

1969. No. 104

[NC]

**METALLIFEROUS MINES****Safety, Health, Welfare and Electricity**

REGULATIONS, DATED 22ND APRIL 1969, MADE BY THE MINISTRY OF COMMERCE UNDER SECTION 86 OF THE COAL MINES ACT 1911, AS APPLIED TO METALLIFEROUS MINES BY SECTION 19 OF THE MINING INDUSTRY ACT 1920.

The Ministry of Commerce in exercise of the powers conferred on it by section 86 of the Coal Mines Act 1911(a), as applied to Metalliferous Mines by section 19 of the Mining Industry Act 1920(b) and of all other powers enabling it in that behalf, hereby makes the following regulations:—

**PART I****GENERAL***Citation*

1. These regulations may be cited as the Metalliferous Mines (Safety, Health, Welfare and Electricity) Regulations (Northern Ireland) 1969.

*Interpretation*

2.—(1) In these regulations, the following expressions have the meanings hereby respectively assigned to them, that is to say—

the “Acts” mean the Metalliferous Mines Regulation Acts 1872(c) and 1875(d) as modified by the Mining Industry Act 1920;

the “Regulations” mean all the general regulations applicable to Metalliferous Mines, including these regulations;

“inspector” means an inspector appointed by the Ministry of Commerce under the Metalliferous Mines Regulation Act 1872;

“manager” means the agent of a mine, as defined by the Metalliferous Mines Regulation Act 1872, or where there is no such agent, the owner;

“mine” means any mine to which the Acts apply;

“the Ministry” means the Ministry of Commerce;

“owner” has the same meaning as in the Coal Mines Act 1911.

(2) The Interpretation Act (Northern Ireland) 1954(e) shall apply to these regulations and to documents issued thereunder as if the regulations were an enactment and such documents were statutory documents within the meaning of that Act.

*Exemptions*

3. Without prejudice to anything contained in these regulations the Ministry may by notice served on the manager of a mine exempt the mine, or any part thereof, or anything or class of things thereat, from the application of any provision of these regulations if an inspector is satisfied that the safety of persons employed at the mine will not be prejudiced in consequence of the

(a) 1 & 2 Geo. 5. c. 50.  
(b) 10 & 11 Geo. 5. c. 50.  
(c) 35 & 36 Vict. c. 77.

(d) 38 & 39 Vict. c. 39.  
(e) 1954. c. 33.

granting of the exemption, and nothing contained in these regulations shall affect the operation of this regulation.

#### Operation

4. These regulations shall have effect notwithstanding anything in the General Rules contained in section 23 of the Metalliferous Mines Regulation Act 1872.

## PART II

### SAFETY

#### Shafts and Outlets

5.—(1) If an inspector is of opinion that provision of at least two shafts or outlets, so that two separate means of ingress and egress shall be available to the persons employed in the mine, whether the shafts or outlets belong to the same mine or to more than one mine, is necessary for the safety of the persons employed, the Ministry may by notice served on the manager, require provision of such shafts or outlets and the manager shall comply with the requisition unless he disputes the reasonableness thereof in which case he may within 14 days of service of such notice upon him serve on the Ministry a statement in writing of his objections thereto. The Ministry shall consider such objections and may withdraw or modify its notice. If the Ministry shall refuse to withdraw or modify such notice, the manager may refer the matter to arbitration in the manner provided by regulation 34. On the hearing of such arbitration the arbitrator may quash, modify or confirm such notice and if any such notice is modified or confirmed it shall take effect accordingly.

(2) If the only means of ingress and egress available to the persons employed in the mine consists of a single shaft, such shaft shall be fitted with a compartment separated throughout by a substantial partition from that part of the shaft in which persons are ordinarily lowered and raised and the compartment shall be provided with ladders or other satisfactory means of egress independent of the main winding apparatus.

(3) (a) A ladder ordinarily used for the ascent or descent of persons shall not be fixed in a vertical or overhanging position, and shall be inclined at the most convenient angle which the available space allows. Every such ladder shall have substantial platforms at intervals of not more than ten yards and unless strong hand-holds are provided shall project at least three feet above the platform or top of the shaft.

(b) In a shaft every ladder shall be securely fastened to the timbering or sides of the shaft and each platform shall be securely fenced.

(4) Guides shall be provided in the case of every working shaft over fifty yards in depth, and, in the case of every shaft in the course of being sunk, over one hundred yards in depth.

(5) Keps for supporting the cage when at rest shall be provided at the surface but shall not be provided at any intermediate landings in the shaft. The keps provided at the surface, and also the keps, if any, provided at the bottom of the shaft, shall be used when persons are entering or leaving the cage.

(6) Every cage, skip or gig which is used for lowering or raising tubs or wagons shall be provided with catches or other suitable contrivances to prevent them from falling out.

(7) Every cage, skip or gig used for lowering or raising persons shall be covered in completely at the top and closed in at the two sides so as to prevent persons or things from projecting beyond the sides, and shall be provided with suitable gates at the ends and with a rigid bar fixed in a position where it can be easily reached.

(8) In a sinking shaft and at other shafts where persons may be underneath, or it otherwise appears requisite, the tub or bucket shall be kept steady and no stones or loose material shall be allowed above the level of the top of it or to adhere to the bottom before it is sent away. Tools, material or other gear shall be safely slung or be loaded into an empty tub or bucket, and if they project above its rim, they shall be securely fastened to the bow or chains supporting the tub or bucket.

(9) Every working shaft and every shaft in the course of being sunk shall, if exceeding 25 yards in depth, be provided with some proper means of communicating distinct and definite signals from and to the bottom of the shaft, and from and to every entrance for the time being in use between the surface and the bottom of the shaft, to and from the surface, and the manager shall prescribe the signals to be used.

(10) There shall be in attendance at the top of every shaft by which persons are about to be lowered or raised in a mine, a competent person (hereinafter referred to as "the banksman") for the purpose of giving and receiving signals. All signals, other than those relating to underground haulage, transmitted to the surface shall be transmitted simultaneously to the engineman and to the banksman.

(11) No person shall give any signal unless he is authorised in writing by the manager to do so.

(12) Where there are entrances into the workings from the shaft at different levels, the manager shall prescribe the signals to be used to indicate the level to which the cage, skip or gig is to be sent and in respect of its movements between one level and another level, and shall fix any other signals that may be required.

(13) A notice shall be posted in the engine house and at the shaft top, and at each entrance into the workings from the shaft containing the signals prescribed in pursuance of paragraph (9).

(14) Where the natural strata are not safe, every working or pumping shaft and every such shaft in the course of being sunk shall be securely cased, lined, or otherwise made secure.

*Banksman, Onsetter, etc.*

6.—(1) As long as more than 15 persons are below ground in the mine the banksman shall always be in attendance for the purpose of giving and receiving signals.

(2) When persons are being lowered or raised the banksman or onsetter, as the case may be, shall not signal the cage away until the gates with which it is provided are effectively in position.

(3) No minerals, tubs or wagons, timber or other such materials shall be lowered or raised whilst persons are being lowered or raised in the same shaft or outlet, whether in the same cage or not. This paragraph shall not apply in the case of men working in the shafts or outlets, or in the case of men accompanying animals or bulky materials that cannot be lowered or raised in a cage, or in the case of the manager, or any person specially authorised by him other than the workmen employed in the mine.

(4) The maximum number of persons allowed to be carried at one time in any cage or, where it has more than one deck, on each deck of such cage, shall be determined by the manager and indicated in a notice which shall be kept posted up at the top and bottom of the shaft or outlet, and at every entrance for the time being in work between the top and bottom of the shaft or outlet, and no person shall be carried in a cage loaded with more than that number of persons.

(5) For the purpose of this regulation, the expression "cage" includes a skip or gig.

#### *Winding Engineman*

7.—(1) The winding engineman shall on no pretext leave the controlling gear whilst the engine or machinery is in motion, or when anyone is in or on the cage, skip or gig.

(2) The winding engineman shall—

(a) immediately before lowering or raising any person after any cessation of winding exceeding two hours, run the cage, skip or gig at least once between the surface and the lowest drawing level in order to ascertain whether everything is in order;

(b) if any defect is discovered likely to affect the proper working of the winding apparatus, not begin winding until the defect has been remedied;

(c) once at least during his shift examine the external parts of the engine to see that they are in proper working order;

(d) not allow any other person to handle or operate the winding engine and apparatus unless that person is authorised in writing to do so by the manager;

(e) attend during the whole time that any person is below ground in the mine, unless satisfactory means of egress from the mine are available otherwise than by means of the winding machinery.

#### *Ventilation*

8.—(1) An adequate amount of ventilation shall be constantly produced in every mine to such an extent that the shafts, outlets, winzes, rises, roads, sumps, levels, stables, pump rooms, haulage rooms, and workings in the mine, shall be in a fit state for working and passing therein. Provided that a discontinued or abandoned part of a mine, not used in connection with the working of the mine, shall, if properly fenced off, not be deemed to be a part of the mine within the meaning of this regulation.

(2) Without prejudice to the generality of the foregoing provisions of this regulation a place shall not be deemed to be adequately ventilated unless—

(a) the air contains not less than 19 per cent. of oxygen and not more than  $1\frac{1}{4}$  per cent. of carbon dioxide;

(b) the supply of air is sufficient to dilute and render harmless any inflammable gases and all noxious gases, including those resulting from the firing of explosives; and

(c) the supply of air is sufficient to disperse and remove any airborne dust which is not suppressed by other means.

(3) No stone or other material shall be allowed to accumulate in levels, cross-cuts or other underground workings so as to interfere with the ventilation.

(4) No person shall be liable in respect of any contravention of or failure to comply with the provisions of this regulation if he shows that the ventilation was interrupted in consequence of an accident, and that no persons were employed in any part of the mine which was not adequately ventilated, except such persons as it was necessary to employ in that part of the mine for the purpose of restoring the ventilation, under the supervision of the manager or a competent person appointed by him in writing for the purpose.

#### *Water and Boreholes*

9. Where at any time there is reasonable cause to apprehend that any working has approached within 40 yards of a place which may contain an accumulation of water or other liquid matter, or noxious gas, adequate and timely precautions shall be taken and, in particular, the working shall not be more than 8 ft. in width, or 8 ft. in height, and there shall constantly be kept at least one borehole not less than 10 ft. in igneous rock and 15 ft. in other strata in advance of the face of the said working, and sufficient flank, roof and floor boreholes of similar lengths as may be necessary to ensure that the water or other liquid matter or gas shall be tapped in the first instance by a borehole.

#### *Travelling Roads, Outlets and Working Places*

10.—(1) Every underground road on which persons travel shall be of adequate height and width and if an inspector is of opinion that the height or width of any such road is inadequate, the Ministry may, by notice served on the manager, require that the height or width be increased to such extent as may be specified in the notice, and the manager shall comply with the requisition unless he disputes the reasonableness thereof, in which case he may within 14 days of service of such notice upon him serve on the Ministry a statement in writing of his objections thereto. The Ministry shall consider such objections and may withdraw or modify its notice. If the Ministry refuses to withdraw or modify such notice, the manager may refer the matter to arbitration in the manner provided by regulation 34. On the hearing of such arbitration, the arbitrator may quash, modify or confirm such notice and if any such notice is modified or confirmed it shall take effect accordingly.

(2) Every underground road on which a horse or other animal is used, or by which it has to pass, shall be of sufficient dimensions to allow the animal to pass without rubbing itself or its harness against the roof or sides of the bars or props supporting roof or sides.

(3) The roof and sides of every travelling road, outlet and working place shall be made secure, and no person, unless engaged in repairing or in investigating the safety of the workings shall travel on or work in any travelling road or working place which is not so made secure.

(4) A sufficient supply of timber or other materials suitable for supports shall at all times be placed at the disposal of all workmen requiring to make or keep secure the roof and sides of any working place, outlet or travelling road; and such materials shall be kept in the mine at or near every working place where supports are required to be erected. A reserve supply shall be kept at other suitable places convenient to the workmen, or, if that is not practicable, close to the pithead.

(5) Every entrance to any place below ground in the mine which is not in actual use or course of working or extension shall be kept fenced across the whole width of the entrance so as to prevent persons entering it inadvertently.

(6) As far as is reasonably practicable, every permanent roadway, tram-road, or path across or through any open gunniss, bottoms, sinks or stopes, the top of all winzes, and the edges of all chambers shall be securely fenced.

(7) No loose stone or other material shall be allowed to remain on any ledge or landing or elsewhere whence it might fall into a shaft or other opening.

### *Haulage and Transport*

11.—(1) Sufficient and suitable sprags, lockers or drags shall be provided and used for the purpose of holding a wagon or set of wagons at the top of every incline on which haulage is worked by gravity, and on all haulage roads or parts of haulage roads where the gradient exceeds 1 in 20.

(2) Every haulage road on which persons travel and on which the haulage is worked by gravity or mechanical power shall be provided (if exceeding 30 yards in length) with some proper means of communicating distinct and definite signals between the stopping places and the ends of the road, and the manager shall prescribe the signals to be used.

(3) A notice shall be posted in each haulage engine house and at each signalling station containing the haulage signals prescribed in pursuance of the foregoing paragraph.

(4) (a) All haulage roads on which persons travel shall be provided at intervals of not more than 20 yards with sufficient man holes for places of refuge, but where the gradient does not exceed 1 in 20 and the rate of haulage is not more than 4 miles an hour, it shall be sufficient if the intervals are not more than 100 yards. This requirement shall not apply—

(i) Where the produce in transit does not exceed 10 tons in any one hour.

(ii) Where there is provided on the side of the road a clear space of at least 2 feet in width between the wagons and that side of the road. In measuring any clear space, any props or other supports of the roof projecting beyond the side of the road shall be deemed to form part of the road.

(iii) Within 75 feet of the working face or forebreast.

(b) Every refuge hole shall be—

(i) As near as may be 3 feet in width and not less than 3 feet in depth.

(ii) Not less in height than the height of the haulage road at the point where the hole is, or 6 feet whichever is the less.

(iii) On the same side of the road as the aforesaid clear space if such a space is provided.

(iv) On the same side of the road as the other refuge holes or, where the road is on the curve, on the outer side of the curve if no such clear space as aforesaid is provided.

(v) Kept clean.

(c) Nothing shall be placed in any refuge hole or across the entrance thereto so as to impede ingress.

(5) No person, other than an official of the mine or a person employed on the road in connexion with the haulage, or a person engaged on the haulage road in carrying out any repairing work required to be carried out forthwith, shall, while the haulage is in motion, travel on foot on any underground road on which haulage is worked by gravity or mechanical power at a speed which ordinarily exceeds six miles an hour, unless there is provided on one side of the road a clear space of at least 2 feet in width between the wagons and that side of the road.

(6) Where haulage is worked by gravity or mechanical power no person shall ride on sets or trains of wagons except, with the written permission of the manager,—

- (a) officials of the mine;
- (b) men being conveyed to or from their work at the commencement or end of their employment (including any person in charge of a set or train of wagons on which men are being so conveyed) subject to conditions agreed in writing by the Ministry; or
- (c) the driver of a locomotive; or
- (d) any other person, with the consent in writing of the Ministry.

(7) Without prejudice to the foregoing a system of haulage or transport worked by self-propelled vehicles or locomotives shall not be operated except under and in accordance with special rules or regulations.

#### *Safety Lamps and Inflammable or Noxious Gases*

12.—(1) No lamp or light, other than a locked safety lamp or such other form of lighting as may be permitted by the Ministry in writing, shall be allowed or used—

- (a) in any place in the mine in which there is likely to be any such quantity of inflammable gas as to render the use of naked lights dangerous; or
- (b) in any working near to or approaching a place in which there is likely to be an accumulation of inflammable gas.

(2) In any mine, or part of a mine where safety lamps or such other form of lighting as may be permitted by the Ministry in writing are required to be used, any official required to test for inflammable gas shall hold the certificate of an institution approved by the Ministry that he is competent to do so.

(3) Before any disused shaft is entered, a lighted candle or oil lamp shall first be lowered to the bottom, and if gas be detected suitable precautions shall be taken.

(4) No person shall test for inflammable gas with a naked light, or brush out, or waft gas. In places where safety lamps or such other form of lighting as may be permitted by the Ministry in writing are used no person shall use or have a naked light or have in his possession any apparatus either for smoking or striking a light.

(5) Safety lamps shall be thoroughly examined before they are used and shall not be used unless they are found to be in safe working order and securely locked.

#### *Precautions Against Fire*

13.—(1) Every shaft top, adjoining building, engine or motor room, or boiler gallery, in the construction of which timber is used, shall be equipped with adequate means of extinguishing fire.

(2) No person shall allow any burning wick or part of a wick or other burning material to lie about in the mine, and every workman on leaving his working place shall take his light or lights with him.

(3) Calcium carbide shall be taken below ground only in lamps or in watertight metal containers.

#### *Lines and Sidings*

14. Lines of rails of not less than 4 feet 8½ inches gauge, and sidings, not

being part of a railway within the meaning of the Railway Employment (Prevention of Accidents) Act 1900(f), shall not be installed or used at any mine except in accordance with the provisions of special rules or regulations.

*General Duties of Owner, Manager and Officials*

15.—(1) The manager shall exercise close and effective supervision of all the operations of the mine, and if the owner does not act as manager he shall appoint, in writing, an agent to act as such. The following provisions of this regulation are without prejudice to the generality of this paragraph.

(2) The manager shall to the best of his power ensure the observance of these regulations, and he shall give such directions as may be necessary in that behalf to secure the safety of the mine, and the safety, health and proper discipline of the persons employed therein.

(3) The manager shall appoint, in writing, such officials as may be necessary for the safe administration of the mine, and shall, to the best of his power, ensure that each official understands, carries out, and enforces the provisions of the Acts, the Regulations, and any special rules or regulations which relate to the duties of such official.

(4) The manager shall see that a sufficient supply of proper materials and appliances is at all times provided and maintained in an efficient state for the purpose of ensuring the safety of the mine and the persons employed and of carrying out the provisions of the Acts, the Regulations, any special rules or regulations and any regulations made by the manager in pursuance thereof.

(5) The manager, or an official appointed in writing by him for the purpose, shall—

- (a) during every ordinary mineral-getting shift, inspect every working place and road in every part of the mine in which persons work or along which they have to pass and during the course of every mineral-getting day inspect every outlet and means of access in use, and shall, so far as practicable, ascertain the condition thereof in regard to ventilation, roof and sides, and general safety, and shall ensure that every dangerous place is fenced off, or, if this is not practicable, that adequate warning is given so that such place shall not be inadvertently entered by any person;
- (b) once at least in every 24 hours examine thoroughly the state of the external parts of the machinery, the state of the guides and ladderways in the shafts and the state of the headgear, ropes, chains, cages, skips or gigs and other similar appliances of the mine which are in actual use for the purpose of lowering or raising persons: any such machinery and appliances not ordinarily used for the purpose of lowering or raising persons shall be so examined immediately before use for that purpose, and in any case at least once in every three months;
- (c) once at least in every week examine thoroughly the state of the shafts in which persons descend or ascend;
- (d) once at least in every week examine thoroughly the state of all machinery, ropes, gear and other appliances of the mine which are actually in use whether above ground or below ground and to which sub-paragraph (b) does not apply;
- (e) once at least in every month examine thoroughly all accessible parts of the airways of the mine;

(f) 63 & 64 Vict. c. 27.



- (f) if one of the two ways affording means of ingress and egress is not ordinarily used for travelling, at least once in every three months travel the whole of such way in order to see that it is fit for use, and in order to make himself thoroughly acquainted with it.
- (6) (a) A true report of every such examination or inspection including all defects found and repairs made shall be made and signed forthwith by the person who has made the examination or inspection in a report book to be kept at the mine for the purpose. Any danger revealed or notified in the course of the examination or inspection, or any other danger observed by or notified to the manager, together with the steps taken to remove the danger, shall be recorded in the report book and signed and dated by the person making the entry.
- (b) Every report required by this paragraph to be made shall be submitted to the person for the time being in charge of the mine, and shall be countersigned by him on the day on which the report is made or the day following.
- (7) If any danger is revealed by the examination or inspection, steps shall be taken at once to remove it and except for that purpose any person exposed to the danger shall be withdrawn.
- (8) All such books as are by the Regulations and special rules or regulations required to be kept at the mine shall be provided by the owner and shall be in the form approved for the purpose by the Ministry; and the books or a correct copy thereof shall be kept at the office on the surface of the mine. Any inspector and anyone having the written authority of the Ministry and any representative of the workmen employed at the mine may, at all reasonable times inspect and take copies of and extracts from any such books; but, except as provided in paragraph (15) of regulation 30, nothing in this paragraph shall be construed to impose the obligation of keeping any such book or a copy thereof for more than twelve months after the book has ceased to be used for entries therein under the Regulations and special rules or regulations.
- (9) (1) The owner shall supply gratis to each person employed in or about the mine who applies for such copy, a printed copy or copies as the case may be of the Regulations.
- (2) The manager shall cause a copy or copies as the case may be of the Regulations to be kept posted up in some conspicuous place at or near the mine where they may be conveniently read by the persons employed.

#### *Persons Employed*

16.—(1) Every person employed at the mine shall observe the provisions of these regulations and any regulations made by the manager in pursuance thereof and shall comply with such directions concerning safety and discipline as may be given to him by those in authority over him.

(2) Every workman employed in the mine shall, before commencing work, and during the course of it, especially after blasting, make a careful examination of his working place, and so far as practicable remove any or secure any loose rock, stones or ground which might be dangerous.

(3) Every person employed at the mine who notices anything that appears unsafe, or likely to cause danger, shall remedy the matter if it is within the scope of his duty, and if not shall withdraw forthwith from the place of danger and report the matter to the manager, or other responsible official.

(4) Except in sinking shafts or winzes, no person shall remain under a suspended wagon or load; and no person shall travel or be allowed to travel by means of an aerial ropeway, without special permission from the manager.

(5) (a) Every workman shall to the best of his power carry on his work so as at all times to leave a free passage for the air current.

(b) No person shall disarrange any appliance for directing the ventilation and every person having occasion to pass through any door, canvas screen or flap shall carefully close the same.

(6) No person shall, without authority, pass beyond any fence or danger signal or open any locked door or go into any part of the mine other than that in which he works, and no person shall travel to or from his work by any road other than the proper travelling road.

(7) Every person working on a narrow ledge or other places of danger, where he may fall 6' 6" or more, shall secure himself against falling by means of a rope or other suitable appliance which shall be provided by the owner. Every such person shall, before commencing work, satisfy himself as to the safety of the rope or other appliance provided for his use, and shall not use anything that he finds unsafe.

(8) No inexperienced workman shall be employed upon any work attended with any special risk or danger except under the supervision of a skilled workman.

(9) No person shall be in or about the mine in a state of intoxication, or, without permission of the manager, take any intoxicating liquor into the mine or the mine premises.

(10) No person shall negligently or wilfully do anything likely to endanger life or limb in the mine, or negligently or wilfully omit to do anything necessary for the safety of the mine or of the persons employed therein.

(11) No person shall wilfully damage, or without proper authority remove or render useless, any apparatus, appliance or thing provided in any mine in compliance with the Regulations.

### PART III

#### HEALTH AND WELFARE

##### *First-Aid*

17.—(1) The owner shall provide and maintain—

(a) at the surface of the mine, so as to be readily accessible a first-aid box, or cupboard of the standard required by law and nothing except appliances or requisites for first-aid shall be kept in a first-aid box or cupboard;

(b) at convenient places underground, a sufficient supply of suitable requisites for first-aid.

(2) Each first-aid box or cupboard shall be placed under the charge of a responsible person who shall hold a first-aid certificate and shall always be readily available during working hours. A notice stating the name of the person in charge shall be posted at the mine.

(3) If possible, one out of every ten of the persons employed at the mine shall be trained in first-aid, and hold a first-aid certificate.

(4) The owner shall provide in readily accessible positions on the surface and underground at the mine, suitably constructed stretchers for the safe removal of persons suffering from sickness or the results of serious accidents.

(5) At every shaft in which injured persons are raised and where the cage is not large enough to permit of a stretcher being laid flat, and at every shaft where persons are raised otherwise than in a cage, and at every sinking shaft and at every mine where the workings are steeply inclined there shall be provided and used a suitable jacket or attachment to minimise discomfort.

(6) At every mine the owner shall, for the purpose of the removal of patients in serious cases of accident or sickness, provide and maintain in good condition a suitably constructed ambulance carriage, unless arrangements have been made by him or on his behalf either to obtain such a carriage promptly, when required, from a hospital or other place within a reasonable distance from the mine, or to provide such a carriage jointly with the owners of other mines in the neighbourhood.

(7) Once at least in every month a competent person appointed in writing for the purpose by the manager shall inspect the first-aid and ambulance arrangements and satisfy himself that they are in conformity with the requirements of this regulation.

(8) Where an inspector is satisfied that any of the requirements of this regulation can reasonably be suspended or relaxed and such requirements can properly be suspended or relaxed, the Ministry may by certificate in writing suspend or relax the requirements to such an extent and subject to such conditions as it may by such certificate determine.

#### *Sanitary Conveniences*

18.—(1) Wherever sanitary conveniences are required for sanitary reasons or for the convenience of the persons employed the owner shall cause a sufficient number of suitable conveniences to be provided. Where females are employed on the surface, separate conveniences shall be provided for their use.

(2) Every sanitary convenience on the surface shall be under cover and so screened as to secure privacy, and, if for the use of females, shall have a proper door and an inside fastening.

(3) Every sanitary convenience shall be kept in a cleanly and sanitary condition, and in good repair.

#### *Lighting*

19.—(1) The manager shall make effective provisions for securing and maintaining sufficient and suitable lighting whether natural or artificial—

- (a) at shaft insets and shaft sidings which are regularly used; and
- (b) in every place above ground in which persons regularly work.

(2) Above ground, all windows and skylights of places where persons are regularly employed shall, so far as practicable, be kept clean and free from obstruction.

#### *Changing and Messing Accommodation*

20.—(1) Subject to paragraph (2) the owner shall provide and maintain:—

- (a) For the use of all persons employed, suitable accommodation above ground, but not in the engine house or boiler house, for changing and drying clothes.

(b) For the use of persons employed above ground, suitable accommodation for the taking of meals furnished with adequate means of warming food and boiling water and an adequate supply of clean and wholesome drinking water. Where the total number of persons employed above ground in any shift exceeds ten, such accommodation shall be separate from that provided for changing and drying clothes.

(c) The accommodation shall be kept clean and the ceilings and all inside walls and partitions of such accommodation shall, unless they are kept painted or have a smooth impervious surface, be whitewashed or colourwashed at least once in every period of fourteen months.

(2) If an inspector after consultation with the manager and with the persons employed or their representatives, is satisfied as respects any mine that the application of any of the requirements of this regulation would be unreasonable or impracticable, the Ministry shall by certificate in writing exempt the mine from such requirements.

#### *Removal of Dust*

21. It shall be the duty of the manager to ensure that in connection with the getting, dressing or transporting of minerals, whether above or below ground, the giving off of dust of such character and in such quantity as to be likely to be injurious to persons employed is minimised.

### PART IV

#### MACHINERY, PLANT AND APPARATUS

##### *General*

22. All parts and working gear, whether fixed or moveable, including the anchoring and fixing appliances, of all machinery and apparatus used as, or forming, part of the equipment of a mine, and all foundations in or to which any such appliances are anchored or fixed shall be of good construction, suitable material, adequate strength and free from patent defect, and shall be properly maintained.

23. All apparatus used as or forming part of the equipment of a mine, being apparatus which contains or produces air, gas or steam at a pressure greater than atmospheric pressure shall be so constructed, installed, maintained and used as to obviate any risk from fire, bursting, explosion or collapse or the production of noxious gases.

##### *Machinery in Motion*

24.—(1) Machinery shall not be cleaned while in motion.

(2) Machinery shall not be oiled or greased while in motion unless provision be made for the operation to be performed in safety.

(3) Belts shall not be put on or put off while machinery is in motion by mechanical power except by means of a safety contrivance.

##### *Fencing*

25.—(1) Every flywheel and all exposed and dangerous parts of machinery shall be kept securely fenced.

(2) As far as reasonably practicable, the top of every hopper and kiln shall be kept secured fenced.

(3) All gantries and platforms (other than temporary wheeling planks) if dangerous, shall be securely fenced on each open side and shall have on each such side a continuous skirting board not less than nine inches deep.

(4) The top of every shaft which for the time being is out of use, or used only as a ventilating shaft, shall be kept securely fenced.

(5) The top and bottom of every working, ventilating, or pumping shaft, and all entrances into the workings therefrom, shall be kept securely fenced, but this shall not be taken to forbid the temporary removal of the fence for the purpose of repairs or other operations if proper precautions are used.

#### *Internal Combustion Engines*

26.—(1) Except with the prior written permission of the Ministry and subject to such conditions (if any) as may be specified, no internal combustion engine, steam boiler or locomotive shall be newly introduced below ground in the mine.

(2) No internal combustion engine, steam boiler or locomotive in use below ground in the mine on the date when these regulations come into force shall be continued in use except in accordance with the provisions of special rules or regulations.

#### *Lifting Machines*

27.—(1) For the purpose of this paragraph the expression "lifting machine" means a crane, crab or winch.

(2) All parts and working gear whether fixed or moveable including the anchoring and fixing appliances of every lifting machine and transporter shall at least once in every period of 14 months be thoroughly examined by a competent person who shall forthwith make a written report in a form approved by the Ministry and such report shall be entered in or attached to a book to be kept at the mine for the purpose; and the like examination and report shall be made in respect of any lifting machine which has previously been used and has since been dismantled or has been out of regular use for a period exceeding 2 months, before it is taken into use at any mine for the first time at that mine.

(3) All rails on which a travelling crane moves shall be of proper size and adequate strength and have an even running surface; and any such rails shall be properly laid, adequately supported and properly maintained. Where necessary to prevent danger, an adequate stop block shall be provided to limit the travel of the crane.

(4) There shall be plainly marked on every lifting machine the safe working load or loads thereof, except that in the case of a jib crane so constructed that the safe working load may be varied by the raising or lowering of the jib, there shall be attached thereto either an automatic indicator of safe working loads or a table indicating the safe working loads at corresponding inclinations of the jib or corresponding radii of the load.

(5) No lifting machine shall, except for the purpose of a test, be loaded beyond the safe working load as marked or indicated under paragraph (4).

(6) Every lifting machine shall be provided with an efficient catch or an efficient brake.

#### *Steam Boilers*

28.—(1) Every steam boiler used for generating steam, whether separate or one of a range, shall be fitted with:—

- (a) a proper safety valve;
- (b) a suitable fusible plug or an efficient low water alarm device, unless the steam boiler is externally fired;
- (c) a steam-gauge and water-gauge to show respectively the pressure of steam and the height of water in each boiler:

Provided that sub-paragraphs (b) and (c) shall not apply to either economisers or super-heaters.

(2) Every steam boiler and all its fittings and attachments shall be maintained in proper working conditions, and all water-gauges shall be adequately protected by a covering or guard unless so constructed as to be equally safe to the persons employed whether so protected or not.

(3) The person appointed to attend to any steam boiler shall not, except with the authority of the official under whose direction he works, alter or permit anyone to alter the setting of any safety valve, and only suitable and proper weights or springs shall be used.

- (4) Every steam boiler and all its fittings and attachments shall—
  - (a) be cleaned out and examined internally, as far as the construction of the boiler will permit, by a competent person once at least every 6 months; and
  - (b) be examined thoroughly by a competent person once at least in every 14 months and also after any extensive repairs.

(5) A report of the result of every such examination in the approved form and containing the specified particulars (including the maximum permissible working pressure) shall, within 28 days of the completion of the examination, be entered in or attached to a book to be kept at the mine for the purpose and the report shall be signed by the person making the examination and, if that person is an inspector of a boiler-inspecting company or association, countersigned by the chief engineer or other duly authorised officer of the company or association.

(6) No steam boiler which has previously been used and has since been dismantled or has been out of regular use for a period exceeding one month shall be taken into use at a mine for the first time at that mine until it has been examined and reported on in accordance with paragraphs 4(b) and 5; and no new steam boiler shall be taken into use unless there has been obtained from the manufacturer of the boiler, or from a boiler-inspecting company or association, a certificate specifying the maximum permissible working pressure thereof, and stating the nature of the tests to which the boiler and fittings have been submitted, and the certificate is kept available for inspection, and the boiler is so marked as to enable it to be identified as the boiler to which the certificate relates.

(7) In this regulation the expression "steam boiler" means any closed vessel in which for any purpose steam is generated under pressure greater than atmospheric pressure, and includes any economiser used to heat water being fed to any such vessel, and any superheater used for heating steam.

#### *Air Receivers*

29. Every receiver for compressed air shall—

- (1) have marked upon it so as to be plainly visible the maximum safe working pressure and be fitted with a correct pressure gauge;
- (2) be fitted with a suitable safety valve so adjusted, as to permit the air to escape as soon as the safe working pressure is exceeded;

- (3) be fitted with a blow-off cock through which any fluid which may have accumulated in the receiver may be blown off, and such blow-off cock shall be opened at least once in every working day whilst the plant is running;
- (4) be thoroughly cleaned and examined by a competent person once at least in every 26 months, and a report of the result of such examination in the approved form and containing the specified particulars shall be entered in or attached to a book to be kept at the mine for the purpose. Provided that in the case of a receiver of solid drawn construction—
- (a) the person making any such examination may specify in writing a period exceeding 26 months but not exceeding 4 years within which the next examination is to be made; and
- (b) if it is so constructed that the internal surface cannot be thoroughly examined, a suitable hydraulic test of the receiver shall be carried out in lieu of internal examination.
- (5) For the purposes of paragraphs (1) and (2), any set of air receivers supplied with air through a single pipe to which a pressure gauge and safety valve are fitted, may be treated as one receiver.
- (6) In this regulation the expression "air receiver" means:
- (a) any vessel (other than a pipe or coil, or an accessory fitting or part of a compressor) for containing compressed air and connected with an air compressing plant;
- (b) any fixed vessel for containing compressed air or compressed exhaust gases and used for the purpose of starting an internal combustion engine.

### *Winding Apparatus*

30.—(1) Where the apparatus ordinarily used for raising or lowering persons to or from the surface is worked by mechanical power it shall, if the shaft is vertical, be provided with detaching gear for each cage; and if the maximum speed of winding can exceed 12 feet per second, the Ministry may require the provision of an automatic contrivance to prevent overwinding.

(2) Where the apparatus used for raising or lowering persons is worked by mechanical power, there shall be provided—

- (a) one or more brakes on the drum, or; if there is more than one drum, on each drum, which will hold the loaded cage in any position in the shaft when the maximum torque is applied downwards; and
- (b) a proper indicator or indicators (in addition to a mark on the rope or drum) showing to the winding engineman on a dial or in some sufficient manner, the position of the cages or load in the shaft, and placed in such a position as to be easily seen by him at the same time as the mark on the rope or drum;
- (c) such flanges or horns on the drum, and also, if the drum is conical, such other appliances as shall effectively prevent the rope from slipping.
- (3) (a) Once at least in every 6 months all cage chains and detaching hooks in general use shall be annealed or given other proper heat treatment and shall be thoroughly examined by a competent person.
- (b) Provided that the Ministry may, by certificate in writing, exempt from the foregoing requirement as to heat treatment chains or hooks made of any steel which does not require heat treatment.

(c) A single linked chain shall not be used for lowering or raising persons in any working shaft or plane except for the short coupling chain attached to the cage or load.

(4) All detaching hooks in general use shall be dismantled, cleaned and refitted once at least in every three months.

(5) All detaching plates and bells in general use shall be tested monthly by calipers or gauges.

(6) (a) No winding rope which has been in use for more than  $3\frac{1}{2}$  years, or which has been spliced, shall be used in a shaft in which persons are raised or lowered.

Provided that the Ministry may permit the use for more than  $3\frac{1}{2}$  years of a rope which has not been and is not to be ordinarily used for the winding of persons or mineral, on production of evidence satisfying the Ministry that the use of the rope may be continued without danger, and subject to such conditions as may be specified.

(b) Every winding rope shall be re-capped at intervals of not more than 6 months in accordance with paragraphs (8)-(13).

(c) The length of the winding rope shall be such that there shall remain at least two rounds of rope on the drum of the winding apparatus when the cage is at the bottom of the shaft.

(7) (a) A competent person appointed in writing by the manager shall, once at least in every month, make a special examination of every winding rope in use.

(b) The rope shall be thoroughly cleaned at all places particularly liable to deterioration and at other places not more than 100 yards apart throughout its length, and at each of these places after cleaning, examination shall be made of the circumference and surface condition of the rope and for any fractures of the wires.

(8) No mode or type of capping shall be used which fails to withstand, for a winding rope, a load of at least seven times the maximum static load and, for a haulage rope, a load of at least 60 per cent. of the breaking strain of the rope.

(9) A competent person appointed in writing by the manager shall, whenever a rope is capped or re-capped, superintend the work, and see that it is properly carried out.

(10) (a) Before each re-capping a length, including the capping, of at least 6 feet shall be cut off the rope, but if the rope is re-capped after an interval of less than 6 months, the length cut off may be reduced, by one foot for each complete month less than 6, to a minimum of 3 feet.

(b) Each piece of rope cut off shall be opened up and its internal condition examined by a competent person approved by the manager.

(11) The capel of a round rope shall not be attached to the rope by rivets passing through the rope.

(12) In those forms of capping in which the wires at the end of the rope are bent back on the rope itself to form a cone, wedges formed by the lapping of soft iron wire shall be placed between the rope and that portion which is bent back. The length of the tapered portion of the socket shall be not less than eight times the diameter of the rope.

(13) Paragraphs (9), (10), (11) and (12) shall not apply in the case of ropes used only for the hauling of mineral.



- (14) If white metal is used in the capping of ropes—
- (a) its melting point shall not exceed 570° Fahr. or 299° Cent. and its temperature when poured into the socket shall not exceed 685° Fahr. or 363° Cent.;
  - (b) in the length of rope which is to lie within the tapered part of the socket the fibre core, if any, shall be cut out and the wires shall be untwisted and thoroughly cleaned;
  - (c) the socket shall be heated to a temperature of about 212° Fahr. or 100° Cent. before the white metal is poured into it.
- (15) There shall be recorded in a book kept at the mine dated reports and other information relating to the measures taken to comply with—
- (a) Paragraph (3), and every such record shall be preserved for a period of 12 months after the report or other information was recorded; and
  - (b) Paragraphs (6), (7) and (10), and every such record shall be preserved for a period of 12 months after the rope to which it relates has ceased to be used.
- (16) In this regulation the expression “cage” includes a skip or gig.

#### *Chains, Ropes and Lifting Tackle*

31.—(1) No chain, rope or lifting tackle shall be used unless it is of good construction, sound material, adequate strength and free from patent defect.

(2) In this regulation the expression “lifting tackle” means chain slings, rope slings, rings, hooks, blocks, shackles and swivels.

### PART V

#### ELECTRICITY

#### *Definitions*

32.—(1) In this regulation, the following words and terms shall have the meanings assigned to them as follows:—

“Apparatus” means electrical apparatus and includes all machines, apparatus and fittings in which conductors are used, or of which they form a part.

“Authorised person” means a person employed, appointed, or selected by the manager to carry out duties incidental to the generation, transformation, transmission or use of energy, such person being competent for the purposes of the regulation in which the term is used.

“Cable” means one or more stranded conductors, separately insulated throughout their length, and when more than one, laid up together, and generally provided with a mechanical protective covering.

“Circuit” means an electric circuit forming a system or branch of a system.

“Circuit-breaker” means a mechanical device capable of making and breaking the circuit under normal and abnormal conditions such as that of short-circuit. Unless otherwise specified a circuit-breaker is designed to break the current automatically.

“Conductor” means an electrical conductor arranged to be electrically connected to a system.

“Connected with earth” means connected with the general mass of earth in such a manner as will ensure at all times an immediate and safe discharge of energy.

"Consumer" means the owner of the mine.

"Consumer's installation" means the consumer's wiring together with any apparatus upon the premises connected or intended to be connected thereto.

"Consumer's wiring" means the electric lines situate upon the consumer's side of the supply terminals where energy is obtained from a system that is not owned by or under the control of the consumer.

"Danger" means danger to health or danger to life or limb from shock, burn or other injury incidental to the generation, transformation, distribution or use of energy.

"Dead" means at, or about, earth potential, and disconnected from any live system.

"Earthed concentric system" means a system comprising cables of which one of the conductors, called the outer conductor, is earthed and completely surrounds the other conductor, called the inner conductor, which is insulated.

"Earthing conductor" means the conductor provided for connecting a point of a system to an earth plate or for connecting a metallic structure to an earth plate.

"Earth electrode" means a metal rod or rods, or system of underground metal pipes or other conducting object providing an effectual connection with the general mass of earth.

"Electric line" means a wire or wires, conductor, or other means used for the purpose of conveying, transmitting or distributing electricity with any casing, coating, covering, tube, pipe, or insulator enclosing, surrounding, or supporting the same, or any part thereof or any apparatus connected therewith for the purpose of conveying, transmitting, or distributing electricity or electric currents.

"Energy" means electrical energy.

"Flexible cable" means a cable containing one or more cores each formed of a group of wires, the diameters of the cores and of the wires being sufficiently small to afford flexibility.

"Flexible metallic screen" means a screen of wires applied to a flexible cable or to the component cores of such a cable so as to enclose more or less completely the live conductors.

"Fuse" means a device for protecting a circuit from damage by overload, by means of the fusion of a specially designed part thereof.

"High voltage" means a voltage normally exceeding 650 volts.

"Insulating material" means non-conducting material enclosing, surrounding or supporting a conductor or any part thereof, and of such quality and thickness as to be suitable for the purposes of the regulation in which the term is used.

"Insulation resistance" means the resistance under certain specified conditions between two conductors or systems of conductors normally separated by insulation, or between any such conductors and earth.

"Isolated" means disconnected from the source of energy.

"Leakage current" means a current passing through or over the surface of insulating material from one conductor to earth or to another conductor, other than the electrostatic charging current.

"Live" means electrically charged.

"Low voltage" means a voltage not exceeding 250 volts under normal conditions, subject to a permissible variation not exceeding 6 per cent. above 250 volts.

- “Medium voltage” means a voltage exceeding 250 volts but not exceeding 650 volts under normal conditions, subject to a permissible variation not exceeding 6 per cent. above 650 volts.
- “Metallic covering” means an iron or steel wire armouring applied to cables, or a rigid iron or steel, or other hard metal, tube enclosing conductors.
- “Neutral point” means that point of a system which has the same potential as the point of junction of a group of equal non-reactive resistances connected at their free ends to the appropriate main terminals of the system.
- “Outdoor substation” means any ground whereon apparatus of the kind included within the definition of substation is situate in the open air and includes the said apparatus.
- “Outdoor switch station” means any ground whereon apparatus of the kind included within the definition of switch station is situate in the open air, and includes the said apparatus.
- “Overhead line” means any electric line which is placed above ground and in the open air.
- “Portable apparatus” means apparatus that from the nature of its use requires to be moved while it is working, or that is designed so that it can be moved while it is working.
- “Portable hand lamp” means a fitting for inspection purposes suitable for carrying in the hand, comprising an electric lamp, and supplied with energy from a circuit by means of a flexible cable.
- “Rated current” means the maximum current in relation to time that an electric line, conductor, or apparatus will carry without permanent injury under the conditions of use for which it is designed.
- “Substation” means any premises or enclosure or part thereof, being large enough to admit the entrance of a person after the apparatus therein is in position, containing apparatus for transforming or converting energy to or from a voltage above medium voltage (other than transforming or converting solely for the operation of switchgear or instruments) with or without other apparatus for switching, controlling or otherwise regulating the energy, and includes the apparatus therein.
- “Switch station” means any premises or enclosure or part thereof, being large enough to admit the entrance of a person after the apparatus therein is in position, containing apparatus for switching, controlling or otherwise regulating energy at a voltage above medium voltage, but not for transforming or converting energy (other than transforming or converting solely for the operation of switchgear or instruments), and includes the apparatus therein.
- “System” means an individual electrical system in which all the conductors and apparatus are electrically connected to a common source of voltage, and includes all the said conductors and apparatus.
- “Transportable apparatus” means apparatus that from the nature of its use requires to be moved to a new position from time to time between the periods when it is working.
- “Voltage” means electro-motive force, and in particular the voltage between any pair of conductors forming part of a system or between any part of either conductor and earth. In the case of alternating current, the expression means the virtual voltage or root mean square value (i.e., the square root of the mean or average value of the squares of the instantaneous values of the voltage during a complete cycle).

“Works” means and includes electric lines, also any buildings, machinery, engines, works, matters, or things of whatever description required for the generation, transformation, distribution or use of energy.

### Savings

- (2) (a) Nothing in this regulation shall apply to—
- (i) any electrical apparatus which is not used and is not intended to be used as, and does not form and is not intended to form, part of the equipment of a mine; or
  - (ii) any electrical apparatus operated at a mine by an Electricity Undertaker within the meaning of sub-section (1) of section 31 of the Electricity (Supply) Act (Northern Ireland) 1967(g), being such apparatus thereat other than any such apparatus on the consumer's side of the consumer's terminals within the meaning of section 1 of the Schedule to the Electric Lighting (Clauses) Act 1899(h), as incorporated with the Electricity (Supply) Act (Northern Ireland) 1931(i).
- (b) Nothing in paragraphs (8), (9), (10), (11), (12), (13), (14), (15), (16), (17), (18), (19) and (33) shall apply to any system used exclusively for signalling or telephones and supplied with energy from a battery of primary or secondary cells at a voltage not exceeding 50 volts, nor to any system used exclusively for telephones and supplied with energy from magneto generators operated by hand.

### Use of Electricity

(3) It shall be the duty of the consumer to comply with and enforce the requirements of the following paragraphs, and it shall be the duty of all contractors, workmen and persons employed to conduct their work in accordance therewith.

(4) All apparatus, conductors and electric lines shall be sufficient in size and power for the work they may be called upon to do, and so constructed, installed, protected, worked and maintained as to prevent danger so far as is reasonably practicable.

(5) The standard of construction of all apparatus, conductors and electric lines shall be not lower than that prescribed in the appropriate specification (if any) of the British Standards Institution current at the time of their installation.

(6) All overhead lines in a mine shall comply with the Regulations for Overhead Lines prescribed by the Ministry and made under the Electricity (Supply) Acts (Northern Ireland) 1882 to 1967(j) as if they were lines of the undertakers authorised to supply electricity within the area in which the mine is situated, provided that overhead lines which are installed and removed within a period of three months, need not comply with the said Regulations as to factors of safety for supports.

(7) Outdoor substations and outdoor switch stations shall (unless the apparatus is completely enclosed in a metal casing connected with earth, the

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|-------------------------|--------------------------|-----------------------------|
| (g) 1967. c. 11 (N.I.). | (h) 62-3 V. c. 19.       | (i) 21-2 G. 5. c. 9 (N.I.). |
| (j) 45-6 V. c. 56.      | 23-4 G. 5. c. 33 (N.I.). |                             |
| 51-2 V. c. 12.          | 25-6 G. 5. c. 9 (N.I.).  |                             |
| 62-3 V. c. 19.          | 1948. c. 18.             |                             |
| 9 Ed. 7. c. 34.         | 1951. c. 8.              |                             |
| 9-10 G. 5. c. 100.      | 1953. c. 15.             |                             |
| 21-2 G. 5. c. 9 (N.I.). | 1967. c. 11 (N.I.).      |                             |

said apparatus also being connected with the system by electric lines provided with a metallic covering) be efficiently protected by fencing not less than eight feet in height or other means so as to prevent access to the electric lines and apparatus therein by any unauthorised person.

- (8) All conductors, unless so placed and safeguarded as to prevent danger, shall be covered with insulating material; provided that this paragraph shall not apply to circuits in which the voltage does not exceed 25 volts.
- (9) (a) All electric lines which are required to be covered with insulating material, other than flexible cables used with portable or transportable apparatus, shall be protected throughout by a metallic covering suitable for the purposes which shall enclose all the conductors of the circuit; and the said metallic covering shall have a conductance of not less than half that of the same length of the largest of the live conductors enclosed therein; provided that this sub-paragraph shall not apply to circuits in which the voltage does not exceed low voltage direct current or 125 volts alternating current. Provided also that this sub-paragraph shall not apply to single conductor cables having a continuous metal sheath and so placed and safeguarded as to prevent danger.
- (b) (i) Where cable protected by a metallic covering is connected to apparatus, the metallic covering shall be securely attached to the apparatus.
- (ii) Where cable is jointed or terminated, the insulating material shall be efficiently sealed to exclude moisture, so as to preserve its insulating quality.
- (10) (a) Flexible cables used with portable or transportable apparatus shall be multi-core cables, and shall comprise an earthing conductor having a cross-sectional area and conductance not less than that of the largest of the live conductors comprised in the cable.
- (b) (i) If the voltage of the circuit exceeds low voltage direct current or 125 volts alternating current, such cables shall also comprise a metallic covering which shall enclose all the conductors of the circuit or a flexible metallic screen or screens.
- (ii) The said metallic covering shall have a conductance of not less than half that of the largest of the live conductors in the cable; provided that where this is impracticable the conductance of the metallic covering shall not be required to be greater than that of a copper conductor having a cross-sectional area of 0.022 of a square inch and of the same length as the cable.
- (iii) The said flexible metallic screen, when applied to enclose collectively the conductors of the circuit, shall have a conductance of not less than that of a copper conductor having a cross-sectional area of 0.022 of a square inch and of the same length as the cable.
- (iv) The said flexible metallic screens, when applied to enclose individually the conductors of the circuit, shall have a conductance severally of not less than half that of a copper conductor having a cross-sectional area of 0.022 of a square inch and of the same length as the cable.
- (c) (i) Where flexible cable is connected to apparatus, it shall be attached by means designed to hold the cable securely, and to exclude water where necessary, and the metallic covering of the cable, if any, shall also be securely attached to the apparatus.
- (ii) Where flexible cable is jointed or terminated, the insulating material shall be efficiently sealed to exclude moisture, so as to preserve its insulating quality, where this is reasonably practicable.

(11) All metallic structures, other than live conductors, forming part of, or enclosing, or protecting apparatus, or electric lines, or adjacent to live conductors so as to be liable to become charged by contact therewith or leakage therefrom shall be connected with earth; provided that, except with respect to portable or transportable apparatus, this paragraph shall not apply where the voltage of the live conductors does not exceed low voltage direct current or 125 volts alternating current. Provided also that this paragraph shall not apply to metallic structures that cannot be touched while the circuit is live.

(12) (a) All metallic structures that are required to be connected with earth shall be connected to one or more earth electrodes by a conductor which, except as hereinafter provided, shall have a cross-sectional area of not less than 0.022 of a square inch for any one such conductor. Provided that a metallic covering that complies with the requirements of this regulation may be used as the said conductor and provided also that one of the component conductors of a multi-core flexible cable used to supply portable or transportable apparatus and complying with the requirements of this regulation may be used as the said conductor, notwithstanding that the said metallic covering or the said component core may have an equivalent cross-sectional area of less than 0.022 of a square inch. Provided also that this requirement shall not apply to earthing conductors forming part of an overhead line.

(b) (i) No automatic circuit-opening device shall be introduced into any earthing conductor that is provided to comply with this regulation.

(ii) All connections in or to any earthing conductor shall be mechanically secure and electrically efficient.

(13) (a) One pole of the system shall be connected with earth in the following instances, viz.:—

(i) An earthed concentric system in which the pole that is connected to the outer conductor shall be connected with earth;

(ii) A 2-wire system used wholly or mainly for traction and in which the running rails are designed to be connected to one pole of the system in which the pole to which the running rails are connected shall be connected with earth;

(iii) A 2-wire system derived from the secondary winding of a single phase transformer and used for indicating instruments or other accessories of switchgear including fixed lights associated therewith.

(b) The neutral point of any alternating system, where the voltage exceeds 25 volts, shall be connected with earth, except that one pole of a 3-phase 3-wire system derived from the secondary winding of a 3-phase transformer and used for indicating instruments or other accessories of switch-gear including fixed lights associated therewith, may be earthed instead of the neutral point.

(14) (a) The system shall be connected with earth at one point only, provided that this requirement shall not apply to an earthed concentric system nor to a system used wholly or mainly for traction, and in which the running rails are connected to one main terminal of the system.

(b) No automatic circuit-opening device shall be introduced into the connection between the system and the earth electrode. Nevertheless, a non-automatic switch or a link may be used to isolate a generator or transformer for the purpose of testing or where energy is obtained from two or more generators or transformers in parallel to enable the neutral point of one only to be connected with earth.

- (c) Subject to compliance with the requirements of this regulation as to the automatic control of the current in the system, it shall be permissible to include a current limiting device in the circuit between the system and the earth electrode.

(15) Where the system is not connected to the same earth electrode, or earth electrodes to which are connected the metallic structures that are required to be connected with earth, then the several earth electrodes shall be connected with one another by an earthing conductor complying with this regulation, unless the electrical resistance between the several earth electrodes through the general mass of earth is not more than two ohms:

Provided that when the earth electrode to which the system is connected is remote from the consumer's installation, or is otherwise inaccessible to the consumer, it shall suffice that the electrical resistance between the consumer's earth electrode and the general mass of earth shall be not more than two ohms.

(16) The insulation resistance of any circuit, excepting the insulation resistance of that conductor, if any, which is normally connected with earth, shall be so maintained that in normal working the leakage current does not exceed one ten-thousandth part of the rated current for the circuit:

Provided that this requirement shall not apply to overhead lines.

(17) The current in an alternating current system in which the voltage exceeds 125 volts for portable or transportable apparatus, or 650 volts for other apparatus, shall be so controlled that, when in any circuit the leakage current to earth exceeds 15 per cent. of the rated current for the circuit, the circuit shall be automatically isolated.

(18) The current in the system shall be so controlled that, when in any circuit the current exceeds the rated current so as to involve danger, the current shall be automatically cut off.

(19) Every circuit-breaker and fuse shall be of adequate breaking capacity for the circuit in which it is used and having regard for the energy in the system, so as to avoid danger.

(20) Adequate precautions shall be taken to isolate any electric line, conductor or apparatus, if there is danger therefrom, before the conductors are handled and, where necessary to prevent danger, suitable means shall be provided and used to enable the conductors of the circuit upon which work is to be done to be connected with earth before they are handled, and the said conductors shall remain connected with earth until the work is finished.

(21) (a) Energy shall not be supplied to any portable hand lamp above low voltage direct current or 25 volts alternating current.

(b) Energy shall not be supplied to any portable apparatus above low voltage direct current or 125 volts alternating current where the continuous rated output of the motor, if any, comprised therein does not exceed 5 horsepower, or, in the case of other applications of energy, where the rated input does not exceed 5 kilo volt amperes.

(22) Where energy is transformed, suitable provision shall be made to protect the lower voltage system from becoming charged above its normal voltage by leakage or electrostatic induction from the higher voltage system, either by connecting with earth a point of the lower voltage system or by other equally effective means.

(23) Inflammable material shall not be used for the construction of any room or compartment below ground containing apparatus nor in proximity to

any apparatus therein unless the apparatus is so constructed as to obviate the risk of fire, so far as is reasonably practicable, and inflammable material shall not be stored in any such room or compartment.

(24) In any place below ground where oil immersed apparatus is installed containing in the aggregate more than 100 gallons of oil, provision shall be made to localise a fire resulting from the ignition of the oil and adequate means shall be provided at the place for extinguishing such a fire.

Spare oil shall not be stored in any place below ground containing apparatus.

(25) Means shall be provided at the surface of the mine to enable all current to be cut off from the installation below ground and during the time the said installation is live a person authorised to use the said means shall be available within easy reach thereof, and telephonic communication shall be provided between the surface and one or more convenient places in the mine.

(26) Where necessary to prevent danger, suitable means shall be provided at the surface of the mine to protect the installation below ground from abnormal voltage due to atmospheric electricity.

(27) Where in any part of a mine there may be risk of igniting inflammable gas all apparatus including telephones and signalling apparatus installed in such places shall be of a type approved by the Ministry for the purpose.

(28) Electric locomotives shall not be used for haulage below ground except with the consent of the Ministry and subject to such conditions as the Ministry may specify.

(29) The consumer shall keep at the mine a plan to scale showing the position of all apparatus and cables installed in the mine and the said plan shall show in distinguishing colours or by other means all apparatus and cables.

(30) The consumer shall send to the Ministry an annual return in such form and at such date as the Ministry may from time to time prescribe of the electrical apparatus in use above and below ground at the mine.

(31) No person except an electrician of the requisite skill and experience shall undertake any work where technical knowledge is required adequately to avoid danger.

(32) No person except an authorised person shall undertake any work incidental to the generation, transformation, transmission, or use of energy.

(33) Instructions for the treatment of persons suffering from electric shock shall be exhibited at the mine or that part of the mine where the voltage exceeds low voltage direct current or 125 volts alternating current.

(34) (a) An external examination of all apparatus, cables and electric lines shall be made by an authorised person not less frequently than once in every seven days.

(b) Before any apparatus, cable or electric line, that has been newly installed, or re-installed in a new position, is put into service it shall be thoroughly examined and tested by an authorised person for insulation resistance and for the conductance of the earthing conductors comprised therein or associated therewith.

(c) The results of the said examination shall be recorded in a book to be kept at the mine and the record shall be signed and dated by the person who made the examination or test.



(35) Tests shall be made not less frequently than once in each 6 months, or such longer period as the Ministry may allow, of the insulation resistance of all parts of the consumer's installation and of the conductance of the earthing conductors comprised therein, and of the earth plate or plates associated therewith. The results of these tests with the date upon which each test was made shall be recorded in a book to be kept at the mine and the record shall be signed and dated by the person who made the test.

## PART VI

### MISCELLANEOUS

#### *Making and Revocation of Certificates of Exemptions*

33. Any certificate or notice of, or any exemption or relaxation granted by, the Ministry under the regulations, may be given or granted and from time to time revoked or altered by the Ministry, either unconditionally or subject to such conditions as the Ministry may see fit.

#### *Arbitration*

34. Any matter which is referred to arbitration under regulations 5 and 10 shall be referred in accordance with the provisions of the Arbitration Act (Northern Ireland) 1937(k) as though these regulations were an arbitration agreement within the meaning of that Act and the parties to the reference shall be the manager of the mine and the Ministry which may be represented by an inspector. The arbitrator shall be appointed by agreement between the manager and the inspector.

Sealed with the Official Seal of the Ministry of Commerce for Northern Ireland this 22nd day of April 1969 in the presence of

(L.S.)

K. R. Shimeld,  
Assistant Secretary.

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### EXPLANATORY NOTE

*(This note is not part of the regulations but is intended to indicate their general purport.)*

These regulations deal with the general duties of management and employees in metalliferous mines in matters of safety (including the use of machinery, plant, apparatus and electricity), health and welfare.