unless the affiant is made available for cross-examination, or the presiding officer determines that cross-examination is not necessary for the full and true disclosure of facts referred to in such assertions.

§ 505.58 Evidence.

Irrelevant, immaterial, unreliable, and unduly repetitious evidence will be excluded.

§ 505.59 Cross-examination.

A witness may be cross-examined on any matter material to the proceeding without regard to the scope of his direct examination.

§ 505.60 Unsponsored written material.

Letters expressing views or urging action and other unsponsored written material regarding matters in issue in a hearing will be placed in the correspondence section of the docket of the proceeding. These data are not deemed part of the evidence on record in the hearing.

§ 505.61 Objections.

Objections to evidence shall be timely and briefly state the ground relied upon.

§ 505.62 Exceptions to rulings of presiding officer unnecessary.

Exceptions to rulings of the presiding officer are unnecessary. It is sufficient that a party, at the time the ruling of the presiding officer is sought, makes known the action which he desires the presiding officer to take, or his objection to an action taken, and his grounds therefor.

§ 505.63 Official notice.

Where official notice is taken or is to be taken of a material fact not appearing in the evidence of record, any party, on timely request, shall be afforded an opportunity to show the contrary.

§ 505.64 Public document items.

Whenever there is offered (in whole or in part) a public document, such as an official report, decision, opinion, or published scientific or economic statistical data issued by any of the executive departments (or their subdivisions), legislative agencies or committees, or administrative agencies of the Federal Government (including Government-owned corporations), or a similar document issued by a State or its agencies, and such document (or part thereof) has been shown by the offeror to be reasonably available to the public, such document need not be produced or marked for identification, but may be offered for official notice as a public document item by specifying the document or relevant part thereof.

§ 505.65 Offer of proof.

An offer of proof made in connection with an objection taken to any ruling

of the presiding officer rejecting or excluding proffered oral testimony shall consist of a statement of the substance of the evidence which counsel contends would be adduced by such testimony; and, if the excluded evidence consists of evidence in documentary or written form or of reference to documents or records, a copy of such evidence shall be marked for identification and shall accompany the record as the offer of proof.

§ 505.66 Appeal from ruling of presiding officer.

Rulings of the presiding officer may not be appealed to the Panel prior to its consideration of the entire proceeding, except with the consent of the presiding officer and where he certifies on the record or in writing that the allowance of an interlocutory appeal is clearly necessary to prevent exceptional delay, expense, or prejudice to any party, or substantial detriment to the public interest. If an appeal is allowed, any party may file a brief with the Panel within such period that the presiding officer directs. No oral argument will be heard unless the Panel directs otherwise.

Subpart G—The Record

§ 505.70 Official transcript.

Hearings shall be reported verbatim by an official reporter designated by the Panel. The official transcripts of testimony taken, together with any exhibits, briefs, or memoranda of law filed therewith shall be filed with the Panel. Transcripts of testimony in hearings may be obtained from the official reporter by the parties and the public at rates not to exceed the maximum rates fixed by the contract with the reporter. Upon notice to all parties, the presiding officer may authorize corrections to the transcript which involve matters of substance.

§ 505.71 Record for decision.

The transcript of testimony, exhibits and all papers and requests filed in the proceedings (except the correspondence section of the docket) including rulings and any recommended or initial decision shall constitute the exclusive record for decision.

Subpart H—Posthearing Procedures, Decisions

§ 505.80 Posthearing briefs: proposed findings and conclusions.

(a) The presiding officer shall fix the time for filing posthearing briefs, which

may contain proposed findings of fact and conclusions of law, and, if permitted, reply briefs.

(b) Briefs should include a summary of the evidence relied upon together with references to exhibit numbers and pages of the transcript, with citations of the authorities relied upon.

§ 505.81 Decisions by presiding officer.

On or before the 30th day following the completion of the hearing, the presiding officer, if so authorized, shall render an initial decision, or if not so authorized, he shall certify the entire record, including recommended findings, conclusions and decision to the Panel. Such initial decision or recommended decision shall be filed as part of the record of the proceeding, shall be mailed to each party, and shall include findings and conclusions, and the reasons or basis therefor, on all material issues of fact and law presented on the record.

§ 505.82 Review: exceptions to initial or recommended decisions.

(a) Within 15 days after the mailing of an initial or recommended decision, any party may file with the Panel exceptions to the decision, stating fully his reasons therefor. Any exception not included is waived. Any other party may file a response thereto within 25 days after the mailing of the decision. Upon the filing of such exceptions, the Panel shall review the decision and issue its own decision thereon.

(b) In the absence of such exceptions, the Panel may, on its own initiative, by an order adopted and filed within 15 days after the filing of the initial decision, provide that an initial decision shall not become final, but shall be further reviewed or considered by the Panel.

§ 505.83 Decision on the record or review by the Panel.

In any case in which the record is certified to the Panel for a decision or the Panel reviews an initial or recommended decision pursuant to § 505.82, the Panel may, prior to its decision, on its own initiative or upon request of any party, take one or more of the following actions:

(a) Hear oral argument,

(b) Require the filing of briefs, and

(c) Prior to, or after oral argument or briefs, reopen the record and remand the proceedings to the presiding officer to take further testimony or evidence, or to make further findings or conclusions.

§ 505.84 Final decisions.

(a) Where the hearing is conducted by a presiding officer who makes an initial decision, if no exceptions thereto or Panel order for review are filed within the 15-day period specified in § 505.82, such decision shall become the final decision of the Panel, and shall constitute "final agency action" subject to judicial review pursuant to section 106 of the Act.

(b) Where the hearing is conducted by a presiding officer who makes a recommended decision, or upon the filing of exceptions to, or Panel order for, review of a presiding officer's initial decision, the Panel shall review the recommended or initial decision and shall issue its own decision thereon, which shall become the

final decision of the Panel, and shall constitute "final agency action" subject to judicial review pursuant to section 106 of the Act. Such decisions by the Panel shall contain findings of fact and conclusions of law, as well as the basis therefor, upon all the material issues of fact or law presented.

(c) All final decisions issued by the Panel shall be promptly served on all parties.

§ 505.85 Posting of decisions on mine bulletin board.

Upon receipt of an initial, recommended or final decision, the applicant shall immediately post a copy thereof on the bulletin board of the affected coal mine and shall certify by written notice to the Panel the date of such posting.

CHAPTER VI—BUREAU OF MINES, DEPARTMENT OF THE INTERIOR¹

NOTE: Nomenclature changes affecting this Chapter appear at 39 FR 23997, June 28, 1974.

SUBCHAPTER A—HELIUM AND COAL

Part

- 601 Sales of helium by and rental of containers from Bureau of Mines.
- 602 Purchase of helium by Federal agencies and their contractors.
- 609 Payments required from owners of private lands upon which the Bureau of Mines performs exploration or development work to investigate known coal deposits.
- 610 Coal analysis for non-Federal applicants.

SUBCHAPTER K—PROCEDURES

- 641 Mine fire control, Appalachia.
- 642 Subsidence and strip mine rehabilitation, Appalachia.

SUBCHAPTER M—RULES AND REGULATIONS FOR THE ADMINISTRATION OF GRANTS

- 651 Bureau of Mines grant programs.

SUBCHAPTER A—HELIUM AND COAL

PART 601—SALES OF HELIUM BY AND RENTAL OF CONTAINERS FROM BU- REAU OF MINES

- Sec.
- 601.1 Definitions.
- 601.2 Purchase price of helium.
- 601.3 Service charges.
- 601.4 Settlements under existing contracts.
- 601.5 Applications.
- 601.6 Advances, deposits, bonds, insurance.
- 601.7 Initial advance for purchase of helium.
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- Sec.
- 601.11 Repurchase rights of Government.
- 601.12 Reservations with respect to sales and deliveries.
- 601.13 Exportation of helium.
- 601.14 Power of inspection.
- 601.15 Notification to repurchasers.
- 601.16 Violations and penalties.
- 601.17 Cancellation and assignment of contracts.
- 601.18 Federal agencies not affected.
- 601.19 Forms.
- 601.20 Termination.
- Appendix.

AUTHORITY: Secs. 6, 9, 74 Stat. 921, 922; 50 U.S.C. 167d, 167g.

¹ 39 FR 23997, June 28, 1974.

SOURCE: 26 FR 9827, Oct. 19, 1961, unless otherwise noted. Redesignated as Part 601 at 39 FR 23997, June 28, 1974.

§ 601.1 Definitions.

(a) "Act" means the Helium Act, approved September 13, 1960 (74 Stat. 918; 50 U.S.C. 167).

(b) "Helium Production Fund" means the fund referred to in subsection (f) of section 6 of the Act.

(c) "Helium plant" means a facility operated by the United States Bureau of Mines for the production, purification, repurification, or shipment of helium.

(d) "Bureau" means the Bureau of Mines of the Department of the Interior.

(e) "Purchaser" means any individual, corporation, partnership, firm, association, trust, estate, public or private institution, state or political subdivision thereof other than an agency of the United States Government, purchasing helium from the Bureau, or using helium containers rented from the Bureau.

(f) "Grade-A helium" means the grade of helium produced at the Bureau's helium plants, and it is 99.995 percent pure helium or better, by volume.

(g) "Unit of helium" means 1,000 cubic feet of helium at a pressure of 14.7 pounds per square inch absolute and a temperature of 70° Fahrenheit.

(h) "Cylinder" means a standard-type cylinder of approximately 1.5 cubic feet internal volume, designed for a filling pressure of 1,800 pounds per square inch gage or more, which will stand vertically without external support with the center of the valve outlet not less than 50½ inches nor more than 58½ inches above the floor, equipped with a standard-type cylinder valve and valve-protective cap, or a similar cylinder acceptable to the Bureau as a standard type.

(i) "Valve" means a standard-type cylinder valve acceptable to the Bureau of Mines having a valve outlet conforming to specifications No. 580 or No. 350 as described by Compressed Gas Association, Inc., Pamphlet V-1, Second Edition: B57.1-1953: *Provided*, That at the Bureau's option, valves with outlets conforming to other specifications may be accepted as alternate standards. Each valve shall be equipped with an outlet-port cap or plug.

(j) "Tank car" means a special railroad car container permanently equipped with multiple cylinders of ICC Specifi-

cation 107A to be used exclusively for transporting helium.

(k) "Semi-trailer" means a special road-type trailer container without motive power permanently equipped with multiple cylinders of ICC Specification 3AA to be used exclusively for transporting helium.

(l) "Local time" means standard or daylight saving time, whichever is in use in the locality of the transaction to which it applies.

(m) "Day" means a period of 24 consecutive hours beginning and ending at 7 a.m. local time.

(n) "Month" means a calendar month beginning at 7 a.m. the first day of the month and ending at 7 a.m. on the first day of the succeeding month.

(o) "Constructive placement" means written notice by a common carrier to a purchaser of its readiness to deliver a tank car to the purchaser's track, or to public delivery tracks if so specified by purchaser.

(p) "Schedule of Prices and Charges" means a schedule published in the FEDERAL REGISTER as a part of the regulations in this part and referred to herein as the Schedule showing the prices that are charged for helium, services, and use of equipment rented from the Bureau, and showing the cash advance required and deposit, bonds, or insurance that must be furnished to guarantee return of containers. In no event will the Schedule become effective in less than 30 days after date of publication in the FEDERAL REGISTER.

§ 601.2 Purchase price of helium.

(a) The purchase price per unit of Grade-A helium shall be the price stated in the Schedule that is in effect on the date the helium is shipped from the helium plant.

(b) *Minimum charge.* Notwithstanding the provision of paragraph (a) of this section, the minimum charge for the helium delivered under any one contract shall be the full price of 20 units as of date of contract.

§ 601.3 Service charges.

In addition to the purchase price of helium, the following charges for services and use of equipment rented from the Bureau shall be paid by the purchaser:

(a) *For filling cylinders.* The charge per unit of helium compressed into cylinders as shown in the Schedule that is in effect on that date the helium is shipped from the helium plant.

(b) *For ordinary work performed on containers supplied by the purchaser and for ordinary services performed in connection with shipment of helium from a helium plant.* The charges state in the Schedule that is in effect on the day the work is performed.

(c) *For extraordinary expenses.* Such expenses incurred in connection with any contract or delivery, including, but not limited to, cost of work on purchaser's containers for which prices are not stated in the effective Schedule, filling containers of types other than those referred to in § 601.1 (h), (j), and (k), purifying helium beyond normal plant purity, shipment of helium from other than a helium plant selected by the Bureau, and unusual handling, transportation, and communications, may be determined by the Bureau and charged to the purchaser as they arise on the basis of the cost of rendering the services, making due allowances for contingencies, overhead expense and commercial common-carrier rates.

(d) *For use of helium containers supplied by the Bureau.* (1) *Cylinder:* The monthly charge per cylinder shall be as stated in the Schedule in effect on the first day of the month in which the cylinders are rented: *Provided*, That the charges stated in any newly approved price Schedule shall be paid from the beginning of the first month following that in which it became effective: *Provided further*, That minimum net charge under any one cylinder rental contract shall be one month's charge for 100 cylinders: *And provided further*, That upon written approval of the Bureau, purchasers may themselves give such cylinders the quinquennial hydrostatic test required by the Interstate Commerce Commission and for each cylinder so tested will be allowed a credit equal to the amount the Bureau charges for such service as shown in the Schedule.

(2) *Semi-trailer for each round trip:* A charge per day as stated in the Schedule in effect at the time a round trip of a semi-trailer is started from a helium plant.

(3) *Tank car for each round trip:* The sum of the charges, as stated in the Schedule in effect at the time a round trip is started, consisting of:

(1) A charge for each whole mile, or major fraction thereof, of the total round-trip mileage between the helium plant at which the tank car is filled and its destination, according to the official

mileage tariffs of the railroads concerned, and

(ii) A charge per day at destination as stated in the Schedule in effect at the time a round trip of a tank car is started from a helium plant.

(e) *Computation of time periods.* (1) *For cylinders:* The time period of months referred to in subparagraph (1) of paragraph (d) of this section or in the Schedule of charges for use of cylinders shall begin the month in which the cylinder is placed in service for the purchaser and shall end the month it is returned to the Bureau's service except in the case of cylinders placed in the purchaser's service and returned to Bureau's service the same month. Any fractional period, including the period of use of a cylinder placed in the purchaser's service and returned to the Bureau's service the same month, shall count as a whole period. A cylinder shall not be considered to be returned to the Bureau's service until it is returned to the Bureau's point of origin or to some other point designated by the Bureau, and in the case of a cylinder used in making repeated shipments to the same purchaser, until it is released from that service. The charge for the use of a cylinder shall abate on a pro rata basis for the number of days during any period when it is out of service because of unserviceable conditions not caused by any fault of the purchaser.

(2) *For semi-trailers:* The time period of days referred to in subparagraph (2) of paragraph (d) of this section or in the Schedule of charges for use of semi-trailers shall begin the day following the day in which the semi-trailer is placed in service for the purchaser and shall end the day it is returned to the Bureau's service; except that semi-trailer placed in a purchaser's service and returned to the Bureau's service the same day shall be charged on the basis of a whole day. A semi-trailer shall not be considered to be returned to the Bureau's service until it is returned to the Bureau's point of origin or to some other point designated by the Bureau. The charge for use of a semi-trailer shall abate during any period when it is out of service because of unserviceable condition not caused by any fault of the purchaser.

(3) *For tank cars:* The time period of days as referred to in subparagraph (3) of paragraph (d) of this section, or in the Schedule of charges for use of tank

cars, shall begin the day following whichever is the earliest of:

(i) Placement by carrier on purchaser's track, or

(ii) Placement by carrier on public delivery track when so specified by the purchaser, or

(iii) Constructive placement by carrier.

The time period shall be terminated the day of release of the tank car by the purchaser to the carrier for return to a helium plant as evidenced by date and hour shown by billing carrier on empty return billing. The purchaser shall be responsible for having this information shown on the empty return billing. The charge for the use of a tank car shall abate on a pro rata basis for the number of days during any period when it is out of service because of unserviceable conditions not caused by fault of the purchaser.

§ 601.4 Settlements under existing contracts.

Uncoupled portions of contracts for the purchase of helium and for the use of containers in effect when the regulations in this part become effective may be performed and settled under the regulations in this part, by written agreement between the Bureau and the purchaser; but in the absence of such agreement shall be performed and settled under the terms of such contracts and of the regulations as they were in effect at the time such contracts were entered into.

§ 601.5 Applications.

(a) *Applications to purchase helium.* Sales of helium will be made only upon a written application, signed by the applicant, setting forth all of the information and conditions required by the Bureau's form entitled "Application and Contract to Purchase Helium." Such forms will be furnished by the Bureau upon request to the Bureau of Mines Helium Activity, Amarillo, Texas. The application, upon acceptance and execution by the Bureau, shall become the contract for the purchase of helium from the Bureau in accordance with the regulations in this part.

(b) *Application to use containers.* If a purchaser desires that containers be supplied by the Bureau, he may make application thereof on the Bureau's form entitled "Application and Contract To Use Helium Containers." Such forms will be furnished by the Bureau upon re-

quest to the Bureau of Mines Helium Activity, Amarillo, Texas. The application, upon acceptance and execution by the Bureau, shall become the contract for the use of containers in accordance with the regulations in this part.

§ 601.6 Advances, deposits, bonds, insurance.

(a) *Advances and bonds for purchase of helium.* No helium will be delivered or services performed under the regulations in this part except against cash paid in advance on account of the purchase price and services, and when applicable, a bond or bonds as provided in § 601.8.

(b) *Advances, deposits, bonds, or insurance for use of containers.* No containers will be furnished by the Bureau under the regulations in this part except against cash paid in advance for use of the containers and a cash deposit, bond, or insurance policy issued to the United States and acceptable to the Bureau to guarantee the return of all Government-owned containers in satisfactory condition, or the repair or replacement of, or payment for, any containers lost or damaged, and payment of any other charges that may become due.

(c) *Purchaser to maintain adequate credits and bonds or insurance.* The purchaser shall at all times maintain with the Bureau a cash credit sufficient to cover all or as much as the Bureau may require of the purchase price of helium together with such charges for services and use of containers as may accrue, and a cash deposit, bond, or insurance adequate and acceptable to the Bureau to save the Bureau harmless from loss of or damage to containers and to guarantee payment of all charges.

(d) *Initial and supplemental advances, deposits, bonds, or insurance.* Applicants for helium and for use of containers may estimate the amounts of the total and initial cash advances and deposits, bonds, or insurance from the Bureau's established purchase prices, service charges, and container values, as published in the Schedule, and make the necessary payments with their application, or may await a determination and statement of these items by the Bureau after the filing of the application. If the Bureau at any time deems any advance, deposit, bond, or insurance insufficient, it may require that it be made sufficient as a condition to further deliveries of helium or use of containers.

(e) *Computation of cash advance when method of shipment is uncertain.* If the type of container in which helium is to be shipped has not been decided at the time an application is made, the cash advance shall include the service charge for filling cylinders as specified in the Schedule but in adjusting accounts pursuant to § 601.9, filling charges will not be made for units shipped in tank cars or semi-trailers.

(f) *Forms of checks for advances and deposits.* All cash advances, deposits, and additions thereto shall be made in the form of certified checks or cashier's checks payable to the Bureau of Mines Helium Activity, unless this requirement is waived by the Bureau.

§ 601.7 Initial advance for purchase of helium.

The initial cash advance for purchase of helium may be determined as follows:

(a) *On account of purchase price.* The minimum charge for helium under a contract is the purchase price of 20 units.

(1) With applications for less than 500 units of helium: The full purchase price (but not less than the price for 20 units).

(2) With applications for 500 units or more of helium: The full purchase price for 500 units, but the Bureau may require more.

(b) *On account of services.* The full amount of the estimated charges for the services to be rendered, not including charges for use of containers furnished by the Bureau.

§ 601.8 Initial advance and guarantee for containers.

The initial cash advance for rental charge and the deposit, bond, or insurance for use of containers may be determined from the Schedule in effect at the time the application is made.

§ 601.9 Adjustment of accounts.

(a) *Delivery which fulfills contract.* The delivery of a quantity of helium within plus or minus five percent of that contracted for shall constitute performance on the part of the Bureau, but payments for the helium shall be on the basis of the number of units delivered; except as provided in paragraph (b) of this section.

(b) *Refunds to purchasers.* As contracts of sale are performed by the Bureau by the delivery of helium, and as contracts for use of containers are performed by the purchaser by the return of

containers and other equipment furnished by the Bureau, the Bureau may make refunds from time to time to the purchaser, from any credits to the purchaser's account to the extent that the Bureau deems such credit or credits to be in excess of the amounts that may be required to insure the performance of any outstanding contract or contracts with the same purchaser; and in any event, upon full performance by both the Bureau and the purchaser of any contract of sale or contract for use of containers, the Bureau shall at the purchaser's request refund to the purchaser any balance left to the purchaser's credit on account of such contract; *Provided*, That no refunds or credits will be made on contracts to an extent that will reduce the net payment to the Bureau below the full purchase price for 20 units of helium.

§ 601.10 Shipping containers.

(a) *Containers may be provided by the purchaser of the Bureau.* The applicant may provide containers, as indicated by the Application and Contract to Purchase Helium, or may request the Bureau to provide them, as indicated by the Application and Contract to Use Helium Containers. Containers provided by the applicant must be satisfactory to the Bureau in all respects, must be free internally from oil or water, and shall comply with the requirements for shipment in interstate commerce. The Bureau will not use or fill any container which in its opinion is unsafe or unsuitable.

(b) *Provisions applicable to all types of containers supplied by the Bureau.*

(1) Agencies of the Federal Government purchasing helium from the Bureau will have priority in the use of containers for transporting helium. Containers will not be rented to non-Federal users who do not purchase helium directly from the Bureau.

(2) The purchaser shall make every effort to prevent loss of or damage to helium containers rented from the Bureau; shall not use such containers for any purpose other than transportation or storage of helium purchased from the Bureau; and shall not permit any substance other than Grade-A helium to be compressed or injected into such containers without the Bureau's written consent.

(3) The purchaser shall keep account of all containers supplied by the Bureau

(by serial number if a container is so numbered and if the Bureau makes written request for such record) and shall return such containers (including attached valves and other parts) to the helium plant or other point from which they were shipped to the purchaser, or to such other point as may be specified in writing by the Bureau, at no greater cost to the purchaser. Notwithstanding any other provisions of the regulations in this part, the purchaser shall return standard-type cylinders within 90 days and return helium tank cars and helium semi-trailers within 30 days after receipt of notice that their return is required.

(4) The purchaser shall not, without written approval of the Bureau, remove, obliterate, or obscure any of the Government's stamped or painted markings on such containers, nor stamp, paint, or otherwise apply permanent markings on the metal of such containers, except records of hydrostatic tests stamped into the metal thereof in the manner prescribed by the Interstate Commerce Commission if the making of such tests by the purchaser is authorized by the Bureau: *Provided*, That the purchaser may place temporary markings on said containers if such markings are applied in a manner that will in no way affect the metal or of paint on said containers or attached fittings, but any such temporary markings not authorized by the Bureau in writing shall be removed before return of the containers to the Bureau.

(5) Title to all containers supplied to purchasers under the regulations in this part shall remain in the United States. Payment by the purchaser for a container rendered unserviceable or not returned shall not vest title to such container in the purchaser.

(6) The purchaser shall pay to the carrier all transportation charges and demurrage fees resulting from shipment of the containers and their contents to the purchaser and return of the containers to the Bureau, unless the Bureau has agreed in writing to pay such transportation charges and fees.

(7) In the event that the Bureau pays any transportation costs on containers in the service of a purchaser, the purchaser shall reimburse the Bureau for such transportation at commercial common-carrier rates for the kind of transportation used, whether or not the trans-

portation was by common carrier, or the cost incurred by the Bureau, whichever is applicable.

(8) The purchaser shall not remove containers furnished by the Bureau from the continental limits of the United States (which continental limits shall include Hawaii and Alaska) without specific permission of the Bureau, except for continuous passage through Canada en route between locations in the United States, which passage shall be in accordance with all laws and regulations applying to such passage through Canada.

(9) Any use or operation by the purchaser of containers furnished by the Bureau shall be in full compliance with all applicable Federal and State laws.

(10) The purchaser shall completely indemnify the Government and hold it harmless from any loss or expense arising from claims of third persons in connection with personal injuries or damage to property or otherwise arising from any Government-owned container while in the service or custody of the purchaser.

(c) *Provisions applicable to cylinders supplied by the Bureau.* (1) If any standard-type cylinder supplied by the Bureau is not returned within 90 days after receipt of notice that its return is required, or is rendered unserviceable by defects or failure to pass a quinquennial hydrostatic test as a result of mistreatment or damage beyond the effects of ordinary wear, tear, and age occurring during the period commencing with the delivery or shipment of such cylinder to the purchaser and ending with the return of such cylinder to the Bureau, the purchaser shall be charged and shall pay to the Bureau, or cause to be paid to the Bureau, the replacement cost of the cylinder and its parts, including costs of assembly, as determined by the Bureau which in on event shall be less than \$30 nor more than \$40. The entry of such charge on account of any cylinder not returned shall terminate the charge for the use thereof as of the end of the current month for which charge is made pursuant to § 601.3(d), but if said cylinder is subsequently returned in serviceable condition, the Bureau shall credit or refund to the purchaser, the amount charged for the cylinder less one and one-half times the rental charge not to exceed the amount charged for the lost cylinder for the period from the date when the charge was terminated to the date of the return of the cylinder in re-

payment to the Bureau for extra costs incurred.

(2) The purchaser shall be charged with and shall pay to the Bureau, or cause to be paid to the Bureau, the cost of repairing the damage (as estimated by the Bureau if immediate repair is not made) to any returned cylinder which, although serviceable, has suffered damage beyond that attributable to ordinary wear, tear, and age during the period while it was in the service of the purchaser.

(3) The purchaser shall return each cylinder with a minimum residual pressure of 15 pounds per square inch gage of uncontaminated Grade A helium. Purchasers who fail to comply with these requirements are subject to an additional charge as shown in the Schedule.

(d) *Provisions applicable to tank cars and semi-trailers supplied by the Bureau.* (1) The purchaser shall furnish the Bureau complete routings for movement of tank cars and semi-trailers. Unless otherwise directed, the routings shall be based on the shortest transit time and shall be acceptable to the Bureau.

(2) The purchaser shall be charged with any excess empty mileage of tank cars for which the purchaser is responsible. The Bureau reserves the right to specify the return routing of a tank car, but if not specified by the Bureau, the return movement shall be by the reverse of the routing used in shipment from a helium plant.

(3) The Bureau may collect from the purchaser the amount of any bill received by the Bureau or other Government agency from a railroad or other commercial repair shop for repair of damage incurred by a tank car or a semi-trailer while in the custody of the purchaser.

(4) Bills of lading issued by the purchaser for shipment of tank cars and semi-trailers shall be in such form and bear such notations as the Bureau may direct.

(5) The purchaser shall not remove from their mountings the containers from tank cars or semi-trailers without specific authority of the Bureau.

(6) The purchaser shall make good, or cause to be made good, to the Government, by replacement of materials or by financial reimbursement, as may be appropriate and satisfactory to the Bureau, all losses and damages, not caused by any fault or negligence of the Government,

to any tank car or semi-trailer during any period when such tank car or semi-trailer is in the service or custody of the purchaser. Financial reimbursement shall be satisfactory to the Bureau and to any other governmental agency having jurisdiction over the equipment lost or damaged, and for tank cars shall not exceed the cost of the equipment and its parts, including costs of assembly, determined in accordance with Rule 112 of the Association of American Railroads "Interchange Rules." The same basic principles set forth in Rule 112 of the Association of American Railroads "Interchange Rules" will be used in computing the financial reimbursement for a semi-trailer which is lost or damaged extensively.

(7) The purchaser shall return each tank car and semi-trailer with a minimum residual pressure of 15 pounds per square inch gage of uncontaminated Grade-A helium in each individual cylinder. Purchasers who fail to comply with these requirements are subject to an additional charge as shown in the Schedule. Allowance for this residual helium will be made in the Bureau's billing for helium; however, no additional credit will be allowed purchaser by Bureau for helium returned in tank cars and semi-trailers with pressures in excess of 15 pounds per square inch gage.

§ 601.11 Repurchase rights of Government.

The Government shall have the right to repurchase helium that has been sold by the Bureau and that has not been lost or dissipated, when needed for Government use, upon the following terms and conditions:

(a) *Price for repurchase.* The price to be paid by the Government per unit of helium, at the point of repurchase, for helium of 99.995 percent purity or better, shall be the price at which the helium to be repurchased was purchased initially.

(b) *Adjustment for purity.* For repurchased helium of less than 99.995 percent purity, the unit price to be paid by the Government shall be the price as above determined less one percent thereof for each one percent or fraction thereof that the purity is below 99.995 percent.

§ 601.12 Reservations with respect to sales and deliveries.

The Bureau reserves the right to select the helium plant from which shipments

will be made. The Bureau further reserves the absolute right and discretion to limit or defer sales and deliveries under contracts to conform to the needs and requirements of the Government, and to give such preferences as between sales for medical, scientific, and commercial use, and requisitions by Government agencies, as it deems proper: *Provided*, That in all cases, requirements for Government use shall have first preference. All furnishing of services and supplying of containers under the regulations in this part shall be at the Bureau's option.

§ 601.13 Exportation of helium.

Neither the regulations in this part nor any sale or contract of sale pursuant to the regulations in this part shall authorize or be construed as authorizing the exportation of helium. The export of helium is governed by regulations of the Department of State set out in 22 CFR Parts 121-128. Applications for export licenses should be addressed to the Department of State, Washington, D.C. 20520.

§ 601.14 Power of inspection.

Authorized representatives of the United States may enter and inspect at all reasonable times the place (including places in foreign countries) where any helium produced by the Bureau is stored or used, to the extent reasonably necessary to ascertain whether it is being used or is likely to be used in violation of restrictions in the Act or the regulations in this part.

§ 601.15 Notification to repurchasers.

Every purchaser of helium from the Bureau shall comply and be bound by the Act and the regulations in this part, now or hereafter in force, and shall notify all repurchasers of such helium of the Act and regulations in this part including the power of inspection provided for in § 601.14, the Government's right to repurchase set out in § 601.11, and the regulations of the Department of State governing the export of helium set out in 22 CFR Parts 121-128.

§ 601.16 Violations and penalties.

For violation of any of the provisions of the Act or of the regulations in this part, the Bureau, in addition to any other penalties provided by law, may cancel all future deliveries and forfeit all deposits under existing contracts of purchasers responsible for or in any

manner aiding or participating in such violations, and may deny all pending or future applications from applicants who are participating, or who have participated, in or in any way aided such violations.

§ 601.17 Cancellation and assignment of contracts.

Contracts for the purchase of helium or for the use of containers may not be canceled, assigned, or otherwise transferred without the written consent of the Bureau.

§ 601.18 Federal agencies not affected.

The regulations in this part have no application to requisitions of helium by agencies of the Federal Government, nor to the use of helium by such agencies.

§ 601.19 Forms.

Forms of applications and contracts for purchase of helium and for use of helium containers will be furnished by the Bureau upon request. The Bureau may make alterations in or additions to said forms, and may require the execution of a contract in a different form.

§ 601.20 Termination.

Contracts entered into under these regulations for the purchase of helium or to use helium containers owned by the Bureau may be terminated by the Bureau upon giving purchaser 60 days written notice of its intention to do so. In the event of such termination, the Bureau shall refund to the purchaser all of the unused portion of the purchaser's cash advance hereunder and any other unused moneys in purchaser's account with the Bureau for the purchase of helium and charges related thereto.

APPENDIX
BUREAU OF MINES—HELIUM ACTIVITY
[Effective.....1961]

SCHEDULE OF PRICES AND CHARGES

| | |
|---|-----------------------------------|
| Helium sale price: | |
| Each unit f.o.b. helium plants... | \$35.00. |
| Minimum order each contract... | 20 units. |
| Initial cash advance: | |
| Contracts for less than 500 units. | Full purchase price. ¹ |
| Contracts for 500 units or more | \$17,500.00. |
| Filling charge: | |
| Standard-type cylinders..... | \$2.50 each unit of helium. |
| Tank cars..... | No charge. |
| Semi-trailers..... | Do. |
| Service charges: | |
| Furnish new cylinder caps..... | \$1.50 each. |
| Furnish new cylinder valve and install. | \$2.75 each. |

See footnote at end of table.

SCHEDULE OF PRICES AND CHARGES—CON.

| | |
|---|-------------------------------|
| Service charges—Continued | |
| Hydrostatic test cylinders and indent new test data. | \$1.30 each cylinder. |
| Indent serial numbers on cylinders. | \$0.10 each letter or figure. |
| Install customer's valves. | \$0.30 each. |
| Move cylinders from plant storage. | \$0.20 each |
| Move cylinders to plant storage. | Do. |
| Paint cylinders. | \$0.30 each color. |
| Remove caps wedged by loose port plug. | \$0.15 each cylinder. |
| Remove rusted caps that require special handling. | \$1.15 each. |
| Replace safeties. | \$0.35 each. |
| Reset cylinder valves. | \$0.30 each. |
| Retwork cylinder valves. | \$1.00 each. |
| Retwork safeties. | \$0.20 each. |
| Rubber-stamp special information on cylinders. | \$0.10 each cylinder. |
| Seal cylinder valves. | \$0.05 each. |
| Stencil "Helium Oil Free" on cylinders. | \$0.10 each cylinder. |
| Stencil special markings on cylinders. | \$0.50 each cylinder. |
| Wash and dry cylinders (includes reset valve). | \$1.00 each. |
| Use of tank cars: | |
| Round-trip mileage between helium plant and destination, and | \$0.11 a mile. |
| Time at destination. | \$25.00 each day. |
| Initial cash advance for use of each tank car: | |
| Contracts specifying a definite number of round trips. | \$1,000.00 each round trip. |
| Contracts specifying an indefinite number of round trips. | \$4,000.00. |
| Cash, bond, or insurance to guarantee return of containers: | |
| 1 tank car. | \$100,000.00. |
| 2 or more, but less than 5 tank cars. | \$200,000.00. |
| Each car in excess of 4. | \$20,000.00. |
| Use of semitrailers: | |
| Time in customer's service. | \$15.00 each day: |
| Initial cash advance for use of each trailer: | |
| Contracts specifying a definite number of round trips. | \$150.00 each round trip. |
| Contracts specifying an indefinite number of round trips. | \$600.00. |
| Cash, bond, or insurance to guarantee return of containers: | |
| 1 trailer. | \$40,000.00. |
| 2 or more, but less than 5 trailers. | \$100,000.00. |
| Each trailer in excess of 4. | \$10,000.00. |
| Use of standard-type cylinders: | |
| Each cylinder. | \$.25 a month; |
| Minimum each contract. | \$25.00. |
| Initial cash advance for use of cylinders: | |
| Contracts for 100 cylinders or less. | \$75.00. |
| Contracts for more than 100 cylinders. | \$0.75 a cylinder. |
| Cash, bond, or insurance to guarantee return of containers: | |
| First 500 cylinders. | \$38.00 a cylinder. |
| Second 500 cylinders. | \$15.00 a cylinder. |
| For each cylinder in excess of 1,000. | \$5.00. |
| Additional charge for failing to return containers with minimum residual pressure of 15 pounds per square inch gage of uncontaminated grade-A helium. | |
| Tank cars. | \$175.00. |
| Semitrailers. | \$50.00. |
| Standard type cylinders. | \$1.90. |

¹ The advance shall also include the estimated amount for filling charges and the full amount of estimated charges for the services to be rendered.

PART 602—PURCHASE OF HELIUM BY FEDERAL AGENCIES AND THEIR CONTRACTORS

| | |
|-------|--|
| Sec. | |
| 602.1 | Purpose. |
| 602.2 | Definitions. |
| 602.3 | Purchases by a Federal agency and its contractors. |
| 602.4 | Private helium distributors—eligibility. |
| 602.5 | Sales to private helium distributors. |
| 602.6 | Navajo Helium Plant production. |

AUTHORITY: Sec. 95, 74 Stat. 918; 50 U.S.C. 167g.

SOURCE: 33 FR 15478, Oct. 18, 1968, unless otherwise noted. Redesignated as Part 602 at 39 FR 23997, June 28, 1974.

EDITORIAL NOTE: The effect of a Court Order published at 34 F.R. 1233, Jan. 25, 1969, reads in part as follows:

* * * By notice published in the FEDERAL REGISTER of November 30, 1968, at page 17852, the effective date of the new Part 2 was postponed to December 10, 1968.

On December 9, 1968, the U.S. District Court for the District of Columbia, in *Air Reduction Co., Inc., et al., Plaintiffs, v. Stewart L. Udall, Secretary of the Interior, et al., Defendants* (Civil Action No. 2880-68), entered its final order and judgment the pertinent parts of which are as follows:

"That a permanent injunction is hereby granted, and that the defendants, their agents, employees, and attorneys, and all persons in active concert or participation with them, be and each of them are hereby permanently enjoined, from enforcing, taking any steps under, or allowing to become effective, the helium regulations established and published in the FEDERAL REGISTER of October 18, 1968, 33 F.R. 15478-15480, insofar as they apply in all their aspects to purchases of helium by contractors of Federal agencies as that term is defined in the regulations, and

That it is hereby ordered and declared that the Helium regulations issued and established at 33 F.R. 15478-15480 are unauthorized in that they are beyond the authority of the defendants to issue as set out in section 167g of the Helium Act Amendments of 1960, 50 U.S.C.A. § 167g, insofar as they apply in all their aspects to purchases of helium by contractors of Federal agencies as that term is defined in the regulations."

The Department of the Interior has recommended that an appeal be taken from the foregoing order.

Except as otherwise provided by the foregoing order, the regulations in Part 2 of Title 30, Code of Federal Regulations, remain in effect.

§ 602.1 Purpose.

(a) Subsection (a) of section 6 of the Helium Act (50 U.S.C. 167d(a)) provides:

The Department of Defense, the Atomic Energy Commission, and other agencies of the Federal Government, to the extent that supplies are readily available, shall purchase all major requirements of helium from the Secretary.

(b) The purpose of this Part 2 is to implement this provision of the Act, and the regulations in this part shall govern the purchase of the Federal agencies' major requirements of helium, whether such major requirements are purchased and used directly by the Federal agencies or by their contractors. To the same end, the regulations prescribe certain requirements that must be met by private helium distributors in order to establish and retain eligibility to supply such major requirements of helium.

§ 602.2 Definitions.

As used in this part—

(a) "Helium Act" means the Act of March 3, 1925, as amended by section 2 of the Helium Act Amendments of 1960 (50 U.S.C. 167-167n).

(b) "Helium" means the element helium regardless of its physical state.

(c) "Bureau of Mines helium" means helium sold by the Bureau of Mines pursuant to Part 1 of this chapter.

(d) "Federal agency" means any department, independent establishment, commission, administration, board, or bureau of the United States and any wholly owned Government corporation.

(e) "Contractor" means any individual, corporation, partnership, firm, association, trust, estate, public or private institution, or State or political subdivision thereof that requires helium in the performance of a contract or work for a Federal agency under either a prime contract, subcontract, or cooperative agreement.

(f) "Standard cubic foot" means that volume of helium at a pressure of 14.7 pounds per square inch absolute and a temperature of 70° Fahrenheit.

(g) "Private helium distributor" means any individual, corporation, partnership, firm, association, or other private agency or organization that sells helium.

§ 602.3 Purchases by a Federal agency and its contractors.

(a) A Federal agency and its contractors shall purchase all major requirements of helium either (1) directly from the Bureau of Mines in accordance with Part 1 of this chapter, or (2) from private helium distributors which establish

and maintain their eligibility in accordance with the regulations in this part.

(b) "Major requirements of helium" means all of a Federal agency's requirements of helium in quantities of five thousand (5,000) standard cubic feet, or more, of gaseous helium a month, including the first five thousand (5,000) standard cubic feet of such requirements, whether such requirements are purchased and used directly by the Federal agency or by contractors in the performance of contracts or work for the Federal agency. For the purposes of the regulations in this part, a "requirement of helium" means the helium in whatever quantity, including the gaseous helium equivalent of any liquid helium, that is required either by a Federal agency or by a contractor to accomplish a significant objective, whether or not all of said helium is purchased and used at a single location; specifically, for contractors, the helium required by each contractor or subcontractor in the performance of a contract or work for a Federal agency shall comprise a separate "requirement of helium."

(c) "Helium required in the performance of a contract or work for a Federal agency" means only the helium that is actually so used and does not mean or include helium that a contractor may use in the performance of a contract or work for other than a Federal agency. In the event that a contractor uses helium in the performance of contracts and work for both Federal and non-Federal purposes and the quantity of helium used for Federal purposes may not otherwise be readily determined, then the helium required in the performance of a contract or work for a Federal agency may be estimated. The estimated amount shall be the same percentage of the contractor's total helium requirements as the contractor's work using helium for Federal purposes is of all of the contractor's work using helium. Helium used by a contractor in the manufacture of items prior to the receipt of a contract or purchase order either from a Federal agency or contractor for the purchase of such items shall not be considered to be helium required in the performance of a contract or work for a Federal agency.

§ 602.4 Private helium distributors—eligibility.

(a) To be eligible to supply major requirements of helium of a Federal agency and its contractors, a private helium dis-

tributor must comply with the provisions of this section.

(b) Each private helium distributor desiring to establish and maintain its eligibility in accordance with the regulations in this part shall so advise the Bureau of Mines in writing at the following address: Bureau of Mines Helium Activity, Department of the Interior, Post Office Box 10085, Amarillo, Tex. 79106. The Bureau of Mines will maintain at this address a current list of eligible private helium distributors and will supply copies of this list to the Federal agencies, their contractors, and any other interested persons upon request.

(c) Private helium distributors shall sell and deliver only Bureau of Mines helium to supply major requirements of helium of Federal agencies and their contractors. Private helium distributors are not required to provide physical facilities to keep Bureau of Mines helium separate and apart from any other helium in their distribution systems; and it is recognized that Bureau of Mines helium will lose its identity when commingled with other helium. In the event of any such commingling, so much of the commingled helium may be considered to be Bureau of Mines helium as is equal to the volume of Bureau of Mines helium contained in such commingled helium. Each private helium distributor shall conduct its helium buying and selling operations in such a manner as to assure that at all times after the effective date of the regulations in this part it shall have received at each of its shipping points supplying major requirements of helium to Federal agencies and their contractors a volume of Bureau of Mines helium that is no less than the volume of such helium sold to Federal agencies and their contractors from each such shipping point.

(d) In order to establish beginning inventories of Bureau of Mines helium at such shipping points on the effective date of the regulations in this part and thus avoid any discontinuity of sales therefrom to the Federal agencies and their contractors, any Bureau of Mines helium received at those shipping points and not sold to Federal agencies and their contractors within the 30-day period immediately preceding the effective date of the regulations in this part shall be considered for the purpose of the regulations in this part to be Bureau of Mines helium received and available for sale to the Federal agencies and their

contractors after the effective date of the regulations in this part: *Provided, however,* That at no time, either at the effective date of the regulations in this part or thereafter, shall the inventory of Bureau of Mines helium at any shipping point be considered to be more than the total volume of helium in inventory at that shipping point.

(e) Sales of Bureau of Mines helium by one private helium distributor to another such distributor, and transfer of Bureau of Mines helium by a private helium distributor from one of its shipping points to another of its shipping points shall be accompanied by a certificate in the following form which shall then become a part of the recipient's helium accounting records:

CERTIFICATE OF RESALE OR TRANSFER OF BUREAU OF MINES HELIUM

I certify that on this _____ day of _____, 19____, _____ standard cubic feet of Bureau of Mines helium (convert liquid helium to its gaseous helium equivalent) was sold, transferred, (indicate one) from:

(Company) _____,
 (Shipping Point) _____ to
 (Company) _____,
 (Shipping Point) _____,
 Name _____
 Title _____
 Company _____
 Address _____

(f) Each private helium distributor shall keep such helium accounting records as are necessary to assure compliance with the regulations in this part. Such records, together with pertinent supporting documents, shall be retained for a period of at least 1 year following the dates of their applicability, and they shall be made available to any duly authorized representative of the Bureau of Mines for examination during normal business hours at the place where the records are kept. The Director, Bureau of Mines, may require a private helium distributor to revise or to augment its helium accounting records following such an examination to provide whatever additional information that the Director determines to be necessary to assure future compliance with the regulations in this part.

(g) The following form shall be used by private helium distributors to report on the receipts and distribution of Bureau of Mines helium. The completed forms shall be submitted to the Bureau of Mines Helium Activity, Department of

the Interior, Post Office Box 10085, Amarillo, Tex. 79106. Copies of the form, in blank, may be obtained from the above address.

To: Bureau of Mines Helium Activity, Department of the Interior, Post Office Box 10085, Amarillo, Tex. 79106.

Report of Bureau of Mines Helium Receipts and Distribution for the period commencing ----- and ending -----.

Company -----
Shipping Point Designation and Address.-----

Bureau of Mines Helium (Mscf)¹

Opening inventory (carryover closing balance from previous period or total helium inventory this shipping point, whichever is smaller)²-----

Receipts:

By purchase from Bureau of Mines-----
By purchase from another distributor³-----
By transfer from another shipping point of this distributor³-----
Total receipts-----
Total available for distribution this period-----

Distribution:

By sale to Federal agencies and their contractors-----
By sale to another distributor-----
By transfer to another shipping point of this distributor-----
Total distribution-----
Closing balance²-----

¹ Express liquid helium is gaseous helium equivalent.

1 liter is equivalent to 26.63 standard cubic feet of gaseous helium.

1 gallon is equivalent to 100.82 standard cubic feet of gaseous helium.

² Because sales of Bureau of Mines helium to civilian consumers are not required to be reported on this form, it is possible for the closing balance of Bureau of Mines helium to exceed the total helium inventory at a shipping point at the end of a reporting period. However, it is not physically possible for the opening inventory of Bureau of Mines helium to exceed the total helium inventory at a shipping point at the beginning of a reporting period. See 30 CFR 602.4(d).

³ Purchases and transfers from sources other than the Bureau of Mines must be supported by copies of certificates from suppliers. See 30 CFR 602.4(e).

I certify that the foregoing report is true, correct, and complete to the best of my knowledge and belief.

Name -----
Title -----
Company -----
Address -----
Date -----

effective date of the regulations in this part and the close of business on December 31, 1968; and

(3) On or before the 30th day of July and January of each year thereafter, the receipts and distribution of Bureau of Mines helium within the 6-month periods ending on the immediately preceding June 30 and December 31, respectively.

(h) Each private helium distributor shall use the form specified in paragraph (g) of this section to report for each of its shipping points supplying major requirements of helium to a Federal agency or contractor, as follows:

§ 602.5 Sales to private helium distributors.

(1) Within 30 days after the effective date of the regulations in this part, the receipts and distribution of Bureau of Mines helium within the 30-day period preceding the effective date of the regulations in this part. This initial report shall establish a beginning inventory as of the effective date of the regulations in this part, and the opening inventory for this initial report shall be zero;

From the effective date of the regulations in this part, all contracts for the sale of helium by the Bureau of Mines to private helium distributors shall require that such distributors comply with the provisions of § 602.4 and shall provide that the Bureau may withhold deliveries under a contract or terminate a contract with a private helium distributor which has refused or failed to comply with the provisions of § 602.4.

(2) On or before the 30th day of January 1969, the receipts and distribution of Bureau of Mines helium between the

§ 602.6 Navajo Helium Plant production.

Notwithstanding any other provisions of the regulations in this part, an amount

of helium not to exceed 500,000 standard cubic feet produced in any calendar month by the Navajo Tribe or by a private company under contract with the Navajo Tribe at the Navajo Helium Plant at Shiprock, N. Mex., shall, for the purpose of the regulations in this part, be deemed to be Bureau of Mines helium: *Provided*, That, with respect to sale or transfer of, and accounting for, helium, the Navajo Tribe and its contractor shall comply with the provisions of the regulations in this part.

PART 609—PAYMENTS REQUIRED FROM OWNERS OF PRIVATE LANDS UPON WHICH THE BUREAU OF MINES PERFORMS EXPLORATION OR DEVELOPMENT WORK TO INVESTIGATE KNOWN COAL DEPOSITS

§ 609.1 Reasonable percentage determined.

It is hereby determined that 5 mills per ton of 2000 pounds of coal is a reasonable percentage of the total value of minerals that may be produced from private property upon which the Bureau of Mines performs exploration or development work to investigate known coal deposits, to be paid by owners of such property.

(60 Stat. 373) [11 FR 14485, Dec. 18, 1946. Redesignated as Part 609 at 39 FR 23997, June 28, 1974]

PART 610—COAL ANALYSIS FOR NON-FEDERAL APPLICANTS

Sec.

- 610.1 Policy governing coal analyses.
- 610.2 Applications.
- 610.3 Coal samples and fees.
- 610.4 Fees.

AUTHORITY: Sec. 5, 36 Stat. 370, as amended; 30 U.S.C. 7.

SOURCE: 16 FR 9504, Sept. 19, 1951, unless otherwise noted. Redesignated as Part 610 at 39 FR 23997, June 28, 1974.

§ 610.1 Policy governing coal analyses.

The Bureau of Mines makes analyses of coals primarily on behalf of Federal agencies. However, the Bureau will make analyses of coals for a non-Federal applicant in the following instances when such work can be done without hindrance to other Bureau functions:

(a) To check laboratory techniques, methods, and results at the request of a laboratory engaged in coal analysis.

(b) In cases involving disputes where the laboratory analyses previously obtained by the parties are in conflict.

(c) In cases where non-Federal applicants are investigating coal deposits by core drilling and other geologic methods, provided the data from such investigations are to be published, either by the Bureau or the applicant.

(d) In any other cases which the Director, Bureau of Mines, determines to be in the public interest.

§ 610.2 Applications.

Requests of non-Federal applicants for coal analyses should be sent in duplicate to the Regional Director, Region V, Bureau of Mines, Central Experiment Station, 4800 Forbes Avenue, Pittsburgh, Pa. 15213.

§ 610.3 Coal samples and fees.

When an applicant has been notified that his application has been approved, he should send the requisite samples and fees as follows:

(a) Samples of coal should be collected and shipped in the manner approved by the Bureau of Mines. (See Bureau of Mines Technical Paper 1, "The Sampling of Coal in the Mine," by Joseph A. Holmes; and Bureau of Mines Revision of Technical Paper 133 (1950), "Handbook on Coal Sampling", by N. H. Snyder.) Samples should be sent, transportation charges prepaid, to the Regional Director, Region V, Bureau of Mines, Central Experiment Station, 4800 Forbes Avenue, Pittsburgh, Pa. 15213. Each sample of coal should be accompanied by identification showing the name of the applicant, the name of the coal bed and of the mine from which the coal came, the exact location where the sample originated in case of mine or core drill sample, the place of delivery in case of a sample of delivered coal, the State and county in which the mine (or coal bed in case of core drill sample) is located, and the shipping point or town nearest the mine or drill site.

(b) Every non-Federal applicant except a State governmental agency must pay the fees specified in § 610.4 by check, bank draft, or money order payable to the order of the Treasurer of the United States. All fees should be transmitted to the Regional Director, Region V, Bureau of Mines, Central Experiment Station, 4800 Forbes Avenue, Pittsburgh, Pa. 15213.

[16 F.R. 9504, Sept. 19, 1951, as amended at 19 F.R. 3006, May 25, 1954]

§ 610.4 Fees.

(a) The following fees are charged for each sample:

- 1. Moisture and ash, or sulfur, or volatile matter, or free-swelling index ----- \$4.50
- 2. Proximate analysis (moisture, ash, and volatile matter) ----- 6.00
- 3. Btu determination ----- 7.50
- 4. Proximate analysis, sulfur, and Btu ----- 13.00
- 5. Ultimate analysis (moisture, ash, carbon, hydrogen, sulfur, and nitrogen) ----- 22.50

- 6. Ultimate analysis and Btu ----- 28.00
- 7. Proximate and ultimate analyses, and Btu ----- 29.50
- 8. Fusibility of ash ----- 10.00
- 9. Hardgrove grindability index ----- 10.00

(b) Fees for tests not included in the above list will be based on the cost of the services required, and the applicant will be notified accordingly. The fee shall be paid before such tests are begun.

[Sched. 3C, 29 F.R. 7318, June 5, 1964]

SUBCHAPTER K—PROCEDURES

PART 641—MINE FIRE CONTROL, APPALACHIA

Sec.

- 641.1 Scope.
- 641.2 Definitions.
- 641.3 Qualification of projects.
- 641.4 Contribution contracts.
- 641.5 Project contracts.
- 641.6 Administration of contributions.
- 641.7 Assistance by States and local authorities.
- 641.8 Civil rights.

AUTHORITY: Sec. 7, 68 Stat. 1011, sec. 205, 79 Stat. 13; 30 U.S.C. 557, 40 U.S.C. App. 205.

SOURCE: 30 FR 11349, Sept. 4, 1965, unless otherwise noted. Redesignated as Part 641 at 39 FR 23997, June 28, 1974.

§ 641.1 Scope.

Projects for the control or extinguishment of outcrop or underground fires in coal formations under the authority of the Act of August 31, 1954 (30 U.S.C. 551-558) and pursuant to subsection (a) (2) of section 205 of the Appalachian Regional Development Act of 1965 (P.L. 89-4, 79 Stat. 5), shall be instituted and conducted in accordance with the regulations in this part.

§ 641.2 Definitions.

As used in the regulations in this part and in contribution contracts entered into pursuant to the regulations in this part:

(a) "Government" means the United States of America.

(b) "Commission" means the Appalachian Regional Development Commission established by section 101 of the Appalachian Regional Development Act of 1965.

(c) "Secretary" means the Secretary of the Interior or his authorized representative,

(d) "Director" means the Director of the United States Bureau of Mines or his authorized representative.

(e) "Bureau" means the United States Bureau of Mines.

(f) "State" means any one of the States listed in section 403 of the Appalachian Regional Development Act of 1965, and

(g) "Local authorities" means a county, city, township, town, or borough, and other local governmental bodies organized and existing under authority of State laws.

§ 641.3 Qualification of projects.

A project in a State for the control of fires in coal formations will be undertaken in cooperation with a State and local authorities if, in the Secretary's judgment, the project will prevent injury and loss of life, protect public health, conserve natural resources, or protect public and private property. Projects must be submitted by a State to the Commission and receive the approval of that body.

§ 641.4 Contribution contracts.

(a) Each project shall be covered by a contribution contract among the Government, as represented by the Director, the State, and the local authorities. The contract shall establish the total estimated cost of the project and, if the project is to be accomplished in phases, the estimated cost of each phase. The maximum obligations of the parties to share the cost of the project shall be stated in terms of the total estimated cost of the project. Other responsibilities of the parties shall also be described in the contract, as may be agreed and in conformity with the regulations

in this part, to meet the needs and requirements of a particular project.

(b) Total project costs shall include the costs of the work performed pursuant to a project contract or a series of project contracts, and the costs to the Bureau of administration, engineering, planning, direction of the project work, and routine maintenance and inspection following completion of the work performed to control or extinguish the fire.

(c) The Government's obligation to contribute funds may be less than but shall not exceed 75 percent of the total estimated cost of the project. The obligation of the State (and, if appropriate, the local authorities) to contribute funds may be more but shall not be less than 25 percent of the total estimated cost of the project.

(d) None of the funds contributed by the Government or the State or the local authorities shall be used for the purchase of sand, clay, stone, or other such kinds of non-combustible materials used to control or extinguish the fire.

§ 641.5 Project contracts.

(a) The Bureau will design, plan, and engineer a method of operation for control or extinguishment of the outcrop or underground mine fire, and will execute the project through a project contract or, if the work is to be done in phases, a series of project contracts.

(b) A State or local authority must pay the financial contribution required under the contribution contract to the Bureau after the bids on a proposed project contract have been opened but before the contract is awarded. The State will be advised of the time and place of the opening of bids on a proposed project contract and may have a representative present and, when requested, shall advise the Bureau with respect to the qualifications of bidders. The Bureau will recognize the contribution and cooperation of a State and local authorities in advertisements for bids for the work.

(c) If the bids on work to be done under a proposed project contract exceed the estimated cost of that work, the Bureau shall not enter into a project contract until the contribution contract has been amended to provide for an increase in contributions sufficient to meet the increase in costs. Similarly, no amendment shall be made to, and no change order shall be issued under, a project contract, if the amendment or change order would result in an expendi-

ture under the contract in excess of the estimated cost of the work until the contribution contract has been amended to provide for an increase in contributions sufficient to meet the increase in costs.

(d) The Director is authorized to execute an amendment to a contribution contract, without prior approval of the Secretary, to meet an increase in costs under a proposed or existing project contract if the increase is not in excess of 20 percent of the estimated cost of the work under the proposed or existing project contract.

§ 641.6 Administration of contributions.

Financial contributions made by a State or local authorities will be deposited in trust in the Treasury of the United States for withdrawal and expenditure by the Bureau pursuant to the contribution contract and as necessary in performance of the project work. Withdrawals and expenditures from the trust fund will be made only for costs connected with the project. Any part of the money contributed by a State or local authority for an individual project which remains unexpended at the completion or termination of a project will be returned to the State or local authority.

§ 641.7 Assistance by States and local authorities.

Either the State or local authorities, as may be appropriate in each particular project, and without cost or charge to project costs shall:

(a) Provide such assistance in planning and engineering the project as may be requested by the Bureau;

(b) Furnish accurate information, data, and accurate maps on the location of the project and the location of water, sewer, and power lines within the project area, and maps or plats showing properties and lands on which releases, consents, or rights or interests in lands have been obtained;

(c) Obtain and deliver to the Bureau releases, proper consent or the necessary rights or interests in lands, and other documents required by the Bureau for approval of the project, and in form and substance satisfactory to the Bureau;

(d) Furnish a certification in form and substance satisfactory to the Bureau that the releases, consents, or the necessary rights or interests in lands, are from all the legal property owners within the project area;

(e) Agree to indemnify and hold the Government harmless should any property owner within the project area make any claim for damage resulting from the work within the project area if releases, consents or rights or interests were not obtained from such property owner by the State or local authorities;

(f) Grant to the Government the right to enter upon streets, roads, and other land owned or controlled by the State or the local authorities overlying or adjacent to the project fire area, and to conduct thereon the operations referred to in the contribution and project contract, and agree to hold the Government harmless from any claim for damage arising out of the project operations to property owned, possessed or controlled by the State or local authorities in the vicinity of the project area;

(g) Furnish sand, clay, stone, or other such kinds of noncombustible materials, used in the flushing of voids, installation of fire barriers, plugs, trenches, fills, or other means or methods used to control or extinguish the fire;

(h) Maintain and perform maintenance work on the project as may be provided in the contribution contract;

(i) Agree not to mine or permit mining of coal or other minerals in property owned or controlled by the State or local authorities, if required by the Bureau to assure the success of, or protection to, the project work and the control or extinguishment of the fire, and for such period of time as may be required by the Bureau; and

(j) If necessary, procure the enactment of State or local laws providing for the control and extinguishment of outcrop and underground fires in coal formations on State or privately owned lands and the cooperation of the State or local authorities in the work and the requisite authority to permit the State or local authorities to meet the obligations imposed by the regulations in this part of a contribution contract.

§ 641.8 Civil rights.

A State and local authorities shall comply with Title VI of the Civil Rights Act of 1964 (P.L. 88-352) and all requirements imposed by or pursuant to the regulations of the Department of the Interior entitled "Nondiscrimination in Federally-assisted Programs of the Department of the Interior—Effectuation of Title VI of the Civil Rights Act of 1964" (43 CFR Part 17) and shall give assur-

ances of compliance in such form as may be required by the Director.

PART 642—SUBSIDENCE AND STRIP-MINE REHABILITATION, APPALACHIA

| | |
|--------|---|
| Sec. | |
| 642.1 | Purpose and scope. |
| 642.2 | Definitions. |
| 642.3 | Qualification of projects. |
| 642.4 | Application for contribution. |
| 642.5 | Contribution contracts. |
| 642.6 | Project contract. |
| 642.7 | Administration of contributions. |
| 642.8 | Withholding of payments. |
| 642.9 | Reports. |
| 642.10 | Obligations of States or local authorities. |
| 642.11 | Nondiscrimination. |
| 642.12 | Civil rights. |

AUTHORITY: Sec. 205, 79 Stat. 13; 40 U.S.C. App. 205.

SOURCE: 31 FR 2378, Feb. 4, 1966, unless otherwise noted. Redesignated as Part 642 at 39 FR 23997, June 28, 1974.

§ 642.1 Purpose and scope.

The regulations in this part provide for contributions by the Secretary with respect to projects in the Appalachian Region for the sealing and filling of voids in abandoned coal mines or for the reclamation and rehabilitation of existing strip and surface mine areas under the authority of subsection (a) (1) of section 205 of the Appalachian Region Development Act of 1965 (P.L. 89-4, 79 Stat. 5).

§ 642.2 Definitions.

As used in the regulations in this part and in contribution contracts entered into pursuant to the regulations in this part:

(a) "Government" means the United States of America,

(b) "Commission" means the Appalachian Regional Development Commission established by section 101 of the Appalachian Regional Development Act of 1965,

(c) "Secretary" means the Secretary of the Interior or his authorized representative,

(d) "Director" means the Director of the United States Bureau of Mines or his authorized representative,

(e) "Bureau" means the United States Bureau of Mines,

(f) "State" means any one of the States listed in section 403 of the Appalachian Regional Development Act of 1965, and

(g) "Local authorities" or "local bodies of government" means a county, city, township, town, or borough, and other local governmental bodies organized and existing under authority of State laws.

§ 642.3 Qualification of projects.

(a) Projects for the reclamation and rehabilitation of strip-mined areas will be considered only if all of the lands embraced within the project are lands owned by the Federal Government, or a State, or local bodies of government.

(b) Projects must be submitted by a State to the Commission and receive the approval of that body.

§ 642.4 Application for contribution.

(a) A State in its application for contribution to a project shall fully describe the conditions existing in the project area and give a full justification for the project in terms of the relationship of the potential benefits that will result from the project to the estimated costs of the project and in terms of the improvement, on a continuing basis, to the economic potential of the State or area which the project will bring about. If the project entails the reclamation and rehabilitation of strip and surface mined areas, the application shall state the uses to which the lands will be put.

(b) Before submitting a project to the Secretary for approval, the Director shall obtain from the State the following:

(1) Copies of inspection procedures, designs, plans, and methods of engineering proposed for the construction, installation, services or work to be performed to accomplish the objectives of the project;

(2) Accurate information, data, and maps on the location of the project, the area involved, and, if the project consists of work designed to prevent or alleviate subsidence, information, data, and maps (if available) of the seams of coal to be filled or flushed;

(3) The proposed advertisement for bids for each project contract, which advertisement shall include suitable references concerning the fact that the project is one to the cost of which the Government will contribute under the Appalachian Regional Development Act of 1965, and that the State's acceptance of liability arising out of any bid shall be subject to contribution by the Government under the provisions of a contribution contract with the Government for that purpose;

(4) The proposed project contract, together with specifications and drawings pertaining to the equipment, materials, labor and work to be performed by the project contractor;

(5) Releases, proper consent or the necessary rights or interests in lands and coal formations, for gaining access to and carrying out work in or on the project, and other documents required by the Bureau for approval of the project, and in form and substance satisfactory to the Bureau;

(6) Certifications or documents, as may be required by the Bureau, indicating public ownership or control of subsurface coal or mineral rights accompanied by appropriate resolutions from the State or local authorities to indemnify and hold the Government harmless should any property owner within the project area make any claim for damage resulting from the work within the project area if releases, consents or rights or interests were not obtained from such property owner by the State or local authorities, and not to mine or permit mining of coals or other minerals in property owned or controlled by the State or local authorities;

(7) If the project is for the rehabilitation or reclamation of a strip mine area, evidence satisfactory to the Secretary that the State or local authority owns the lands upon which the project is proposed to be carried out, and that effective installation, operation, and maintenance safeguards will be enforced;

(8) The estimated total cost of the proposed project and, if the work is proposed to be performed in phases, the estimated cost of each phase.

(c) If the Secretary approves the project, the Director will submit to the State a contribution contract establishing the estimated cost of the project in the amount approved by the Secretary.

[31 F.R. 2378, Feb. 4, 1966, as amended at 31 F.R. 5446, Apr. 6, 1966]

§ 642.5 Contribution contracts.

(a) Each project shall be covered by a contribution contract between the Government, as represented by the Director, and the State. The contract shall establish the total estimated cost of the project and, if the project is to be accomplished in phases, the estimated cost of each phase. The maximum obligations of the parties to share the cost of the project shall be stated in terms of the total estimated cost of the project

and, if a project is to be accomplished in phases, in terms of the estimated cost of each phase. Other responsibilities of the parties shall also be described in the contract, as may be agreed upon and as may be in conformity with these regulations, to meet the needs and requirements of a particular project.

(b) The Government's obligation to contribute funds may be less than but shall not exceed 75 percent of the total estimated cost of the project. The obligation of the State (and, if appropriate, the local authorities) to contribute funds may be more but shall not be less than 25 percent of the total estimated cost of the project.

(c) None of the funds contributed by the Government or by the State shall be used for operating or maintaining the project or for the purchase of culm, rock, spoil, or other filling or flushing material.

(d) The Director may, without approval by the Secretary execute amendments to a contribution contract which will cover (1) acceptance of a bid on a proposed project contract that does not exceed by more than 20 percent the estimated cost, initially established in the contribution contract, of the work covered by the proposed project contract, and (2) the estimated costs of additional work under a project contract, if the estimated cost, initially established in the contribution contract, of the work covered by the project contract will not be increased by more than 20 percent.

[31 F.R. 2378, Feb. 4, 1966, as amended at 31 F.R. 5446, Apr. 6, 1966]

§ 642.6 Project contract.

(a) Upon approval of the project by the Secretary, execution of the contribution contract, and receipt of an acceptable bid, the State shall carry out and execute the project through a project contract, or, if the work is to be done in phases, a series of project contracts, entered into by the State and its contractors or suppliers for the construction, installation, services or work to be performed.

(b) Project contracts shall be entered into only with the lowest responsible bidder pursuant to suitable procedures for advertising and competitive bidding. The Government's obligation to contribute to the cost of a project, or a phase of a project, is limited to the estimated costs established in the contribution contract. If the bids on work to be done

under a proposed project contract exceed the estimated cost of the work covered by the project contract, the State should not enter into the project contract unless the contribution contract has been amended to provide for an increase in contributions sufficient to meet the increase in costs, or unless the State wishes to assume the excess cost of the project.

(c) The Bureau shall be advised of the time and place of the opening of bids on a proposed project contract and may have a representative present.

(d) If the State amends a project contract, or issues a change order thereunder, and the amendment or change order results in an expenditure under the project contract in excess of the estimated costs established in the contribution contract, the Government shall be under no obligation to contribute to such excess costs unless the contribution contract has been amended to provide for an increase in contributions by the parties sufficient to meet such excess costs.

(e) The State shall furnish the Director, in duplicate, a certified true executed copy of each project contract with related plans, specifications, and drawings annexed thereto, promptly upon its execution.

(f) The State shall include in each project contract provisions to the effect that—

(1) Regardless of any agreement between the State and the United States of America respecting contributions by the Government to the cost of the contract under the provisions of section 205 (a) (1) of the Appalachian Regional Development Act of 1965 (P.L. 89-4, 79 Stat. 5), the United States of America shall not be considered to be a party to the contract or in any manner liable thereunder. Neither the Government nor any of its officers, agents, or employees shall be responsible for any loss, expense, damages to property, or injuries to persons, which may arise from or be incident to the use and occupation of any property affected by the operations contemplated under the project, or for damages to the property of the contractor, or for injuries to the person of the contractor, or for damages to the property, or injuries to the contractor's officers, agents, servants, or employees, or others who may be on said premises at their invitation or the invitation of any of them, and the State and the project contractor shall hold the Government and any of its

officers, agents, or employees, harmless from all such claims.

(2) The Secretary of the Interior or the Director of the United States Bureau of Mines or their authorized representative may enter upon and inspect the project at any reasonable time and may confer with the contractor and the State regarding the conduct of project operations.

(3) All laborers and mechanics employed by the contractor or subcontractors on the project shall be paid wages at rates not less than those prevailing on similar construction in the locality as determined by the Secretary of Labor in accordance with the Davis-Bacon Act, as amended (40 U.S.C. 276a—276a-5). The Secretary of Labor shall have with respect to such labor standards, the authority and functions set forth in Reorganization Plan Number 14 of 1950 (15 F.R. 3176, 64 Stat. 1267, 5 U.S.C. 133—133z-15), and section 2 of the Act of June 13, 1934, as amended (48 Stat. 948, as amended; 40 U.S.C. 276(c)).

(4) To assure the use of local labor to the maximum extent practicable in the implementation of a project:

(i) Every contractor or subcontractor undertaking to do work on the project which is or reasonably may be done as on-site work, in carrying out such contract work shall give preference to qualified persons who regularly reside in the labor area as designated by the U.S. Department of Labor wherein such project is situated, or the subregion, or the Appalachian counties of the State wherein such project is situated, except:

(a) To the extent that qualified persons regularly residing in the area are not available;

(b) For the reasonable needs of any such contractor or subcontractor, to employ supervisory or specially experienced individuals necessary to assure an efficient execution of the contract;

(c) For the obligation of any such contractor or subcontractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that in no event shall the number of nonresident persons employed under this (c) exceed 20 percent of the total number of employees employed by such contractor and his subcontractors on such project.

(ii) Every such contractor and subcontractor shall furnish the appropriate U.S. Employment Service offices with a list of all positions for which laborers,

mechanics, and other employees may be required.

(iii) Every such contractor and subcontractor shall furnish periodic reports to the contracting agency on the extent to which local labor has been used in carrying out the contract work.

[31 F.R. 2378, Feb. 4, 1966, as amended at 31 F.R. 5447, Apr. 6, 1966]

§ 642.7 Administration of contributions.

(a) The Government's contribution to a State will be made only pursuant to a contribution contract and only upon the basis of payments made, or that are then due and payable, by the State under a project contract between the State and its contractor for the construction, installation, services or work performed on individual projects and shall not exceed 75 percent of such amounts.

(b) The State shall submit to the Director, not more often than once a month and for each contribution contract, a separate voucher which describes each payment made or that is due and payable by the State under a project contract. The amounts claimed under each voucher shall be certified by the State as proper charges under the project contract, and the State shall also certify that the amounts have either been paid or are due and payable thereunder. Insofar as the Government's contribution payments relate to amounts due and payable rather than amounts already paid, the State shall disburse such funds together with the funds contributed by the State, promptly upon receipt from the Government.

(c) The State shall maintain suitable records and accounts of its transactions with and payments to project contractors, and the Government may inspect and audit such accounts and records during normal business hours and as it may deem necessary.

§ 642.8 Withholding of payments.

Whenever the Secretary, after reasonable notice and opportunity for hearing, finds that there is a failure by the State to expend funds in accordance with the terms and conditions governing the Government's contribution for an approved project, he shall notify the State that further payments will not be made to the State from available appropriations until he is satisfied that there will no longer be any such failure. Until the Secretary is so satisfied, payment of any financial contribution to the State shall be withheld.

§ 642.9 Reports.

At such times and in such detail as the Secretary shall require, the State shall furnish to the Secretary a statement with respect to each project showing the work done, the status of the project, expenditures, and amounts obligated, and such other information as may be required.

§ 642.10 Obligations of States or local authorities.

(a) The State shall have full responsibility for installing, operating, and maintaining projects constructed pursuant to the regulations in this part.

(b) The State shall give evidence, satisfactory to the Secretary, that it will enforce effective safeguards with respect to installation, operation, and maintenance.

(c) The State shall agree that neither the Government nor any of its officers, agents, or employees shall be responsible for any loss, expense, damages to property, or injuries to persons, which may arise from or be incident to work upon, or to the use and occupation of any property affected by operations under the project, and the State shall agree to hold the Government and its officers, agents, or employees harmless from all such claims.

(d) In order to assure effective safeguards with respect to installation, operation, and maintenance, the State or local authority will be required to own (or control), the land, subsurface, or coal seams in instances such as the following:

(1) If the objective of the project is to prevent or alleviate subsidence, the State or local authority shall have or acquire such subsurface and underground rights or interests in such coal seams or coal measures as may be required to assure the stability and continued existence of the project and to such an extent as will give reasonable assurance that the work will not be disturbed in the future.

(2) If the objective of the project is to rehabilitate or reclaim strip-mined areas, the land shall be owned by the Federal, State, or local body of Government. Such ownership shall comprise such mineral, subsurface and underground rights and interests as will assure that no further mining operations will be conducted upon or under the land in the future.

(3) If the objective of the project is to seal abandoned open shafts, slopes,

air holes and other mine openings to underground workings where public safety hazards exist, or to control or prevent erosion, water pollution, or discharge of harmful mine waters, the State shall have or acquire such right, title or interest in the lands as will assure the stability and continued existence of the project work.

(4) The extent of ownership or control necessary shall be determined with respect to each individual project.

(e) The State or local authorities shall agree not to mine or permit the mining of coal or other minerals in the land or property owned or controlled by the State or local authorities, if required by the Bureau to assure the success or protection of the project work for such period of time as may be required by the Bureau.

(f) Upon request of the Bureau, the State or local authority shall furnish and disclose the nature and extent of its right, title, or interest in lands within, or which may be affected by, the project and submit an analysis, in writing, of the title situation, the effectiveness, extent and strength of the title which has been acquired, and an opinion as to the protection which the documents conveying the various rights, titles, and interests in the land afford the project work and as to any defects in the title.

(g) If necessary, State and local authorities shall procure the enactment of State or local laws or ordinances providing authority to participate in the work and projects conducted pursuant to the regulations in this part on lands owned by the State, the local authorities, or private persons, and the requisite authority to permit the State or local authorities to meet the obligations imposed by the regulations in this part or a contribution contract and to enter into project contracts of the kind and nature contemplated for the work to be performed.

§ 642.11 Nondiscrimination.

The State shall comply with the provisions of section 301 of Executive Order 11246 (Sept. 24, 1965; 30 F.R. 12319, 12935) and shall incorporate the provisions prescribed by section 202 of Executive Order 11246 in each project contract, and shall undertake and agree to assist and cooperate with the Director and the Secretary of Labor, obtain and furnish information, carry out sanctions

and penalties, and refrain from dealing with debarred contractors, all as provided in said section 301.

§ 642.12 Civil rights.

State or local authorities shall comply with Title VI of the Civil Rights Act of 1964 (P.L. 88-352) and all requirements imposed by or pursuant to the

regulations of the Department of the Interior entitled "Nondiscrimination in Federally-assisted Programs of the Department of the Interior—Effectuation of Title VI of the Civil Rights Act of 1964" (Title 43, Code of Federal Regulations, Part 17) and shall give assurances of compliance in such forms as may be required by the Director.

SUBCHAPTER M—RULES AND REGULATIONS FOR THE ADMINISTRATION OF GRANTS ¹

PART 651—BUREAU OF MINES GRANT PROGRAMS

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- 651.19 Introduction.
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651.22 Covenants on grants made pursuant to § 651.1-3.

AUTHORITY: Solid Waste Disposal Act, Pub. L. 89-272, 71 Stat. 998-999, 42 U.S.C. 3253, 3255; Pub. L. 85-934, 72 Stat. 1793, 42 U.S.C. 1891-1893; and the Federal Coal Mine Health and Safety Act of 1969; Pub. L. 91-173, 83 Stat. 742, 30 U.S.C. 482.

SOURCE: 36 FR 23366, Dec. 9, 1971, unless otherwise noted. Redesignated as Part 651 at 39 FR 23997, June 28, 1974.

Subpart A—General

§ 651.1 Scope.

The regulations contained in this part are issued pursuant to Public Law 85-934 (72 Stat. 1793, 42 U.S.C. 1891), the Solid Waste Disposal Act of 1965 (Public Law 89-272) and the Federal Coal Mine Health and Safety Act of 1969 (Public Law 91-173, 83 Stat. 742) to provide (a) uniform procedures for award and administration of grants for scientific research and (b) uniform procedures for making grants to States under the provisions of section 503 of the Federal Coal Mine Health and Safety Act of 1969.

§ 651.1-1 Purpose—General programs.

Public Law 85-934 (72 Stat. 1793, 42 U.S.C. 1891) provides uniform procedures for the award and administration of

¹ 31 F.R. 15745, Dec. 14, 1966.

grants for research in furtherance of the Bureau of Mines' programs as authorized by statute.

§ 651.1-2 Purpose—solid waste disposal.

The Solid Waste Disposal Act of 1965 (Public Law 89-272) authorizes appropriations to, and confers authority upon the Secretary of the Interior in order to

- (a) initiate and accelerate a national research and development program for new and improved methods of proper and economic solid waste disposal, including studies directed toward the conservation of natural resources by reducing the amount of waste and unsalvageable materials and by recovery and utilization of potential resources in solid wastes; and
- (b) provide technical and financial assistance to State and local governments and interstate agencies in the planning, development, and conduct of solid waste disposal programs.

§ 651.1-3 Purpose—Coal Mine Health & Safety.

(a) State Coal Mine Safety Programs—The Federal Coal Mine Health and Safety Act of 1969 provides authority for contributions to be made by the Secretary of the Interior with respect to projects by States in which coal mining occurs to enlarge or intensify safety education programs or to plan and implement programs for the advancement of health and safety in coal mines under the authority of subsection (e) of section 212 of the Act.

(b) Research Grants—Section 501(c) of the Federal Coal Mine Health and Safety Act of 1969 authorizes the Secretary of the Interior to make grants for research in the field of coal mine safety.

§ 651.2 Delegation of authority for Administration.

The Secretary of the Interior has delegated to the Director, Bureau of Mines his authority under the Acts cited above to enter into grant agreements. This authority may be redelegated.

§ 651.3 Definitions.

As used in the regulations in this part and in grant agreements entered into pursuant to the regulations in this part:

(a) "Government" means the United States of America.

(b) "Secretary" means the Secretary of the Interior.

(c) "State" means a State, the District of Columbia, the Commonwealth of

Puerto Rico, the Virgin Islands, Guam, and American Samoa.

(d) "Director" means the Director, Bureau of Mines.

(e) "Interstate agency" means an agency of two or more municipalities in different States, or an agency established by two or more States, with authority to provide for the disposal of solid wastes and serving two or more municipalities located in different States.

(f) "Solid waste" means refuse, and other discarded solid waste materials resulting from the extraction, processing, or utilization of minerals or fossil fuels.

(g) "Solid waste disposal" means the collection, storage, treatment, utilization, processing, or final disposal of solid waste.

(h) "Fiscal year" means a 12-month period ending on June 30.

(i) "Bureau" means the Bureau of Mines.

(j) "Applicant" means any public (whether Federal, State, interstate, or local) authority, agency, and institution, private agency and institution, and individual who files application for a grant of Federal funds.

(k) "Construction" means (1) the erection or building of new structures or the replacement, expansion, remodeling, alteration, moderation, or extension of existing structures, and (2) the acquisition and installation of initial equipment, required in connection with new or newly acquired structures or the expansion, remodeling, alteration, modernization, or extension of existing structures (including motor vehicles, tractors, cranes, and other machinery) necessary for the proper utilization and operation of the facility after completion of the project, and (3) the engineering, architectural, legal, fiscal, and economic investigations including any surveys, designs, plans, working drawings, and specifications, necessary for the carrying out of the project, and (4) for the inspection supervision of the completion of the project.

§ 651.4 Purpose of making, and entities eligible to receive grants.

§ 651.4-1 Public Law 85-934, 72 Stat. 1793, 42 U.S.C. 1891.

(a) Subject to the availability of appropriated funds, grants may be made pursuant to section 1 of Public Law 85-934, for the conduct of scientific or technological research into any aspect of the problems related to the programs of

the Bureau which are authorized by statute.

(b) Grants may be made to nonprofit institutions of higher education, or to nonprofit organizations whose primary purpose is the conduct of scientific research.

§ 651.4-2 The Solid Waste Disposal Act.

(a) Research, demonstration, training, and other activities: Grants may be made pursuant to section 204 of the Solid Waste Disposal Act (Public Law 89-272, 79 Stat. 997), for the conduct of, and to promote the coordination of research, investigation, experiments, training, demonstration, surveys, and studies relating to the operation and financing of solid waste disposal programs, the development and application of new and improved methods of solid waste disposal (including devices and facilities therefor), and the reduction of the amount of such waste and unsalvageable waste materials.

(b) State and interstate planning: Grants, not to exceed 50 percent of the cost, may be made pursuant to section 206 of the Solid Waste Disposal Act to State and Interstate agencies for making surveys of solid waste disposal practices and problems within the jurisdictional areas of such States or agencies and for developing solid waste disposal plans for such areas.

(c) Subject to the availability of appropriated funds, grants may be made to any applicant qualified to perform the work contemplated in sections 204 and 206 of the Solid Waste Disposal Act.

§ 651.4-3 The Federal Coal Mine Health and Safety Act of 1969.

The Secretary (in coordination with the Secretary of Health, Education, and Welfare and the Secretary of Labor) is authorized by section 503(a) of the Coal Mine Health and Safety Act to make grants to any State in which coal mining takes place (a) to assist in developing and enforcing effective coal mine health and safety laws and regulation; (b) to improve State workmen's compensation and occupational disease laws and programs related to coal mine employment; and (c) to promote Federal-State coordination and cooperation in improving the health and safety conditions in the coal mines. In addition, grants for research in the field of coal mine safety may be made in accordance with the provisions of § 651.1-3(b).

Subpart B—Applications for Grants

§ 651.5 Submission of applications.

(a) An application should be submitted in an original and four copies to the Chief, Division of Procurement and Property Management, Bureau of Mines, Department of the Interior, Washington, D.C. 20240. A separate application must be submitted for each project.

(b) Applications made pursuant to the provisions of § 651.1-1 should include a statement as to the nature of the organization, its officers, principal business, experience, and special qualifications for conducting the project for which application is being made.

(c) Applications made pursuant to the provisions of § 651.1-2 if submitted by:

(1) An individual, the application should include a statement in reasonable detail of his education, experience, accomplishments, and special qualifications for conducting the project for which application is being made.

(2) An organization, the application should include a statement as to its nature, officers, principal business, experience, and special qualifications for conducting the project for which application is being made.

(3) A State or interstate agency submitting a proposal pursuant to section 206 of the Solid Waste Disposal Act, the application must (i) designate or establish a single State agency (which may be an interdepartmental agency) or, in the case of an interstate agency, such interstate agency, as the sole agency for carrying out the purposes of section 206 of the Solid Waste Disposal Act; (ii) indicate the manner in which provision will be made to assure full consideration of all aspects of planning essential to statewide planning (or in the case of an interstate agency jurisdiction-wide planning) for proper and effective solid waste disposal consistent with the protection of the public health, including such factors as population growth, urban and metropolitan development, land-use planning, water pollution control, air pollution control, and the feasibility of regional disposal programs; (iii) set forth the plans for expenditure of such grant, which plans provide reasonable assurance of carrying out the purposes of section 206 of the Solid Waste Disposal Act.

(d) Applications made pursuant to § 651.1-3 must be submitted through the

State's official coal mine inspection or safety agency.

(1) Set forth the programs, policies, and methods to be followed in carrying out the application in accordance with the purposes of section 503(a) of the Federal Coal Mine Health and Safety Act of 1969. An application may provide for the planning of programs for the purposes and objectives of the Federal Coal Mine Health and Safety Act of 1969, and the carrying out of programs to train State coal mine inspectors.

(2) Provide for research and planning studies to carry out plans designed to improve State workmen's compensation and occupational disease laws and programs, as they relate to compensation to miners for occupationally caused diseases and injuries and arising out of employment in any coal mine;

(3) Designate the State coal mine inspection or safety agency as the sole agency responsible for administering grants under section 503 of the Federal Coal Mine Health and Safety Act of 1969 throughout the State, and contain satisfactory evidence that such agency will have the authority to carry out the purposes of section 503 of the Federal Coal Mine Health and Safety Act of 1969;

(4) Give assurance that such agency has or will employ an adequate and competent staff of trained inspectors qualified under the laws of such State to make coal mine inspections within such State;

(5) Provide for the extension and improvement of the State program for the improvement of Coal Mine Health and Safety in the State, and provide that no advance notice of an inspection will be provided anyone.

(6) Contain assurances that grants provided under section 503 of the Federal Coal Mine Health and Safety Act of 1969 will supplement, not supplant, existing State Coal Mine Health and Safety programs.

(7) Agree that the official coal mine inspection or safety agency designated pursuant to subparagraph (3) of this paragraph will make the reports required by § 651.15 and that it will abide by all other terms and conditions set forth in this Part 651 and such additional conditions which the Bureau may prescribe in furtherance of, and consistent with, the purposes and objectives of section 503 of the Federal Coal Mine Health and Safety Act of 1969.

(e) Information required with application: Applications shall be in the form of proposals to undertake specific projects. Such proposals shall set forth for each project:

(1) The nature and scope of the project to be undertaken.

(2) The period during which it shall be pursued.

(3) The name and qualifications of the person who will direct the project.

(4) The number and general qualifications of the personnel who will work on the project, with the name, education, experience, and accomplishments of the principal person who will be assigned to it.

(5) The location or locations at which the project will be pursued.

(6) The importance of the project in relation to the Nation, State, or local area concerned.

(7) The relation of the project to other known research projects theretofore pursued or currently being pursued by the applicant and by others.

(8) The extent to which the project will provide opportunity for the training of personnel.

(9) The financial plan will include:

(i) The amount requested for direct expenses, by category of direct expense.

(ii) The amount requested for indirect expenses related to the requested direct expenses.

(iii) The total grant request.

(iv) The additional amount which the grantee proposes as its contribution from non-Federal sources.

(11) The facilities that will be devoted to the project.

(12) The salient points of the plan that will be followed in pursuing the project, including a financial plan in which expenditures are related to activity and rate of effort to be expended.

(13) The intended method of publishing the results of the project on a timely basis.

(14) The basis for a determination that the project could not be undertaken without the grant for which application is made.

(15) Assurance that, if the grant is made, the required funds from non-Federal sources will be forthcoming.

(16) Information as to whether the project or part of the project has been or will be submitted to organizations other than the Bureau for the purpose of obtaining a grant.

(17) Provision for such fiscal control and fund accounting procedures as may be necessary to comply with the requirements of this part and as may be appropriate to assure proper disbursement and accounting of grants made under this part.

Subpart C—Approval of Applications and Limitations

§ 651.6 Return of defective applications.

§ 651.6-1 Return of defective applications submitted pursuant to §§ 651.1-1 and 651.1-2.

Upon receipt of an application for a grant pursuant to Public Law 85-934 or Solid Waste Disposal Act, the Bureau shall determine whether the submission conforms to the requirements of § 651.5. Nonconforming submissions will be returned with statements of the reasons for their return.

§ 651.6-2 Defective applications and modifications submitted pursuant to § 651.1-3.

(a) Any application or request for renewal that does not meet all of the requirements of § 651.5 shall be returned promptly and the State shall be requested to modify, amend, or revise the application as necessary in order to meet the requirements and to resubmit the application.

(b) The Bureau will not finally disapprove any State application or modification, amendment or revision thereof without first affording the State agency reasonable notice and opportunity for a public hearing.

§ 651.7 Requirements for approval.

The Bureau may approve proposals submitted under these regulations after determining:

(a) The proposal meets the requirements of § 651.5.

(b) The applicant is a bona fide organization, individual, State, or interstate agency that has qualifications necessary to perform the work.

(c) The proposal was properly signed by the applicant or its duly authorized agent.

(d) The problems to be undertaken are related to the mission of the Department of the Interior.

(e) Such research is desirable and covers aspects not otherwise being studied.

(f) A reasonable relationship exists between the cost to the Government and the probable results to be achieved.

(g) The applicant has expressed a willingness and is legally authorized to enter into an agreement acceptable to the Bureau.

§ 651.8 Limitations.

Any grant made in accordance with these regulations shall be limited by the following provisions.

(a) The requirements of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, Public Law 88-352) which provides that no person in the United States shall on the grounds of race, color, religion, sex, or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance (sec. 601) and the implementing regulation issued by the Secretary of the Interior with the approval of the President (43 CFR Part 17).

(b) Any grant for a project which involves a federally assisted construction contract, as defined in Executive Order 11246, September 24, 1965 (30 F.R. 12319), shall be subject to the condition that the grantee shall comply with the requirements of said Executive order and with applicable rules, regulations, and procedures prescribed pursuant thereto.

(c) Grants made pursuant to § 651.1-1.

(1) Any grant made under Public Law 85-934 shall contain provisions effective to insure that all information, uses, processes, patents, and other developments resulting from any activity taken pursuant to such grant will be made readily available on fair and equitable terms to industries engaging in furnishing devices, facilities, equipment, and supplies to be used in connection with such developments. In carrying out this provision, the Bureau will make use of and adhere to the Statement of Government Patent Policy promulgated by the President's memorandum of August 23, 1971.

(2) Any grant made under Public Law 85-934 shall contain provisions effective to insure that the Bureau may from time to time disseminate in the form of reports of publications to public or private agencies or organizations, or individuals such information as the Bureau deems desirable on the research carried out pursuant to such grant.

(d) Grants made pursuant to § 651.1-2.

(1) No grants shall be made to pay more than two-thirds of the cost of construction of any facility under the Solid Waste Disposal Act.

(2) All grants for construction under the Solid Waste Disposal Act shall be subject to the provisions of the Davis-Bacon Act, as amended (40 U.S.C. 276a to 276a-5) relating to the rates of wages paid to laborers and mechanics in connection with such construction. Wage rate determinations made by the Secretary of Labor pursuant to the Davis-Bacon Act will be provided to grantees, when applicable, by the Bureau.

(3) Any grant made under section 204 of the Solid Waste Disposal Act shall contain provisions effective to insure that all information, uses, processes, patents, and other developments resulting from any activity undertaken pursuant to such grant will be made readily available on fair and equitable terms to industries utilizing methods of solid waste disposal and industries engaging in furnishing devices, facilities, equipment, and supplies to be used in connection with solid waste disposal. In carrying out this provision, the Bureau will make use of and adhere to the Statement of Government Patent Policy promulgated by the President's memorandum of August 23, 1971.

(4) No grant shall be made under section 206 of the Solid Waste Disposal Act unless there is a satisfactory assurance that the planning of solid waste disposal will be coordinated, so far as practicable, with other related State, interstate, regional, and local planning activities, including those financed in part with funds pursuant to section 701 of the Housing Act of 1954 (40 U.S.C. 461).

(e) Grants made pursuant to § 651.1-3, excluding research grants.

(1) Applications will be considered only for programs that meet the purposes and objectives of section 503 of the Federal Coal Mine Health and Safety Act of 1969.

(2) Grants will be made on a fiscal year basis or portion thereof. Grants will be renewed where appropriate, but only upon receipt of a request for renewal in accordance with §§ 651.5(d) and 651.5(e).

(3) Each grant shall be covered by a grant agreement between the Government and the State. The grant agreement shall establish the purposes and objectives, and the total estimated cost

of the program during the fiscal year for which the grant is to be made and the approved financial plan.

(4) The amount granted to any State for a fiscal year under this section shall not exceed 80 per centum of the amount expended by such State in such year for carrying out the approved programs. (The Bureau may allocate funds between States and may fix the grant at less than 80 per centum, and the percentages may be unequal between programs and between States.)

(5) None of the funds granted by the Government or provided by the State shall be used for any purpose not specifically provided in the grant instrument.

(6) Any State accepting a grant or grants under section 503 of the Federal Coal Mine Health and Safety Act shall agree that neither the Government nor any of its officers, agents, or employees shall be responsible or liable for any loss, expense, damage to property or for death or bodily injury to persons, which may arise from or be incident to any project or grant coming hereunder and the State shall agree to hold the Government and its officers, agents, or employee harmless from all such claims.

(7) Reimbursement for travel expenses shall be in accordance with the State's regular lawfully established policies and procedures, except they may not exceed those authorized in standardized Government regulations.

§ 651.9 Appeals from decisions affecting applications made pursuant to § 651.1-3.

(a) The proposed disapproval by the Bureau of any initial State application or modification for grant funds shall be given to the State by the issuance of a notice to that effect setting forth the reasons for the proposed disapproval. The State through its designated coal mine inspection or safety agency may request a public hearing within 30 days after receipt of the notice of proposed disapproval for the purpose of appealing such decision, by the mailing of a notice of appeal to the Bureau.

(b) Any decision of the Bureau finally disapproving any initial application or modification shall be final and conclusive unless the State within 30 days from the date of such decision shall file a petition in the U.S. Court of Appeals for the

District of Columbia stating that such decision should be modified or set aside in whole or in part. The filing of a petition shall not stay the application of the decision of the Bureau except as ordered by the U.S. Court of Appeals for the District of Columbia.

Subpart D—Progress and Accomplishment Reports

§ 651.10 Reports—general.

(a) Recipients of funds are encouraged to publish as technical literature, the findings, results, and conclusions relating to separately identifiable projects. Five copies of such documents shall be furnished to the Bureau together with supplementary information suitable for project documentation purposes.

(b) If a publication such as is described in paragraph (a) of this section has not been prepared with respect to a specific project, recipients of the grant funds shall, in conjunction with the completion or termination of the project, prepare a report which sets forth the findings, results, and conclusions relating to such project. Five copies of the report shall be furnished to the Bureau together with supplementary information suitable for project documentation purposes.

§ 651.11 Special reports.

At such times and in such detail as the Bureau shall require, the recipient shall furnish to the Bureau a statement capable of being reproduced with respect to each project showing the work done, the benefits derived, the status of the project, expenditures, and amounts obligated, and such other information as may be required.

§ 651.12 Acknowledgment of Federal government participation.

(a) The grantee may publish or cause to be published data developed through the use of grant funds without prior approval of the Bureau of Mines provided that the data to be published is not subject to the patent and copyright provisions of a grant.

(b) If the grantee chooses to publish or cause to be published any data developed through the use of grant funds without Bureau of Mines approval, the following notice shall be displayed promi-

nently on the title page of each such publication or copy thereof.

The contents contained herein were developed through the use of funds provided by the U.S. Department of the Interior, Bureau of Mines, and by this notice the Bureau does not agree or disagree with any of the ideas expressed or implied in this publication.

Such acknowledgment shall be included in news releases, and other information media developed to publicize, describe, or report upon research activities and accomplishments carried out in whole or in part with funds received under provisions of the Act.

Subpart E—Consultation and Coordination

§ 651.13 Cooperation.

§ 651.13-1 Cooperation on grants made pursuant to §§ 651.1-1 and 651.1-2.

The Bureau shall encourage and assist in the establishment and maintenance of cooperation by and between grantees and between them and other research organizations, the U.S. Department of the Interior, and other Federal establishments.

§ 651.13-2 Cooperation on grants made pursuant to § 651.1-3.

(a) As contemplated by the Federal Coal Mine Health and Safety Act of 1969, the Bureau will cooperate with the States in accomplishing the purposes of the grant, including but not limited to the furnishing of advice and assistance to promote the objectives of the Federal Coal Mine Health and Safety Act of 1969 and the coordination of projects.

(b) In addition to cooperating in carrying out the purposes of the grant, the Bureau shall, separate and apart therefrom, cooperate with such States when feasible and at the discretion of the Bureau in training Federal and State inspectors jointly, and in establishing a system by which State and Federal inspection reports of coal mines located in the State are exchanged for the purpose of improving health and safety conditions in such mines.

§ 651.14 Advice, assistance, and coordination.

The Bureau shall furnish such advice and assistance as it believes will best carry out the mission of the Bureau, participate in coordinating all research initiated, and indicate the lines of inquiry which seem to be most important.

Subpart F—Fiscal and Accounting

§ 651.15 Procedure for obtaining payments.

(a) After the grant agreement has been formally signed, payments of grant funds to the grantee will be made on public vouchers prepared, signed, and submitted by the grantee in three copies to the Bureau. Such vouchers will provide for amounts to be paid to the grantee as funds are required for expenditures under an approved financial plan.

(b) In the case of lost sharing grants, the grantee will also submit evidence that a proper relationship is being maintained between expenditures of grant and non-Federal funds.

(c) When applicable, advance payments will be made under procedures prescribed by title 31, U.S.C. section 205. Payments of grants may be made (after necessary adjustment on account of previously made underpayments or overpayments) in advance or by way of reimbursement, and in such installments and on such conditions as the Bureau may determine.

(d) On grants made pursuant to § 651.1-3: Whenever the Bureau finds there is a failure by the State to expend funds in accordance with the terms and conditions governing the Government's grant, the Bureau shall notify the State that further payments will not be made to the State until it is satisfied that there will no longer be any such failure. Until the Bureau is so satisfied, payment of any grant hereunder to the State shall be withheld.

§ 651.16 Cost computation principles for grants made pursuant to § 651.1-1 and 651.1-2.

(a) The cost computation principles prescribed in this section shall be utilized in the cost accounting required with respect to grants under Public Law 85-934 or the Solid Waste Disposal Act to provide evidence that the recipient has discharged the obligation it assumed, when accepting these funds, to expend them solely for costs necessary for the accomplishment of the work for which they were received. These principles will also be applied in accounting for costs financed with non-Federal funds where those costs pertain to programs financed in part by grants under Public Law 85-934 or the Solid Waste Disposal Act.

(b) Basic cost formulas: Costs will be computed:

(1) By educational institutions, in accordance with appropriate OMB circulars and Federal procurement regulations.

(2) By all entities other than educational institutions, in accordance with the Federal procurement regulations (41 CFR 1-15.2).

§ 651.17 Title to property.

(a) Title to property purchased with funds from non-Federal sources used in the research activity shall be vested in the grantee.

(b) Title to property purchased by educational or nonprofit institutions with research grant funds shall vest in the grantee at the time of purchase unless the Bureau determines that vesting title in the grantee would not further the objectives of the Bureau. (42 U.S.C. 1892)

(c) Title to property purchased by all other grantees with grant funds shall vest in the Government.

§ 651.18 Accounting records.

(a) Recipients of funds shall be responsible for maintaining books of account that clearly, accurately, and currently reflect the financial transactions involving grants financed by the Bureau and also transactions financed with matching funds from sources other than the Federal Government. In addition, they shall maintain files of all papers necessary to explain and prove the validity of the transactions recorded.

(b) Such records, with all supporting and related documents shall, at all reasonable times, be made available, upon request, for inspection and audit by representatives of the Bureau, of the Secretary and of the Comptroller General of the United States.

(c) Records relating to each grant shall be retained and made available until the expiration of 3 years after the Government's last payment to the grantee.

(d) The books and records maintained shall include a record of all property:

(1) Received from the Federal Government.

(2) Charged as a cost of activities financed with funds provided.

(3) Included in costs paid with non-Federal funds to match grant funds.

(e) An accountability record shall be maintained for all items of property that have expected useful service life of more

than 1 year and have an acquisition cost of \$100 or more.

(f) The grantee further agrees to include in all his subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until expiration of 3 years after final payment under the subcontract, or of the time periods for the particular records specified in Part 1-20 of the Federal procurement regulations (41 CFR Part 1-20), whichever expires earlier, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor, involving transactions related to the subcontract. The term "subcontract" as used in this clause excludes (1) purchase orders not exceeding \$2,500 and (2) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public.

Subpart G—Audits and Inspections

§ 651.19 Introduction.

Representatives of the Bureau, of the Secretary, and of the Comptroller General of the United States may conduct onsite audits and inspections of grantees which have received Federal funds pursuant to Public Law 85-934 Solid Waste Disposal Act, or Federal Coal Mine Health and Safety Act of 1969.

§ 651.20 Audits.

Audits conducted at the direction or on behalf of the Bureau will extend to a determination and appropriate finding of fact concerning compliance with the provisions of the grant, the regularity and accuracy of financial transactions and recording, adequacy of property accountability and internal control, and reliability of financial reporting. As a part of such audits, examinations will be made on a selective basis to determine that matching funds have been received and properly expended by recipients of matching-fund grants under Public Law 85-934, Solid Waste Disposal Act, or Coal Mine Health and Safety Act of 1969 and that grantees maintain a proper relationship between costs paid with funds provided. Professional audit techniques

will be applied, and accepted principles of business administration will be the governing criteria.

§ 651.21 Inspection.

In relation to the substantive scientific research operations of grantees the Bureau may, with such personnel as it considers qualified and with such procedures as it determines to be suitable, perform inspections of activities authorized and financed pursuant to these regulations. Such inspections will cover acceptability of progress, consistency with approved plans, and other factors the Bureau deems important to enable it to discharge its responsibilities for achievements consistent with purposes of Public Law 85-934, Solid Waste Disposal Act, or Federal Coal Mine Health and Safety Act of 1969.

§ 651.22 Covenants on grants made pursuant to § 651.1-3.

All grant instruments and contracts awarded thereunder by States shall contain the following provisions:

The payment of any fee, commission or compensation of any kind, or the giving of any gift or gratuity of any kind, either directly or indirectly, by or on behalf of a contractor under this grant, to any officer, employee, or agent of the grantee either as an inducement for the award of a contract under the grant or as an acknowledgement of a contract previously awarded thereunder or as an inducement or acknowledgement for a determination or any other action favorable to such contractor is prohibited. Upon a showing that a contractor under this grant paid fees, commissions, or compensation, or gave gifts or gratuities to an officer, employee, or agent of the grantee in connection with the contract award or administration under the grant, it shall be conclusively presumed that the cost of such expense was included in the contract and ultimately borne or intended to be borne by the United States, in which case the Government shall withhold from sums otherwise obligated under the grant any amount found to have been paid by a contractor as a fee, commission, or compensation, or as a gift or gratuity to an officer, employee, or agent of the grantee.

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