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TITLE 24—HOUSING AND HOUSING CREDIT

Chapter VIII—Office of Housing Expediter

[Rent Procedural Reg. 2, Amdt. 2]

PART 840—PROCEDURE

ACTION BY AREA RENT DIRECTOR ON OWN INITIATIVE

Rent Procedural Regulation 2 (§§ 840.101 to 840.153) is amended in the following respects:

1. The last sentence of the first paragraph of the Introduction to §§ 840.102 to 840.111 is amended to read as follows: "These sections also deal with proceedings instituted on the Area Rent Director's own initiative."

2. Section 840.108 is amended to read as follows:

§ 840.108 *Action by the Area Rent Director on his own initiative.* (a) In any case, except as provided in paragraph (b) of this section, where the Area Rent Director pursuant to the provisions of a maximum rent regulation, deems it necessary or appropriate to enter an order on his own initiative, he shall, before taking such action, serve a notice upon the landlord and tenant of the housing accommodations involved stating the proposed action and the grounds therefor. The proceeding shall be deemed commenced on the date of issuance of such notice. Both parties shall be afforded a period of seven (7) days from the date of mailing within which to respond to the notice of proceeding. The response must in all cases be limited to the issues raised by the notice and shall be filed with the Area Rent Director in an original and one (1) copy. Any person so notified who fails to file such a response shall be deemed to have waived his right to become a party to the proceedings before the Area Rent Director except upon leave granted for good cause shown.

(b) In any case where the Area Rent Director proposes to reduce a maximum rent on his own initiative and the case did not result from a tenant's applica-

tion, the tenant shall not be a party to such proceeding and no notices in connection therewith need be served upon the tenant. However, a copy of any order reducing a maximum rent shall be served upon the tenant as well as upon the landlord. If the tenant feels that a further reduction in maximum rent is warranted, his remedy shall be to file an application for reduction under the applicable maximum rent regulation rather than an application for review under this regulation: *Provided, however,* That if such further reduction is claimed upon the same grounds as on which the Area Rent Director's order of reduction was based, and the landlord files an application for review of such order, the tenant's application for reduction shall be forwarded to the appropriate Regional Housing Expediter for consideration as a part of the application for review proceeding.

3. In § 840.112 (a), the words "Except as provided in § 840.109 (c)" are changed to "Except as provided in § 840.108 (b) and § 840.109 (c)".

(Sec. 204 (d), 61 Stat. 197, as amended by 62 Stat. 37, 94; 50 U. S. C. App. 1894 (d))

This amendment shall become effective August 15, 1949.

Issued this 15th day of August 1949.

TIGHE E. WOODS,
Housing Expediter.

[F. R. Doc. 49-6693; Filed, Aug. 16, 1949; 8:48 a. m.]

TITLE 32—NATIONAL DEFENSE

Chapter IV—Joint Regulations of the Armed Forces

Subchapter A—Armed Services Procurement Regulation

PART 406—CONTRACT CLAUSES AND FORMS

CLAUSES FOR FIXED-PRICE SUPPLY CONTRACTS

Preamble. Sections I through VI (codified as Parts 400-405) of the Armed Services Procurement Regulation were

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republished in the FEDERAL REGISTER (14 F. R. 522) together with the addition of Sections X and XI (Parts 409 and 410, 14 F. R. 541), Section XV (Part 414, 14 F. R. 683), Section XII (Part 411, 14 F. R. 1346), and Section IX (Part 408, 14 F. R. 1923). Section VII (codified as Part 406) is added as set forth below.

GORDON GRAY,
The Assistant Secretary of the Army.
M. E. ANDREWS,
Assistant Secretary of the Navy.
A. S. BARROWS,
Under Secretary of the Air Force.

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AUTHORITY: §§ 406.000 to 406.105-6 issued under sec. 1 (a), (b), 54 Stat. 712, 55 Stat. 838, Pub. Law 413, 80th Cong.; 41 U. S. C. preceding sec. 1 note, 50 U. S. C. App. 601-622; E. O. 9001, Dec. 27, 1941, 3 CFR Cum. Supp.

§ 406.000 *Scope of part.* This part sets forth uniform contract clauses and standard contract forms for use in connection with the procurement of supplies and services by the Departments of the Army, Navy and Air Force. Prescribed standard contract forms appear at the end of this part.

SUBPART A—CLAUSES FOR FIXED-PRICE SUPPLY CONTRACTS

§ 406.100 *Scope of subpart.* This subpart sets forth uniform contract clauses for use in fixed-price supply contracts as defined in § 406.102.

§ 406.101 *Effective date of subpart.* Notwithstanding any earlier effective date prescribed elsewhere in this subchapter, the contract clauses set forth or referred to in this subpart shall be inserted, as hereinafter prescribed, in all fixed-price supply contracts executed on or after January 1, 1950, or with respect to which procurement is initiated on or after October 1, 1949. Use of the contract clauses set forth or referred to herein is authorized from the date of issuance.

§ 406.102 *Applicability.* As used throughout this subpart, the term "fixed-price supply contract" shall mean any contract (a) entered into either by formal advertising or by negotiation, including purchase orders in an amount exceeding \$1,000, but excluding letter contracts, letters of intent, preliminary notices of award, and amendments or modifications to contracts or purchase orders; (b) at a fixed price (with or without provision for price redetermination, escalation, or other form of price adjustment) as covered in §§ 402.402 to 402.404 of this subchapter; and (c) for supplies other than (1) the construction, alteration or repair of buildings, bridges, roads, or other kinds of real property, and (2) experimental, developmental, or research work.

§ 406.103 *Required clauses.* The following clauses shall be inserted in all fixed-price supply contracts:

§ 406.103-1 *Definitions.*

DEFINITIONS

As used throughout this contract, the following terms shall have the meanings set forth below:

(a) The term "Secretary" means the Secretary, the Under Secretary, or any Assistant Secretary of the Department; and the term "his duly authorized representative" means any person or persons or board (other than the Contracting Officer) authorized to act for the Secretary.

(b) The term "Contracting Officer" means the person executing this contract on behalf of the Government, and any other officer or civilian employee who is a properly designated Contracting Officer; and the term includes, except as otherwise provided in this contract, the authorized representative of a Contracting Officer acting within the limits of his authority.

(c) Except as otherwise provided in this contract, the terms "subcontracts" includes purchase orders under this contract.

Additional definitions may be included: *Provided, They are not inconsistent with the foregoing clause.*

§ 406.103-2 *Changes.*

CHANGES

The Contracting Officer may at any time, by a written order, and without notice to the sureties, make changes, within the general scope of this contract, in any one or more of the following: (i) drawings, designs, or specifications, where the supplies to be furnished are to be specially manufactured for the Government in accordance therewith; (ii) method of shipment or packing; and (iii) place of delivery. If any such change causes an increase or decrease in the cost of, or the time required for, performance of this contract, an equitable adjustment shall be made in the contract price or delivery schedule, or both, and the contract shall be modified in writing accordingly. Any claim by the Contractor for adjustment under this clause must be asserted within 30 days from the date of receipt by the Contractor of the notification of change; *Provided, however, That the Contracting Officer, if he decides that the facts justify such action, may receive and act upon any such claim asserted at any time prior to final payment under this contract.* Failure to agree to any adjustment shall be a dispute concerning a question of fact within the meaning of the clause of this contract entitled "Disputes." However, nothing in this clause shall excuse the Contractor from proceeding with the contract as changed.

In the foregoing clause, the period of "30 days" within which any claim for adjustment must be asserted may be varied in accordance with Department procedures.

§ 406.103-3 *Extras.*

EXTRAS

Except as otherwise provided in this contract, no payment for extras shall be made unless such extras and the price therefor have been authorized in writing by the Contracting Officer.

§ 406.103-4 *Variation in quantity.*

VARIATION IN QUANTITY

No variation in the quantity of any item called for by this contract will be accepted unless such variation has been caused by conditions of loading, shipping, or packing, or allowances in manufacturing processes,

and then only to the extent, if any, specified elsewhere in this contract.

§ 406.103-5 *Inspection.*

INSPECTION

(a) All supplies (which term throughout this clause includes without limitation raw materials, components, intermediate assemblies, and end products) shall be subject to inspection and test by the Government, to the extent practicable at all times and places including the period of manufacture, and in any event prior to final acceptance.

(b) In case any supplies or lots of supplies are defective in material or workmanship or otherwise not in conformity with the requirements of this contract, the Government shall have the right either to reject them (with or without instructions as to their disposition) or to require their correction. Supplies or lots of supplies which have been rejected or required to be corrected shall be removed or corrected in place, as requested by the Contracting Officer, by and at the expense of the Contractor promptly after notice, and shall not again be tendered for acceptance unless the former tender and either the rejection or requirement of correction is disclosed. If the Contractor fails promptly to remove such supplies or lots of supplies, when requested by the Contracting Officer, and to proceed promptly with the replacement or correction thereof, the Government either (i) may by contract or otherwise replace or correct such supplies and charge to the Contractor the cost occasioned the Government thereby, or (ii) may terminate this contract for default as provided in the clause of this contract entitled "Default." Unless the Contractor elects to correct or replace the supplies which the Government has a right to reject and is able to make such correction or replacement within the required delivery schedule, the Contracting Officer may require the delivery of such supplies at a reduction in price which is equitable under the circumstances. Failure to agree to such reduction of price shall be a dispute concerning a question of fact within the meaning of the clause of this contract entitled "Disputes."

(c) If any inspection or test is made by the Government on the premises of the Contractor or a subcontractor, the Contractor without additional charge shall provide all reasonable facilities and assistance for the safety and convenience of the Government inspectors in the performance of their duties. If Government inspection or test is made at a point other than the premises of the Contractor or a subcontractor, it shall be at the expense of the Government; *Provided, That in case of rejection the Government shall not be liable for any reduction in value of samples used in connection with such inspection or test.* All inspections and tests by the Government shall be performed in such a manner as not to unduly delay the work. The Government reserves the right to charge to the Contractor any additional cost of Government inspection and test when supplies are not ready at the time such inspection and test is requested by the Contractor. Final acceptance or rejection of the supplies shall be made as promptly as practicable after delivery, except as otherwise provided in this contract; but failure to inspect and accept or reject supplies shall neither relieve the Contractor from responsibility for such supplies as are not in accordance with the contract requirements nor impose liability on the Government therefor.

(d) The inspection and test by the Government of any supplies or lots thereof does not relieve the Contractor from any responsibility regarding defects or other failures to meet the contract requirements which may

be discovered prior to final acceptance. Except as otherwise provided in this contract, final acceptance shall be conclusive except as regards latent defects, fraud, or such gross mistakes as amount to fraud.

(e) The Contractor shall provide and maintain an inspection system acceptable to the Government covering the supplies hereunder. Records of all inspection work by the Contractor shall be kept complete and available to the Government during the performance of this contract and for such longer period as may be specified elsewhere in this contract.

§ 406.103-6 Responsibility for supplies.

RESPONSIBILITY FOR SUPPLIES

Except as otherwise provided in this contract, (i) the Contractor shall be responsible for the supplies covered by this contract until they are delivered at the designated delivery point, regardless of the point of inspection; and (ii) the Contractor shall bear all risks as to rejected supplies after notice of rejection.

§ 406.103-7 Payments.

PAYMENTS

The Contractor shall be paid, upon the submission of properly certified invoices or vouchers, the prices stipulated herein for supplies delivered and accepted or services rendered and accepted, less deductions, if any, as herein provided. Unless otherwise specified, payment will be made on partial deliveries accepted by the Government when the amount due on such deliveries so warrants; or, when requested by the Contractor, payment for accepted partial deliveries shall be made whenever such payment would equal or exceed either \$1,000 or 50% of the total amount of this contract.

§ 406.103-8 Assignment of claims.

ASSIGNMENT OF CLAIMS

(a) Pursuant to the provisions of the Assignment of Claims Act of 1940 (Act of October 9, 1940; 31 U. S. Code 203, 41 U. S. Code 15), if this contract provides for payment aggregating \$1,000 or more, claims for moneys due or to become due the Contractor from the Government under this contract may be assigned to a bank, trust company, or other financing institution, including any Federal lending agency, and may thereafter be further assigned and reassigned to any such institution. Any such assignment or reassignment shall cover all amounts payable under this contract and not already paid, and shall not be made to more than one party, except that any such assignment or reassignment may be made to one party as agent or trustee for two or more parties participating in such financing. Notwithstanding any provision of this contract, payment to an assignee of any claim under this contract shall not be subject to reduction or set-off for any indebtedness of the Contractor to the Government arising independently of this contract.

(b) In no event shall copies of this contract or of any plans, specifications, or other similar documents relating to work under this contract, if marked "Top Secret", "Secret", "Confidential", or "Restricted", be furnished to any assignee of any claim arising under this contract or to any other person not entitled to receive the same: *Provided*, That a copy of any part or all of this contract so marked may be furnished, or any information contained therein may be disclosed, to such assignee upon the prior written authorization of the Contracting Officer.

In cases where special circumstances make it advisable in the best interests of the Government, and in accordance with Department procedures, the last sentence of paragraph (a) of the foregoing clause may be deleted.

§ 406.103-9 Additional bond security.

ADDITIONAL BOND SECURITY

If any surety upon any bond furnished in connection with this contract becomes unacceptable to the Government, or if any such surety fails to furnish reports as to his financial condition from time to time as requested by the Government, the Contractor shall promptly furnish such additional security as may be required from time to time to protect the interests of the Government and of persons supplying labor or materials in the prosecution of the work contemplated by this contract.

§ 406.103-10 Federal, State and local taxes. Insert the contract clause set forth in § 410.401 of this subchapter.

§ 406.103-11 Default.

DEFAULT

(a) The Government may, subject to the provisions of paragraph (b) below, by written Notice of Default to the Contractor, terminate the whole or any part of this contract in any one of the following circumstances:

(i) If the Contractor fails to make delivery of the supplies or to perform the services within the time specified herein or any extension thereof; or

(ii) If the Contractor fails to perform any of the other provisions of this contract, or so fails to make progress as to endanger performance of this contract in accordance with its terms, and in either of these two circumstances does not cure such failure within a period of 10 days (or such longer period as the Contracting Officer may authorize in writing) after receipt of notice from the Contracting Officer specifying such failure.

(b) This contract shall not be terminated under the provisions of paragraph (a) of this clause, and the Contractor shall not be liable for any excess costs, if any failure to perform the contract arises out of causes beyond the control and without the fault or negligence of the Contractor. Such causes include, but are not restricted to, acts of God or of the public enemy, acts of the Government, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe weather, and defaults of subcontractors due to any of such causes unless the Contracting Officer shall determine that the supplies or services to be furnished by the subcontractor were obtainable from other sources in sufficient time to permit the Contractor to meet the required delivery schedule.

(c) In the event the Government terminates this contract in whole or in part as provided in paragraph (a) of this clause, the Government may procure, upon such terms and in such manner as the Contracting Officer may deem appropriate, supplies or services similar to those so terminated, and the Contractor shall be liable to the Government for any excess costs for such similar supplies or services: *Provided*, That the Contractor shall continue the performance of this contract to the extent not terminated under the provisions of this clause.

(d) If this contract is terminated as provided in paragraph (a) of this clause, the Government, in addition to any other rights provided in this clause, may require the Contractor to transfer title and delivery to the Government, in the manner and to the ex-

tent directed by the Contracting Officer, (i) any completed supplies, and (ii) such partially completed supplies and materials, parts, tools, dies, jigs, fixtures, plans, drawings, information, and contract rights (hereinafter called "manufacturing materials") as the Contractor has specifically produced or specifically acquired for the performance of such part of this contract as has been terminated; and the Contractor shall, upon direction of the Contracting Officer, protect and preserve property in possession of the Contractor in which the Government has an interest. The Government shall pay to the Contractor the contract price for completed supplies delivered to and accepted by the Government, and the amount agreed upon by the Contractor and the Contracting Officer for manufacturing materials delivered to and accepted by the Government and for the protection and preservation of property. Failure to agree shall be a dispute concerning a question of fact within the meaning of the clause of this contract entitled "Disputes."

(e) If, after notice of termination of this contract under the provisions of paragraph (a) of this clause, it is determined that the failure to perform this contract is due to causes beyond the control and without the fault or negligence of the Contractor pursuant to the provisions of paragraph (b) of this clause, such Notice of Default shall be deemed to have been issued pursuant to the clause of this contract entitled "Termination for Convenience of the Government," and the rights and obligations of the parties hereto shall in such event be governed by such clause.

(f) The rights and remedies of the Government provided in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under this contract.

§ 406.103-12 Disputes.

DISPUTES

Except as otherwise provided in this contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Contractor. Within 30 days from the date of receipt of such copy, the Contractor may appeal by mailing or otherwise furnishing to the Contracting Officer a written appeal addressed to the Secretary, and the decision of the Secretary or his duly authorized representative for the hearing of such appeals shall be final and conclusive: *Provided*, That, if no such appeal is taken, the decision of the Contracting Officer shall be final and conclusive. In connection with any appeal proceeding under this clause, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the contract and in accordance with the Contracting Officer's decision.

In accordance with Department procedures, the foregoing clause may be modified to provide for intermediate appeal to the head of the procuring activity concerned. The decision of the Contracting Officer referred to in the above clause shall, if mailed, be sent by registered mail, return receipt requested.

§ 406.103-13 Notice and assistance regarding patent infringement. Insert the contract clause set forth in § 408.102 of this subchapter.

§ 406.103-14 *Buy American Act.*

BUY AMERICAN ACT

The Contractor agrees that there will be delivered under this contract only such unmanufactured articles, materials and supplies (which term "articles, materials and supplies" is hereinafter referred to in this clause as "supplies") as have been mined or produced in the United States, and only such manufactured supplies as have been manufactured in the United States substantially all from supplies mined, produced, or manufactured, as the case may be, in the United States. Pursuant to the Buy American Act (41 U. S. Code 10a-c), the foregoing provision shall not apply (i) with respect to supplies excepted by the Secretary from the application of that Act, (ii) with respect to supplies for use outside the United States, or (iii) if supplies of the class or kind to be used, or the supplies from which they are manufactured, are determined by the Secretary or his duly authorized representative not to be mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality.

§ 406.103-15 *Convict labor.* Insert the contract clause set forth in § 411.203 of this subchapter.

§ 406.103-16 *Eight-Hour Law of 1912.* Insert the contract clause set forth in § 411.303-1 of this subchapter. Note the introductory provision required by § 411.303-3 in the case of contracts with a State or political subdivision thereof.

§ 406.103-17 *Walsh-Healey Public Contracts Act.* Insert the clause set forth in § 411.604 of this subchapter.

§ 406.103-18 *Nondiscrimination in employment.* Insert the clause set forth in § 411.803 of this subchapter.

§ 406.103-19 *Officials not to benefit.*

OFFICIALS NOT TO BENEFIT

No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

§ 406.103-20 *Covenant against contingent fees.*

COVENANT AGAINST CONTINGENT FEES

The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration the full amount of such commission, percentage, brokerage, or contingent fee.

§ 406.103-21 *Termination for convenience of the Government.* Insert the contract clause appropriate for use in fixed-price supply contracts as set forth in Part 407 of this subchapter: *Provided*, That prior to the issuance and effective date of Part 407 of this sub-

chapter there shall be inserted such termination clause as is prescribed by Department procedures.

§ 406.104 *Clauses to be used when applicable.*

§ 406.104-1 *Davis-Bacon Act.* In accordance with the requirements of Subpart D of Part 411 of this subchapter, insert the contract clause set forth in §§ 411.405-1 or 411.405-2 of this subchapter, as the case may be.

§ 406.104-2 *Copeland Act.* In accordance with the requirements of Subpart E Part 411 of this subchapter insert the contract clause set forth in § 411.504-1 or 411.504-2 of this subchapter, as the case may be.

§ 406.104-3 *Employment of aliens.* In accordance with the requirement of section 10 (j) of the act of 1926 (10 U. S. C. 310 (j)) all contracts for furnishing or constructing aircraft, aircraft parts, or aeronautical accessories shall contain the following clause:

EMPLOYMENT OF ALIENS

No aliens employed by the Contractor shall be permitted to have access to the plans or specifications, or the work under construction, or to participate in the contract trials, without the written consent beforehand of the Secretary or his duly authorized representative.

§ 406.104-4 *Neutrality Act of 1939.* In accordance with section 12 (g) of the Neutrality Act of 1939 (Resolution of November 4, 1939; 22 U. S. C. 452), which prohibits the purchase by the Government of arms, ammunition, or implements of war (as listed in a proclamation by the President) from any manufacturer, exporter, importer or dealer who has failed to register under said act, all contracts with any manufacturer, exporter, importer or dealer for the purchase of any supplies listed in the then applicable Presidential proclamation shall contain the following clause:

NEUTRALITY ACT OF 1939

If any of the supplies to be delivered under this contract are arms, ammunition, or implements of war, as listed in the current proclamation issued by the President pursuant to the Neutrality Act of 1939 (22 U. S. C. Code 452), the Contractor either (i) represents that it is properly registered under said Act and agrees to furnish satisfactory evidence thereof upon request, or (ii) represents that it is not subject to said Act and agrees to furnish satisfactory evidence thereof upon request.

§ 406.104-5 *Filing of patent applications.* In accordance with the requirements of § 408.104 of this subchapter, insert the contract clause set forth in said section.

§ 406.104-6 *Patent indemnity.* In accordance with the requirements of § 408.105 of this subchapter insert the contract clause set forth in said section.

§ 406.104-7 *Patent rights.* In accordance with the requirements of § 408.107 of this subchapter, insert the appropriate contract clause or clauses,

with additional provisions as prescribed, set forth in said section.

§ 406.104-8 *Reporting of royalties.* In accordance with the requirements of § 408.103 of this subchapter, insert the contract clause set forth in said section.

§ 406.104-9 *Copyrights.* In accordance with the requirements of Subpart B of Part 411 of this subchapter, insert the contract clause set forth in §§ 408.202 or 408.204 of this subchapter, as the case may be.

§ 406.104-10 *Renegotiation Act of 1948.* The clause set forth below shall be included in all contracts subject to renegotiation in accordance with (a) the provisions of the Renegotiation Act of 1948, as incorporated in Section 3 of the Supplemental National Defense Appropriation Act, 1948 (Public Law 547, 80th Congress, approved May 21, 1948), which requires insertion of such a clause in all contracts (including all subcontracts and lower-tier subcontracts thereunder) in excess of \$1,000 entered into on or after 21 May 1948 under the authority of that Appropriation Act, either obligating funds appropriated thereby, or obligating funds consolidated by that Act with funds appropriated thereby, or through contract authorizations granted thereby; (b) the provisions of Section 401 of the Second Deficiency Appropriation Act, 1948 (Public Law 785, 80th Congress, approved June 25, 1948), which authorizes the Secretary of Defense to direct the insertion of such a clause in any Armed Services contracts for the procurement of ships, aircraft, aircraft parts, and the construction of facilities or installations outside the continental United States which obligate any funds made available for obligation in the fiscal year 1949, pursuant to which authority the Secretary of Defense directed, by order of 30 June 1948 (to be effective 1 July 1948), the insertion of such a clause in all Armed Services contracts obligating such funds for the procurement of aircraft and aircraft parts; or (c) the provisions of any other Secretary of Defense order or any other Federal law requiring or directing the insertion of such a clause in any Armed Services contracts or subjecting any such contracts to the Renegotiation Act of 1948. Military Renegotiation Regulations issued by the Military Renegotiation Policy and Review Board, as from time to time supplemented and revised, should be examined for rulings and interpretations as to the kinds of contracts requiring inclusion of a Renegotiation Clause, and for authorized exemptions. The clause referred to is as follows:

RENEGOTIATION

(a) This contract is subject to the Renegotiation Act of 1948.

(b) The Contractor (which term as used in this clause means the party contracting to furnish the articles or perform the work required by this contract) agrees, within thirty days after receipt of its signed copy of this contract, to notify the Military Renegotiation Policy and Review Board, Office of the Secretary of Defense, Washington 25,

D. C., of such contract, indicating its own name and address: *Provided*, That, if the Contractor has previously reported to the Military Renegotiation Policy and Review Board any contract or purchase order subject to the Renegotiation Act of 1948, such notification shall not be necessary.

(c) The Contractor agrees to insert the provisions of this clause, including this paragraph (c), in all contracts or purchase orders in excess of \$1,000 to make or furnish any article or to perform all or any part of the work required for the performance of this contract.

§ 406.104-11 Vinson-Trammell Act.

(a) In accordance with the requirement of Section 3 of the Vinson-Trammell Act as amended and extended (34 U. S. C. 496, and 10 U. S. C. 311), and except as provided in (b) and (c) of this section, any contract in an amount which exceeds or may exceed \$10,000, known to be for the construction or manufacture of any complete aircraft or naval vessel, or any portion thereof, shall contain the following clause, except that in any advertised contract there may be inserted at the beginning of such clause the words "If this contract is in an amount which exceeds \$10,000,":

VINSON-TRAMMELL ACT

The Contractor agrees that this contract shall be subject to all the provisions of the Vinson-Trammell Act as amended and extended (34 U. S. C. 496, and 10 U. S. C. 311) and shall be deemed to contain all the agreements required by Section 3 of said Act: *Provided, however*, That this clause shall not be construed to enlarge or extend by contract the obligations imposed by said Act. In compliance with said Act, the Contractor agrees to insert in such subcontracts hereunder as are specified in said Act either the provisions of this clause or the provisions required by said Act.

(b) In any contract where only certain items or lots totalling more than \$10,000 are subject to the Vinson-Trammell Act, the foregoing clause should be modified to make the agreement of the Contractor applicable only to such items or lots. In any contract where only certain items or lots totalling \$10,000 or less would otherwise be subject to the act, the foregoing clause should not be included in the contract even though the total amount of the entire contract exceeds \$10,000.

(c) In any contract, otherwise subject to the Vinson-Trammell Act, for scientific equipment used for communication, target detection, navigation or fire control, as is designated by the Secretary of the Department concerned, the clause prescribed in (a) of this section shall not be included in such contract, and the following clause shall be inserted in lieu thereof:

VINSON-TRAMMELL ACT

The Secretary having designated the supplies called for by this contract to be scientific equipment used for communication, target detection, navigation or fire control; the provisions of the Vinson-Trammell Act as amended and extended (34 U. S. C. 496, and 10 U. S. C. 311) are not applicable to this contract.

§ 406.104-12 Military security requirements. Insert the following clause in all contracts which are classified "Top Secret", "Secret", "Confidential" or "Restricted", and in any other contracts the performance of which will require access to classified information or material:

MILITARY SECURITY REQUIREMENTS

(a) The provisions of the following paragraphs of this clause shall apply only if and to the extent that this contract involves access to classified matter, which as used in this clause shall mean information or material classified "Top Secret", "Secret", "Confidential", or "Restricted."

(b) The contractor (i) shall be responsible for safeguarding all classified matter and shall not supply or disclose classified matter to any unauthorized person, (ii) shall not make or permit to be made any reproductions of classified matter except as may be essential to performance of the contract and shall submit to the Contracting Officer, at such times as the Contracting Officer may direct, an accounting of all reproductions of classified matter, (iii) shall not incorporate in any other project any special features of design or construction which will disclose classified matter, except with the prior written authorization of the Contracting Officer.

(c) Except with the prior written consent of the Secretary or his duly authorized representative, the Contractor (i) shall not permit any alien to have access to classified matter, and (ii) shall not permit any individual to have access to matter classified "Top Secret" or "Secret."

(d) The Contractor agrees (i) to submit immediately to the Contracting Officer a complete confidential report of any information which the Contractor may have concerning existing or threatened espionage, sabotage, or subversive activity, (ii) to submit to the Contracting Officer, upon written request, any and all information which the Contractor may have concerning any of its employees engaged in any work at any plant, factory, or site at which work under this contract is being performed, and (iii) to exclude from its plant, factory, site, or part thereof, at which work under this contract is being performed, any person or persons whom the Secretary or his duly authorized representative, in the interest of security, may designate in writing.

(e) The Contractor is authorized to rely on any letter or other written instrument signed by the Contracting Officer, changing or entirely removing the classification of this contract or of any classified matter.

(f) The obligations of the Contractor under this clause shall be in addition to any obligations of the Contractor to comply with all the terms and provisions of any applicable security or secrecy agreement heretofore or hereafter entered into between the Contractor and the Government.

(g) The Contractor agrees to insert, in all subcontracts hereunder which involve access to classified matter, provisions which shall conform substantially to the language of this clause, including this paragraph (g): *Provided*, That such provisions need not be included in any subcontract as to which the Contracting Officer shall consent to the omission of such provisions.

§ 406.105 Additional clauses. The following clauses shall be inserted in fixed-price supply contracts in accordance with Department procedures when it is desired to cover the subject matter thereof in such contracts.

§ 406.105-1 Alterations in contract.

ALTERATIONS IN CONTRACT

The following alterations have been made in the provisions of this contract:

§ 406.105-2 Approval of contract.

APPROVAL OF CONTRACT

This contract shall be subject to the written approval of _____ or his duly authorized representative and shall not be binding until so approved.

§ 406.105-3 Notice to the Government of labor disputes.

NOTICE TO THE GOVERNMENT OF LABOR DISPUTES

Whenever the Contractor has knowledge that any actual or potential labor dispute is delaying or threatens to delay the timely performance of this contract, the Contractor shall immediately give notice thereof, including all relevant information with respect thereto, to the Contracting Officer.

§ 406.105-4 Notice of shipments.

NOTICE OF SHIPMENTS

At the time of delivery of any shipment of supplies to a carrier for transportation, the Contractor shall give prepaid notice of shipment to the consignee establishment, and to such other persons or installations designated by the Contracting Officer, in accordance with instructions of the Contracting Officer. If such instructions have not been received by the Contractor at least 24 hours prior to such delivery to a carrier, the Contractor shall request instructions from the Contracting Officer concerning the notice of shipment to be given.

§ 406.105-5 Liquidated damages.

LIQUIDATED DAMAGES

Where it is desired to provide for liquidated damages, the clause entitled "Default", set forth in § 406.103-11, shall be used except that paragraph (f) thereof shall be deleted and the following two paragraphs shall be added:

(f) Subject to the provisions of paragraph (b) above, if the Contractor fails to deliver the supplies or perform the services within the time specified in this contract, or any extension thereof, the actual damage to the Government for the delay will be impossible to determine, and therefore in lieu thereof the Contractor shall pay to the Government as fixed, agreed, and liquidated damages for each calendar day of delay the amount set forth elsewhere in this contract: *Provided*, That the Government may terminate this contract in whole or in part as provided in paragraph (a) of this clause, and in that event the Contractor shall be liable, in addition to the excess costs provided in paragraph (c) above, for liquidated damages accruing until such time as the Government may reasonably provide for the procurement of similar supplies or services.

(g) The rights and remedies of the Government provided in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under this contract.

§ 406.105-6 Authorization and consent. The contract clause set forth in § 408.106 of this subchapter may be inserted pursuant to the provisions of said section.

[F. R. Doc. 49-6687; Filed, Aug. 16, 1949; 8:48 a. m.]

TITLE 46—SHIPPING

Chapter I—Coast Guard, Department of the Treasury

[CGFR 49-18]

MISCELLANEOUS AMENDMENTS TO CHAPTER

A notice regarding proposed changes in the inspection and navigation regulations was published in the **FEDERAL REGISTER** dated February 26, 1949, and a public hearing was held by the Merchant Marine Council on March 29 and 30, 1949.

The purpose of the miscellaneous amendments to the regulations is to clarify their intent, effect editorial changes, and establish additional safety requirements, as well as to bring certain marine engineering material specifications into conformance with American Society for Testing Materials standards. This document establishes new specifications for lifesaving equipment, bulkhead panels, and incombustible materials. These requirements were previously published in the various general rules and regulations for vessel inspection (46 CFR, Subchapters G, H, I, and J of Chapter I). The purpose for the changes in the boiler tube requirements is to clarify the requirements for the determination of the maximum allowable pressure and minimum thickness of boiler and superheater tubes. The requirements for relief valves for unfired pressure vessels were changed to provide for a relief valve of reasonable size. The requirements for piping systems, pumps, refrigeration machinery, and fuel tanks, were rewritten and where necessary regulations in other parts have been canceled so that the requirements will appear in Part 55. All the written and oral comments, data, and suggestions submitted were considered by the Merchant Marine Council and where practicable were incorporated into the miscellaneous amendments to the regulations.

By virtue of the authority vested in me as Commandant, United States Coast Guard, by R. S. 4405, as amended, and section 101 of Reorganization Plan No. 3 of 1946, 46 U. S. C. 1, 375, as well as the statutes cited with the regulations below, the following amendments to the regulations are prescribed which shall become effective ninety (90) days after date of publication of this document in the **FEDERAL REGISTER**:

Subchapter F—Marine Engineering

PART 51—MATERIALS

SUBPART 51.07—STAYBOLT STEEL

1. Section 51.07-15 *Tensile properties* is amended by revising Table 51.07-15 *Physical properties* by deleting the phrase "but not to exceed 30" in the column for "Grade A" and opposite "elongation in 8 inches, minimum, percent" and substituting in lieu thereof the phrase "but need not exceed 30."

SUBPART 51.28 — ELECTRIC-RESISTANCE WELDED STEEL AND OPEN-HEARTH IRON BOILER AND SUPERHEATER TUBES

2. Section 51.28-1 *Scope* is amended by deleting paragraph (b).

3. Subparts 51.31 and 51.34, consisting of §§ 51.31-1 to 51.34-50, inclusive, are amended to read as follows:

SUBPART 51.31—SEAMLESS CARBON AND ALLOY-STEEL BOILER AND SUPERHEATER TUBES

- Sec.
- 51.31-1 Scope.
- 51.31-5 Process.
- 51.31-10 Manufacture.
- 51.31-15 Chemical composition.
- 51.31-20 Check analysis.
- 51.31-25 Tensile properties.
- 51.31-30 Flattening test.
- 51.31-35 Flaring test.
- 51.31-40 Hardness test.
- 51.31-45 Hydrostatic test.
- 51.31-50 Test specimens.
- 51.31-55 Number of tests.
- 51.31-60 Retests.
- 51.31-65 Retreatment.
- 51.31-70 Forming operations.
- 51.31-75 Permissible variations in dimensions and weight.
- 51.31-80 Finish.
- 51.31-85 Marking.

SUBPART 51.34—SEAMLESS STEEL PIPE

- 51.34-1 Scope.
- 51.34-5 Process.
- 51.34-6 Heat treatment.
- 51.34-10 Chemical composition.
- 51.34-11 Ladle analysis.
- 51.34-12 Check analysis.
- 51.34-15 Tensile requirements.
- 51.34-20 Bending properties.
- 51.34-25 Flattening tests.
- 51.34-30 Hydrostatic test.
- 51.34-35 Test specimens.
- 51.34-40 Number of tests.
- 51.34-45 Retests.
- 51.34-50 Finish and marking.

AUTHORITY: §§ 51.31-1 to 51.34-50 issued under R. S. 4405, 4417a, 4418, 4426, 4427, 4429, 4430, 4431, 4432, 4433, 4434, 4453, and 4491, as amended, sec. 14, 29 Stat. 690, 41 Stat. 305, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended, and sec. 101 of Reorg. Plan No. 3 of 1946; 46 U. S. C. 1, 363, 366, 367, 375, 391a, 392, 404, 405, 407-412, 435, 1333, 50 U. S. C. 1275.

SUBPART 51.31—SEAMLESS CARBON AND ALLOY-STEEL BOILER AND SUPERHEATER TUBES

NOTE: In substantial agreement with A. S. T. M. designations: A192-46, A210-46, and A209-46.¹ Certified material—Class B.

§ 51.31-1 *Scope.* (a) This specification covers seamless carbon and alloy-steel tubes intended for boiler and superheater service, boiler flues, safe ends, and boiler stay tubes.

(b) Two grades of carbon-steel boiler tubes are covered, designated grade T192 for low-carbon steel tubes and grade T210 for medium-carbon steel tubes. Twelve grades of alloy-steel tubes are covered, designated grades T1, T1a, T1b, T3, T5, T11, T12, T14, T16, T17, T21, and T22. The alloy-steel grades, exclusive of grades T1, T1a, and T1b, shall be designated ferritic alloy steels. Selection shall depend upon design, service conditions, physical and chemical properties and high-temperature characteristics. Other grades of material may be employed provided they conform at least to the minimum requirements of this specification.

§ 51.31-5 *Process.* The steel shall be a killed steel and shall be made by either or both of the following processes: open-hearth or electric-furnace.

§ 51.31-10 *Manufacture.* (a) Tubes shall be made by the seamless process and shall be either hot-finished or cold-drawn.

(b) Cold-drawn tubes shall be annealed after the final cold-draw pass.

(c) Hot-finished low-carbon tubes, grade T192, need not be annealed unless specified by the purchaser.

(d) Hot-finished medium-carbon tubes, grade T210, shall be annealed by heating to at least 1,300° F.

(e) Hot-finished alloy-steel tubes shall be annealed or normalized and drawn; or they may be given such heat treatment as is considered desirable by the manufacturer to conform to the requirements of this specification.

§ 51.31-15 *Chemical composition.* The steel shall conform to the following requirements as to chemical composition.

TABLE 51.31-15—CHEMICAL COMPOSITION
CARBON-STEEL GRADES

Grade	P192		P210	
	Low-carbon	Medium-carbon	Low-carbon	Medium-carbon
Carbon, percent.....	0.08 to 0.18	0.35	0.08 to 0.18	0.35
Manganese, percent.....	.30 to .60	1.80	.30 to .60	1.80
Phosphorus, maximum, percent.....	.04	.04	.04	.04
Sulfur, maximum, percent.....	.045	.045	.045	.045
Silicon, percent.....	1.25	1.10	1.25	1.10

ALLOY-STEEL GRADES

Grade	T1	T1a	T1b	T3	T5	T11
	Carbon-molybdenum	Carbon-molybdenum	Carbon-molybdenum	Chromium-molybdenum	Chromium-molybdenum	Chromium-silicon-molybdenum
Carbon, percent.....	0.10 to 0.20	0.15 to 0.25	0.08 to 0.14	1.0 to 1.5	1.0 to 1.5	1.0 to 1.5
Manganese, percent.....	.30 to .80	.30 to .80	.30 to .80	.30 to .60	.30 to .60	.30 to .60
Phosphorus, maximum, percent.....	.04	.04	.04	.03	.03	.03
Sulfur, maximum, percent.....	.05	.05	.05	.03	.03	.03
Silicon, percent.....	.10 to .50	.10 to .50	.10 to .50	.45 to .75	1.50	.50 to 1.00
Chromium, percent.....				1.50 to 2.00	4.00 to 6.00	1.00 to 1.50
Molybdenum, percent.....	.45 to .65	.45 to .65	.45 to .65	.60 to .80	.45 to .65	.45 to .65

See footnotes at end of table.

¹ Copies of these A. S. T. M. specifications were filed with the Division of the Federal Register when an order was published in the **FEDERAL REGISTER** March 31, 1948, 13 F. R. 1685. Copies are also on file with the various Coast Guard District Commanders for reference purposes.

TABLE 51.31-15—CHEMICAL COMPOSITION—Continued
ALLOY-STEEL GRADES—continued

Grade	T12	T14	T16	T17	T21	T22
	Chromium-molybdenum	Chromium-molybdenum	Chromium-molybdenum-titanium	Chromium-vanadium	Chromium-molybdenum	Chromium-molybdenum
Carbon, percent	1.0, 1.5	1.0, 1.5	1.0, 1.2	0.15 to 0.25	1.0, 1.5	1.0, 1.5
Manganese, percent	.30 to .60	.30 to .60	.30 to .60	.30 to .60	.30 to .60	.50 to .60
Phosphorus, maximum, percent	.04	.03	.03	.04	.03	.03
Sulfur, maximum, percent	.04	.03	.03	.045	.03	.03
Silicon, percent	1.30	1.50	1.50	.15 to .30	1.50*	1.50
Chromium, percent	.80 to 1.10	1.75 to 2.25	4.00 to 6.00	.80 to 1.10	2.75 to 3.25	2.00 to 2.50
Molybdenum, percent	.45 to .65	.45 to .65	.45 to .65	—	.80 to 1.00	.90 to 1.10
Titanium, percent	—	—	(2)	—	—	—
Vanadium, percent	—	—	—	2.15	—	—

1 Maximum.
2 Minimum.
3 Grade T16 shall have a titanium content of not less than 4 times the carbon content and not more than 0.70 percent.

§ 51.31-20 *Check analysis* — (a) *Grades T192, T210, T1, T1a, and T1b.* (1) At the request of the inspector an analysis of two tubes from each lot as specified in the following table shall be made by the manufacturer on samples of finished tubing selected at random. Drillings for analysis shall be taken from several points around each tube selected for analysis.

TABLE 51.31-20 (a)—CHECK ANALYSIS

Size of tube	Number of samples selected
2 inches and over in diameter and 0.200 inch and over in wall thickness.	100 tubes or fraction thereof.
Less than 2 inches in diameter or any size less than 0.200 inch in wall thickness.	250 tubes or fraction thereof.

(2) If the analysis of either tube does not conform to the requirements specified, an analysis of two additional tubes from the same lot shall be made, each of

which shall conform to the requirements specified in table 51.31-15.

(b) *Ferritic alloy-steel grades.* (1) An analysis of either one billet or one tube shall be made from each melt of steel. Drillings for analysis shall be taken from several points around each tube selected for analysis and, when taken from the billet, they shall be obtained by drilling parallel to the axis at any point midway between the outside and the center of the piece. The chemical composition thus determined shall conform to the requirements specified in table 51.31-15.

(2) If the analysis of one of these test specimens does not conform to the requirements specified in table 51.31-15, an analysis of each billet or tube from the same melt may be made, and all billets or tubes thus conforming to the requirements shall be accepted.

§ 51.31-25 *Tensile properties.* (a) The material shall conform to the following requirements as to tensile properties.

TABLE 51.31-25 (a)—PHYSICAL PROPERTIES

Physical requirements	Medium carbon—Grade T210	Alloy steel			
		Grade T1	Grade T1a	Grade T1b	Ferritic steels
Tensile strength, minimum, p. s. l.	60,000	55,000	60,000	53,000	60,000
Yield point, minimum, p. s. l.	37,000	30,000	32,000	28,000	25,000
Elongation in 2 inches, minimum, percent	25	30	30	30	30
For longitudinal strip tests a deduction for each 1/32 inch decrease in wall thickness below 1/16 inch from the basic minimum elongation of the following percentage.	-1.25	-1.50	-1.50	-1.50	-1.50

1 The following table gives the computed minimum values:

Wall thickness, inche.	Elongation in 2 inches, minimum, percent	
	Medium carbon	Alloy steel
5/16 (0.312)	25.00	30.00
3/8 (.375)	23.75	28.50
1/2 (.500)	22.50	27.00
5/8 (.625)	21.25	25.50
3/4 (.750)	20.00	24.00
7/8 (.875)	18.75	22.50
1 (.000)	17.50	21.00
1 1/8 (1.125)	16.25	19.50
1 1/4 (1.250)	15.00	18.00

NOTE: The above table gives the computed minimum elongation values for each 1/32 inch decrease in wall thickness. Where the wall thickness lies between two values shown above, the minimum elongation values shall be determined by the following formula:

For medium-carbon..... $E = 40t + 12.50$
For alloy-steel..... $E = 48t + 15.00$

where:
 E = elongation in 2 inches, in percent, and
 t = actual thickness of specimen, in inches.

(b) No tensile properties are specified for low-carbon tubes, grade T192, but for purposes of design, the following tensile properties may be assumed:

Tensile strength, minimum, p. s. l.	47,000
Yield point, minimum, p. s. l.	26,000
Elongation in 2 inches, minimum, percent	35

(c) The yield point shall be determined by the drop of the beam or halt in the gauge of the testing machine, or by the use of dividers or other approved method, at a crosshead speed not to exceed 1/8 inch per minute. When a definite yield point is not exhibited, the yield strength corresponding to a limited permanent offset of 0.2 percent of the gauge length of the specimen shall be reported instead. The tensile strength shall be determined at a crosshead speed not to exceed 1 1/2 inches per minute.

§ 51.31-30 *Flattening test.* (a) A section of tube, not less than 2 1/2 inches in length, shall be flattened cold between parallel plates until the opposite walls of the tube meet. No cracks or breaks in the metal shall occur until the distance between the plates is less than the calculated value of H by the following formula:

$$H = \frac{(1+e)t}{e+t/D} \quad (1)$$

where:

- H = distance between flattening plates in inches,
- e = deformation per unit length (constant for a given grade of steel, 0.09 for low-carbon steels, 0.09 for medium-carbon steels, 0.09 for alloy-steels),
- t = nominal wall thickness of tube in inches, and
- D = actual outside diameter of the tube in inches.

(b) Evidence of lamination or burnt material shall not develop during the entire flattening process.

§ 51.31-35 *Flaring test.* A section of tube approximately 4 inches in length shall stand being flared with a tool having 60° included angle until the tube at the mouth of the flare has been expanded to the following percentages, without cracking or showing flaws:

TABLE 51.31-35—FLARING TEST

Ratio of inside diameter to outside diameter 1	Minimum expansion of inside diameter, percent	
	Carbon and carbon-molybdenum	Ferritic steel
0.9	20	15
0.8	22	17
0.7	25	19
0.6	30	23
0.5	37	28
0.4	50	38
0.3	67	50

1 In determining the ratio of inside diameter to outside diameter, the inside diameter shall be defined as the actual inside diameter of the material tested.

§ 51.31-40 *Hardness test.* (a) For tubes 0.200 inch and over in wall thickness the Brinell hardness test shall be used and on tubes having wall thicknesses from 0.200 to 0.375 inch, exclusive, a 10-mm. ball with 1,500-kg. load, or a 5-mm. ball with 750-kg. load may be used, at the option of the manufacturer. For tubes less than 0.200 inch in wall

thickness, the Rockwell hardness test shall be used, except that for medium-carbon and alloy-steel tubes with wall thicknesses of less than 0.065 inch, no hardness tests are required.

(b) The Brinell hardness test may be made on the outside of the tube near the end or on the outside of a specimen cut from the tube, at the option of the manufacturer. The Rockwell hardness test shall be made on the inside of a specimen cut from the tube except in the case of tubes furnished with upset, swaged, or otherwise formed ends in which case it shall be made on the outside of the tubes near the end after forming operations.

(c) The tubes shall have a hardness number not to exceed the following:

TABLE 51.31-40 (c)—HARDNESS TEST

Grades	Brinell hardness number (tubes 0.200 inch and over in wall thickness)	Rockwell hardness number (tubes less than 0.200 inch in wall thickness)
Low-carbon tubes:		
Hot-finished.....	137	B77
Cold-drawn.....	125	B72
Hot-finished (annealed).....	125	B72
Medium-carbon tubes	143	B79
Carbon-molybdenum tubes:		
Grade T1.....	137	B77
Grade T1a.....	143	B79
Grade T1b.....	137	B77
Ferritic grades.....	163	B85

(d) In making the Brinell hardness test, reference should be made to the Standard Method of Test for Brinell Hardness of Metallic Materials (A. S. T. M. designation: E10) of the American Society for Testing Materials.

(e) In making the Rockwell hardness test, reference should be made to the Standard Method of Test for Rockwell Hardness of Metallic Materials (A. S. T. M. designation: E18) of the American Society for Testing Materials.

§ 51.31-45 *Hydrostatic test.* Prior to upsetting, swaging, expanding, bending, or other forming operations, each tube shall be tested at the mill to the hydrostatic pressures prescribed in table 51.31-45: *Provided*, That the fiber stress calculated in accordance with the following formula does not exceed 16,000 p. s. i. in the case of low-carbon and ferritic steel tubes, 24,000 p. s. i. for medium-carbon and carbon-molybdenum tubes:

$$P = \frac{2St}{D} \quad (1)$$

where:

P=hydrostatic test pressure in pounds per square inch,

S=allowable fiber stress of 16,000 p. s. i. for low-carbon and ferritic steel tubes, and 24,000 p. s. i. for medium-carbon and carbon-molybdenum tubes,

t=thickness of the tube wall in inches, and

D=outside diameter of the tube in inches.

TABLE 51.31-45—HYDROSTATIC TEST PRESSURE

Size, outside diameter, inches	Hydrostatic test pressure, p. s. i.
Under 1.....	1,000
1 to 1½, exclusive.....	1,500
1½ to 2, exclusive.....	2,000
2 and over.....	2,500

NOTE: When requested by the purchaser and so stated in the order, tubes shall be tested to one and one-half times the specified working pressure (when one and one-half times the specified working pressure exceeds the test pressures prescribed in above table), provided the fiber stress corresponding to those test pressures does not exceed 24,000 p. s. i. for medium-carbon and carbon-molybdenum tubes, or 16,000 p. s. i. for low carbon and ferritic steel tubes, as determined by the formula (1) above.

§ 51.31-50 *Test specimens*—(a) *Low-carbon tubes.* (1) Test specimens required for the flattening and flaring tests specified in §§ 51.31-30 and 51.31-35 shall be taken from the ends of finished tubes prior to upsetting, swaging, expanding, or other forming operations, or being cut to length. They shall be smooth on the ends and free from burrs and flaws.

(2) All specimens shall be tested at room temperature.

(b) *Medium-carbon and alloy-steel tubes.* (1) Test specimens required for the flattening and flaring tests specified in §§ 51.31-30 and 51.31-35 shall be taken from the ends of finished tubes prior to upsetting, swaging, expanding, or other forming operations, or being cut to length. They shall be smooth on the ends and free from burrs and flaws.

(2) If desirable and practicable, tension tests may be made on full sections of the tubes up to the capacity of the testing machine. For larger size tubes, the tension test specimen shall consist of a strip cut longitudinally from the tube and not flattened between gauge marks. The sides of the specimen shall be parallel between gauge marks; the width irrespective of the thickness shall be 1 inch; the gauge length shall be 2 inches.

(3) On tubes furnished with upset, swaged, or otherwise formed ends, the hardness test specified in § 51.31-40 shall be made on the outside of the tubes near the end after the forming operations.

(4) All specimens shall be tested at room temperature.

§ 51.31-55 *Number of tests*—(a) *Hardness test.* Five percent of all tubes shall be selected and a hardness test shall be made on each of these tubes as specified in § 51.31-40.

(b) *Hydrostatic test.* Each tube shall be subjected to the hydrostatic test specified in § 51.31-45.

(c) *Flattening and flaring tests*—(1) *Low-carbon tubes.* From each lot of 100 tubes or fraction thereof, 4 tubes shall be selected for test. From each end of two of these test tubes, the flattening test specified in § 51.31-30 shall be made and from each end of the other two test tubes the flaring test specified in § 51.31-35 shall be made.

(2) *Medium-carbon and alloy-steel tubes.* From each heat-treated lot of finished tubes, two tubes shall be selected at random for the flattening and flaring tests specified in §§ 51.31-30 and 51.31-35. The flattening test shall be made on each end of one of these tubes and the flaring test shall be made on each end of the remaining tube. For the purpose of calculating the number of tests on tubes heat-treated by the continuous process, the number of tubes in a heat-treated lot shall be determined from the size of the tubes as follows:

TABLE 51.31-55 (c) (2)—NUMBER OF TUBES IN A LOT

Size of tube	Size of lot
2 inches and over in outside diameter and 0.200 inch and over in wall thickness.	Not more than 50 tubes.
Less than 2 inches, but over 1 inch in outside diameter or over 1 inch in outside diameter and under 0.200 inch in wall thickness.	Not more than 75 tubes.
1 inch or less in outside diameter...	Not more than 125 tubes.

(d) *Tension tests (where required).* (1) From each group of 100 finished tubes or fraction thereof, two tubes shall be selected at random for the tension test specified in § 51.31-25.

(2) If any test specimen shows defective machining or develops flaws, it may be discarded and another specimen substituted.

(3) If the percentage of elongation of any test specimen is less than that specified in § 51.31-25 (a) and any part of the fracture is more than ¼ inch from the center of the gauge length, as indicated by scribe scratches marked on the specimen before testing, a retest shall be allowed.

§ 51.31-60 *Retests.* If the results of the physical tests of any lot do not conform to the requirements specified in §§ 51.31-25, 51.31-30, 51.31-35, and 51.31-40, retests may be made on additional tubes of double the original number from the same lot, each of which shall conform to the requirements specified.

§ 51.31-65 *Retreatment.* If individual tubes or tubes selected to represent any group or lot of medium-carbon or alloy-steel tubes fail to conform to the test requirements specified in §§ 51.31-25, 51.31-30, 51.31-35, and 51.31-40, the individual tubes or group or lot represented may be retreated and resubmitted for test. Only two reheat-treatments will be permitted.

§ 51.31-70 *Forming operations.* Tubes when inserted in the boiler shall stand expanding and beading without showing cracks or flaws. Superheater tubes when properly manipulated shall stand all forging, welding, and bending operations necessary for application without developing defects.

NOTE: Certain of the ferritic alloy steels covered by this specification will harden if cooled rapidly from above their critical temperature, particularly the 4 to 6 percent chromium steels. Therefore, operations that involve heating such steels above their critical temperatures, such as welding, flanging, and hot bending, should be followed by suitable heat treatment.

§ 51.31-75 *Permissible variations in dimensions and weight.* Variations in outside diameter, wall thickness, weight and length, from those specified, shall not exceed the amounts prescribed in table 51.25-65.

§ 51.31-80 *Finish.* (a) Finished tubes shall be reasonably straight and have smooth ends free from burrs. They shall be free from injurious defects and shall have a workmanlike finish. Minor defects may be removed by grinding, provided the wall thickness and the outside diameters are decreased to less than that permitted by § 51.31-75.

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(b) The ferritic alloy steel tubes shall be free from scale, suitable for inspection. If special pickling or shot-blasting are required, this shall be specifically stated in the order.

§ 51.31-85 *Marking.* (a) The name or brand of the manufacturer, the grade of material from which it is made (low-carbon steel, A. S. T. M. A192, medium-carbon steel, A. S. T. M. A210, carbon-molybdenum steel, A. S. T. M. A209, or alloy-steel A. S. T. M. A213, as the case may be), and whether hot-finished or cold-drawn, shall be legibly stenciled on each tube 1¼ inches in outside diameter and over, provided the length is not under 3 feet.

(b) On tubes less than 1¼ inches in diameter and on all tubes under 3 feet in length, the information specified in paragraph (a) of this section shall be marked on a tag securely attached to the bundle or box in which the tubes are shipped.

SUBPART 51.34—SEAMLESS STEEL PIPE

NOTE: In substantial agreement with A. S. T. M. designations: A106-48 T, A206-48 T, A280-48 T, and A158-48 T.¹ Certified material—Class B.

§ 51.34-1 *Scope.* (a) This specification covers seamless carbon and alloy-steel pipe intended for high temperature service.

(b) Two grades of carbon-steel pipe are covered, designated grades A and B, and 9 grades of alloy-steel pipe are covered, designated grades P1, a carbon-molybdenum steel, P280, a chromium-molybdenum steel, and grades P3a, P3b, P5a, P5b, P5c, P11, and P15, designated as ferritic alloy steels.

(c) All grades shall be suitable for bending, flanging, and similar forming operations, and for arc or gas welding. Grade A rather than grade B shall be used for close coiling, cold bending, or forge welding.

§ 51.34-5 *Process*—(a) *Carbon-steel pipe.* (1) The steel for grade A or B pipe shall be killed steel made by one or more of the following processes: Open-hearth or electric-furnace.

(2) Pipe 1½ inches and under in nominal diameter may be either hot-finished or cold-drawn and annealed.

(3) Unless otherwise specified, pipe 2 inches and over in nominal diameter shall be furnished hot-finished.

(b) *Alloy-steel pipe.* (1) The steel shall be made by either or both of the following processes: Open-hearth or electric-furnace.

(2) Unless otherwise specified, pipe 2 inches and over in nominal diameter shall be furnished hot-finished, followed by the heat-treatment specified in § 51.34-6.

(3) Unless otherwise specified, pipe under 2 inches in nominal diameter may be furnished either hot-finished or cold-drawn with a suitable manufacturer's finishing treatment.

¹ Copies of these A. S. T. M. specifications have been filed with this document in the Division of the Federal Register. Copies are also on file with the various Coast Guard District Commanders for reference purposes.

§ 51.34-6 *Heat treatment.* (a) All alloy steels, other than grades P1, P280, and P5c shall be reheated and furnished in a full-annealed or normalized and drawn condition. If furnished in the normalized and drawn condition, the temperature for drawing shall be at least 200° F. above the service temperature.

NOTE: Certain of the ferritic alloy steels covered by this specification will harden if cooled rapidly from above their critical temperature, particularly the 4 to 6 percent chromium steels. Therefore operations that involve heating such steels above their critical temperatures, such as welding, flanging,

and hot bending, should be followed by suitable heat treatment.

(b) Grades P1 and P280 in the hot-rolled or cold-drawn pipe, as a final heat-treatment, shall be stress-relieved at 1,200° F. to 1,300° F.

(c) Grade P5c steel unless otherwise specified, shall be heat-treated to approximately 1,350° F. for a proper time, followed by air or furnace cooling.

§ 51.34-10 *Chemical composition.* The steel shall conform to the following requirements as to chemical composition:

TABLE 51.34-10—CHEMICAL COMPOSITION
CARBON-STEEL GRADES

Grade	A	B
Carbon, percent.....	0.25	0.30
Manganese, percent.....	.30 to .50	.35 to 1.00
Phosphorus, maximum, percent.....	.04	.04
Sulfur, maximum, percent.....	.06	.06
Silicon, percent.....	1.10	1.10

ALLOY-STEEL GRADES

Grade	P1 Carbon- molyb- denum	P280 Chromium- molyb- denum	P3a Chromium- molyb- denum	P3b Chromium- molyb- denum	P5a 4 to 6 percent chromium	P5b 4 to 6 percent chromium- silicon- molyb- denum
Carbon, percent.....	0.10 to 0.20	0.10 to 0.20	0.15	0.15	0.15 or 0.20	0.15
Manganese, percent.....	.30 to .80	.30 to .60	.30 to .60	.30 to .60	.30 to .60	.30 to .60
Phosphorus, maximum, percent.....	.04	.04	.03	.03	.03	.03
Sulfur, maximum, percent.....	.05	.05	.03	.03	.03	.03
Silicon, percent.....	.10 to .50	.10 to .30	.45 to .75	1.50	1.50	1.00 to 2.00
Chromium, percent.....		.70 to .70	1.70 to 2.00	1.75 to 2.25	4.00 to 6.00	4.00 to 6.00
Molybdenum, percent.....	.45 to .65	.45 to .65	.00 to .80	.45 to .65	1.45 to .65	.45 to .65
Tungsten, percent.....					1.75 to 1.25	

Grade	P5c 4 to 6 percent chromium- molyb- denum- stabilized with titanium or columbium	P11 Chromium- molyb- denum	P15 Silicon- molyb- denum
Carbon, maximum, percent.....		0.12	0.15
Manganese, percent.....		.30 to .60	.30 to .60
Phosphorus, maximum, percent.....		.03	.03
Sulfur, maximum, percent.....		.03	.03
Silicon, percent.....		1.50	.50 to 1.00
Nickel, percent.....			1.15 to 1.65
Chromium, percent.....		4.00 to 6.00	1.00 to 1.50
Molybdenum, percent.....		.45 to .65	.45 to .65
Tungsten, percent.....			
Titanium, percent.....	(1)		
Columbium, percent.....	(2)		

¹ Maximum.

² Minimum.

³ Either molybdenum or tungsten shall be used.

⁴ Grade P5c shall have a titanium content of not less than 4 times the carbon content and not more than 0.70 percent.

⁵ Grade P5c shall have a columbium content of 8 to 10 times the carbon content.

§ 51.34-11 *Ladle analysis.* An analysis of each melt of alloy-steel pipe shall be made by the manufacturer to determine the chemical composition specified in § 51.34-10. This analysis shall be made from a test ingot taken during the pouring of the melt. The chemical composition thus determined, or that determined from a check analysis made by the pipe manufacturer, if the latter has not manufactured the steel, shall conform to the requirements specified in § 51.34-10.

§ 51.34-12 *Check analysis.* (a) Analysis of two pipes from each lot, as specified below shall be made by the manufacturer from the finished pipe.

TABLE 51.34-12 (a)—CHECK ANALYSIS

Nominal diameter, inches	Carbon steel	Alloy steel
Under 2.....		400 or fraction thereof.
2 to 5, inclusive.....	400 or fraction thereof.	200 or fraction thereof.
6 and over.....	200 or fraction thereof.	100 or fraction thereof.

(b) Drillings for analysis shall be taken from several points around each pipe selected for analysis. Drillings for analysis from billets shall be taken at a point midway between the outside and center of the billet by drilling parallel to the axis. The chemical composition

thus determined shall conform to the requirements prescribed in § 51.34-10.

(c) If the analysis of one of the tests specified in §§ 51.34-11 or 51.34-12 (a) does not conform to the requirements specified in § 51.34-10 an analysis of each billet or pipe from the same melt or lot

may be made, and all billets or pipe conforming to the requirements shall be accepted.

§ 51.34-15 Tensile requirements.

(a) The material shall conform to the following requirements as to tensile properties at room temperature:

TABLE 51.34-15(a)—PHYSICAL PROPERTIES

Physical requirements	Grade A		Grade B		Grades P1 or P250		Ferritic	
	Longitudinal	Transverse	Longitudinal	Transverse	Longitudinal	Transverse	Longitudinal	Transverse
Tensile strength, minimum, p. s. i.	48,000		60,000		55,000		60,000	
Yield point, minimum, p. s. i.	30,000		35,000		30,000		30,000	
Elongation in 2 inches, minimum, percent:								
Basic minimum elongation for walls, 3/16 inch and over in thickness, strip tests, and for all small sizes tested in full section	25	25	30	16.5	30	20	30	20
When standard round 2-inch gauge length test specimen is used	28	20	22	12	22	14	22	14
For strip tests, a deduction for each 1/42 inch decrease in wall thickness below 3/16 inch from the basic minimum elongation of the following percentage	1.75	1.25	1.50	1.00	1.50	1.00	1.50	1.00

1 The following table gives the computed minimum values:

Wall thickness, inches	Elongation in 2 inches, minimum, percent					
	Grade A		Grade B		Alloy steel	
	Longitudinal	Transverse	Longitudinal	Transverse	Longitudinal	Transverse
5/16 (0.312)	35.00	25.00	30.00	16.50	30.00	20.00
3/8 (.375)	33.25	23.75	28.50	15.50	28.50	19.00
1/2 (.500)	31.50	22.50	27.00	14.50	27.00	18.00
5/8 (.625)	29.75	21.25	25.50	13.50	25.50	17.00
3/4 (.750)	28.00	20.00	24.00	12.50	24.00	16.00
7/8 (.875)	26.25	18.75	22.50	11.50	22.50	15.00
1 (.000)	24.50	17.50	21.00	10.50	21.00	14.00
1 1/8 (1.125)	22.75	16.25	19.50	9.50	19.50	13.00
1 1/4 (1.250)	21.00	15.00	18.00	8.50	18.00	12.00

NOTE: The above table gives the computed minimum elongation values for each 1/42 inch decrease in wall thickness. Where the wall thickness lies between two values shown above, the minimum elongation value shall be determined by the following formulas:

Grade and direction of test:	Formula
A—Longitudinal	$E = 50t + 17.50$
A—Transverse	$E = 40t + 12.50$
B—Longitudinal	$E = 48t + 15.00$
B—Transverse	$E = 32t + 6.00$
Alloy steel—Longitudinal	$E = 48t + 15.00$
Alloy steel—Transverse	$E = 32t + 10.00$

where:
E = minimum elongation in 2 inches in percent, and
t = actual thickness of specimen in inches.

(b) The yield point shall be determined by the drop of the beam or halt in the gauge of the testing machine, or by the use of dividers or other approved method, at a crosshead speed not to exceed 1/8 inch per minute. When a definite yield point is not exhibited, the yield strength, corresponding to a limiting permanent offset of 0.2 percent of the gauge length of the specimen shall be used instead. The tensile strength shall be determined at a crosshead speed not to exceed 1 1/2 inches per minute.

§ 51.34-20 Bending properties. For pipe 2 inches and under in nominal diameter, a sufficient length of pipe shall stand being bent cold through 90° around a cylindrical mandrel, the diameter of which is 12 times the nominal diameter of the pipe without developing cracks. When ordered for close coiling, the pipe shall stand being bent cold through 180° around a cylindrical mandrel, the diameter of which is eight times the nominal diameter of the pipe, without failure.

§ 51.34-25 Flattening tests. (a) For pipe over 2 inches in nominal diameter a section of pipe not less than 2 1/2 inches in length shall be flattened cold between parallel plates until the opposite walls of the pipe meet. No cracks or breaks in the metal shall occur until the distance between the plates is less than that calculated for the value of H by the following formula:

$$H = \frac{(1 + e)t}{e + t/D} \quad (1)$$

where:

- H = distance between flattening plates in inches,
- t = nominal wall thickness of pipe in inches,
- D = actual outside diameter of pipe in inches, and
- e = deformation per unit length (constant for a given grade of steel, 0.08 for grade A, 0.07 for grade B, 0.08 for alloy steels).

(b) Evidence of laminations or burnt material shall not develop during the entire flattening process.

§ 51.34-30 Hydrostatic test. (a) Each length of pipe shall be tested by the manufacturer to a hydrostatic pressure which will produce in the pipe wall a stress of 50 percent of the minimum specified yield point at room temperature, determined by the following formula:

$$P = \frac{2St}{D} \quad (1)$$

where:

- P = minimum hydrostatic test pressure in pounds per square inch,
- S = 0.50 times the minimum specified yield point at room temperature in pounds per square inch,
- t = nominal wall thickness in inches, and
- D = outside diameter in inches.

(b) The maximum hydrostatic test pressure shall not exceed 2,500 p. s. i. for nominal sizes 3 inches and under, or 2,800 p. s. i. for all nominal sizes over 3 inches. The test pressure shall be maintained for not less than 5 seconds.

NOTE: When requested by the purchaser and so stated in the order, pipe in sizes 14 inches in nominal diameter and smaller shall be tested to one and one-half times the specified working pressure, provided the fiber stress corresponding to those test pressures does not exceed one-half the minimum specified yield point of the material, as determined by the above formula. When one and one-half times the working pressure exceeds 2,800 p. s. i., the hydrostatic test pressure shall be a matter of agreement between the purchaser and the manufacturer.

§ 51.34-35 Test specimens. (a)

Specimens cut either longitudinally or transversely, shall be acceptable for the tension test.

(b) The longitudinal tension test may be made in full section of the pipe up to the capacity of the testing machine. For larger sizes, the tension test specimens shall consist of strips cut from the pipe. The width of these specimens shall be 1 1/2 inches and they shall have a gauge length of 2 inches. When the pipe wall thickness exceeds 3/4 inch, the tension test specimen shown in figure 51.04-35 (f) shall be used. Longitudinal tension test specimens shall not be flattened between gauge marks. The sides of specimens shall be parallel between gauge marks.

(c) The transverse tension test may be made on pipe 8 inches and over in nominal diameter. Specimens may be taken from a ring cut from the pipe or from sections resulting from the flattening tests. The specimens shall consist of a strip cut transversely from the pipe; the width of the specimen shall be 1 1/2 inches and its gauge length 2 inches. When the pipe wall thickness exceeds 3/4 inch, the tension test specimen shown in figure 51.04-35 (f) shall be used. Specimens shall be flattened cold and heat treated in the same manner as the pipe and shall be parallel between gauge marks. The transverse tension test specimens may be machined off on either surface provided not over 15 percent of the nominal thickness is removed from either side.

(d) Test specimens for the bend and flattening tests shall consist of sections cut from a pipe. Specimens for flattening tests shall be smooth on the ends and free from burrs, except when made on crop ends.

(e) All routine check tests shall be made at room temperature.

§ 51.34-40 *Number of tests—(a) Grade A or B pipe.* (1) One of either of the tests specified in § 51.34-15 shall be made on one length of pipe from each lot of 400 lengths or fraction thereof of each size under 6 inches, and from each lot of 200 lengths or fraction thereof of each size 6 inches and over.

(2) The flattening test specified in § 51.34-25 shall be made on one length of pipe from each lot of 400 lengths or fraction thereof of each size over 2 inches up to but not including 6 inches and from each lot of 200 lengths or fraction thereof of each size 6 inches and over.

(3) For pipe 2 inches and under in nominal diameter, the bend test specified in § 51.34-20 shall be made on one pipe from each lot of 400 lengths or fraction thereof of each size.

(b) *Alloy-steel pipe.* (1) For material heat-treated in a batch type furnace, tests shall be made as follows on 5 percent of the pipe from each treated lot.¹ For small lots at least one pipe shall be tested.

(i) The transverse or longitudinal tension test specified in § 51.34-15;

(ii) The bend test specified in § 51.34-20 for pipe 2 inches and under in nominal diameter; and,

(iii) The flattening test specified in § 51.34-25 for pipe over 2 inches in nominal diameter.

(2) For material heat-treated by the continuous process, the tests specified in subparagraph (1) of this paragraph shall be made on sufficient number of pipes to constitute 5 percent of the lot¹ but in no case less than 2 pipes.

(c) *Hydrostatic tests.* Each length of pipe shall be subjected to the hydrostatic tests specified in § 51.34-30.

(d) *Tension tests.* (1) If any test specimen shows defective machining or develops flaws, it may be discarded and another specimen substituted.

(2) If the percentage of elongation of any test specimen is less than that specified in § 51.34-15 (a) and any part of the fracture is more than $\frac{3}{4}$ inch from the center of the gauge length, as indicated by scribe scratches marked on the specimen before testing, a retest shall be allowed. If a specimen breaks in an inside or outside surface flaw, a retest shall be allowed.

§ 51.34-45 *Retests—(a) Carbon-steel pipe.* (1) If the results of any chemical or physical tests of any lot¹ do not conform to the requirements specified in §§ 51.34-10, 51.34-15, 51.34-20, and 51.34-25, retests shall be made on additional pipe of double the original number from the same lot, each of which shall conform to the requirements specified.

(2) Should a crop end of a finished pipe fail in the flattening test, one retest may be made from the failed end. Pipe may be normalized either before or

¹ A lot shall consist of all pipes from the same melt of steel and of the same size and wall thickness, heat-treated in a batch type furnace at one charge. For pipe heat-treated by the continuous process, a lot shall consist of all pipe from the same melt of steel and of the same size and wall thickness.

after the first test, but pipe shall be subjected to only two normalizing treatments.

(b) *Alloy-steel pipe.* (1) If the results of any physical tests of any lot¹ do not conform to the requirements specified in §§ 51.34-15, 51.34-20, and 51.34-25, retests shall be made on additional pipes of double the original number from the same lot, each of which shall conform to the requirements specified.

(2) If individual lengths of pipe selected to represent any lot fail to conform to the test requirements specified in §§ 51.34-15, 51.34-20, and 51.34-25, the lot may be reheat-treated and resubmitted for test, except that any individual lengths which meet the requirements before re-treating will be acceptable.

§ 51.34-50 *Finish and marking.* (a) The finished pipe shall be free from scale, reasonably straight and free from injurious defects, and shall have a workmanlike finish. Variations in outside diameter shall not exceed the following:

TABLE 51.34-50 (a)—PERMISSIBLE VARIATIONS IN DIAMETER

Nominal pipe size (Inches)	Permissible variation in outside diameter (Inches)	
	Over	Under
$\frac{1}{4}$ to $1\frac{1}{2}$, inclusive.....	$\frac{1}{64}$ (0.015)	$\frac{1}{32}$ (0.031)
Over $1\frac{1}{2}$ to 4, inclusive.....	$\frac{1}{32}$ (.031)	$\frac{1}{32}$ (.031)
Over 4 to 8, inclusive.....	$\frac{1}{16}$ (.062)	$\frac{1}{32}$ (.031)
Over 8 to 16, inclusive.....	$\frac{1}{32}$ (.094)	$\frac{1}{32}$ (.031)

(b) The minimum wall thickness at any point shall not be more than 12.5 percent under the nominal wall thickness specified in table 51.37-55 (a).

(c) Each length of pipe manufactured in accordance with this specification shall be legibly marked, either by stenciling, stamping, or rolling, with the manufacturer's name or brand, together with the designation A106-A (or A106-B depending on the grade of steel used), A206, A280, or A158, and the hydrostatic test pressure.

SUBPART 51.46—STEEL FORGINGS

4. Section 51.46-1 *Steel forgings* is amended by deleting paragraph (c).

5. Section 51.46-35 *Hydrostatic tests* is amended by changing the phrase over "Tables 55.07-15 (e10) and 55.07-15 (e11)" to "Tables 55.07-15 (e12) and 55.07-15 (e13)."

SUBPART 51.49—ALLOY-STEEL BOLTING MATERIAL

6. Section 51.49-1 (a) is amended to read as follows:

§ 51.49-1 *Scope.* (a) This specification covers alloy-steel bolting material for pressure vessels, valves, flanges, and fittings for high-temperature service. The term "bolting material" as used in this specification covers rolled, forged, or cold-drawn bars, and bolts, screws, studs, and stud bolts.

(R. S. 4417a, 4418, 4426, 4427, 4429-4434, 4453, 4491, sec. 14, 29 Stat. 690, 41 Stat. 305, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 1, 363, 366, 367, 391a, 392, 404, 405, 407-412, 435, 1333, 50 U. S. C. 1275)

SUBPART 51.58—STEEL CASTINGS

7. Section 51.58-1 (a) is amended to read as follows:

§ 51.58-L *Scope.* (a) This specification covers carbon and alloy-steel castings for valves, flanges, fittings, or other pressure-containing parts, and of a quality suitable for arc or gas welding.

(R. S. 4417a, 4418, 4426, 4427, 4429-4434, 4453, 4491, sec. 14, 29 Stat. 690, 41 Stat. 305, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 1, 363, 366, 367, 391a, 392, 404, 405, 407-412, 435, 1333, 50 U. S. C. 1275)

8. Section 51.58-15 *Chemical composition* is amended by revising Table 51.58-15—*Chemical composition* by inserting in column "C3B" under "ferritic steels" the value "0.45 to .65" opposite "molybdenum" and by deleting the value "0.45 to .65" in the same column opposite "tungsten."

9. Section 51.58-30 *Hydrostatic tests* is amended in paragraph (a) by changing the phrase "Tables 55.07-15 (e10) and 55.07-15 (e11)" to "Tables 55.07-15 (e12) and 55.07-15 (e13)."

SUBPART 51.61—MALLEABLE IRON CASTINGS

10. Section 51.61-40 is amended to read as follows:

§ 51.61-40 *Marking.* Valves, flanges, and fittings shall be marked as required by § 55.07-10 (e) of this subchapter.

(R. S. 4417a, 4418, 4426, 4427, 4429-4434, 4453, 4491, sec. 14, 29 Stat. 690, 41 Stat. 305, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 1, 363, 366, 367, 391a, 392, 404, 405, 407-412, 435, 1333, 50 U. S. C. 1275)

SUBPART 51.64—GRAY IRON CASTINGS FOR VALVES, FLANGES, AND PIPE FITTINGS

11. Section 51.64-50 is amended to read as follows:

§ 51.64-50 *Marking.* Valves, flanges, and fittings shall be marked as required by § 55.07-10 (e) of this subchapter.

SUBPART 51.73—SEAMLESS COPPER PIPE

12. Section 51.73-1 is amended to read as follows:

§ 51.73-1 *Scope.* This specification covers seamless copper pipe in all standard pipe sizes both regular and extra strong. This material is suitable for boiler-feed lines, blow-off lines, compressed air lines, salt and fresh water lines, and for saturated steam lines.

(R. S. 4417a, 4418, 4426, 4427, 4429-4434, 4453, 4491, sec. 14, 29 Stat. 690, 41 Stat. 305, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), Stat. 244, as amended; 46 U. S. C. 1, 363, 366, 367, 391a, 392, 404, 405, 407-412, 435, 1333, 50 U. S. C. 1275)

SUBPART 51.76—BRONZE CASTINGS

13. Section 51.76-1 is amended to read as follows:

§ 51.76-1 *Scope.* This specification covers four grades of alloy castings designated as follows:

(a) Grade A (ounce metal) for pressure-containing parts of valves and pipe fittings.

1, 363, 366, 367, 391a, 392, 404, 405, 407-412, 435, 1333, 50 U. S. C. 1275)

6. Section 52.70-30 is amended to read as follows:

§ 52.70-30 *Blow-off connections.* (a) Boilers shall be fitted with a surface and a bottom blow-off valve or cock attached directly to the boiler or to a short distance piece. The surface blow-off valve shall be located within the permissible range of the water level, or fitted with a scum pan or pipe at this level. The bottom blow-off valve shall be attached to the lowest part of the boiler or fitted with an internal pipe leading to the lowest point inside the boiler. Water-tube boilers designed for pressures of 350 pounds per square inch or over are not required to be fitted with a surface blow-off valve.

(b) Where blow-off pipes are exposed to radiant heat of the fire, they shall be protected by fire brick or other suitable heat-resisting material.

(R. S. 4417a, 4418, 4426, 4427, 4429-4434, 4453, 4491, sec. 14, 29 Stat. 690, 41 Stat. 305, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 1, 363, 366, 367, 391a, 392, 404, 405, 407-412, 435, 1333, 50 U. S. C. 1275)

PART 53—LOW-PRESSURE HEATING BOILERS

SUBPART 53.03—STEEL-PLATE HEATING BOILERS

1. Section 53.03-50 *Boiler openings* is amended in paragraph (h) by changing the phrase "table 55.07-15 (e 3)" to "table 55.07-15 (e 5)."

SUBPART 53.05—CAST-IRON HEATING BOILERS

2. Section 53.05-20 *Flanged connections* is amended by changing the phrase "table 55.07-15 (j 1) of § 55.07-15 (j)" to "table 55.07-15 (e 1) of § 55.07-15 (e)."

PART 54—UNFIRED PRESSURE VESSELS

1. Section 54.01-15 *Materials and workmanship* is amended by changing in paragraph (b) the phrase "§§ 55.07-1 (k) and 55.07-1 (l)" to "§§ 55.07-1 (d) and 55.07-1 (c)."

2. Section 54.01-30 (b) is amended to read as follows:

§ 54.01-30 *Relief valves.* * * *

(b) A heat exchanger with steam in the shell and liquid in the tubes or coils at a pressure exceeding that in the shell shall have a relief valve fitted to protect the shell against excess pressure. The discharge capacity of the relief valve shall be calculated on the basis of the difference in pressures between that in the shell and that in the tubes, and shall be not less than that determined by the following formula:

$$Q = 29.81 K D^2 \sqrt{P_1 - P_2} \quad (1)$$

where:

Q = required relief valve discharge capacity in gallons per minute, based on relief valve set pressure.

P_1 = pressure in tube or coils, in pounds per square inch.

P_2 = set pressure of shell relief valve in pounds per square inch.

D = internal diameter of the largest tube or coil, in inches.

K = coefficient of discharge = 0.62,

(R. S. 4417a, 4418, 4426, 4429-4434, 49 Stat. 1544, 54 Stat. 346, 1028, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 1, 367, 375, 391a, 392, 404, 407-412, 463a, 1333, 50 U. S. C. 1275)

3. Section 54.01-40 *Tests* is amended by deleting paragraphs (b) (3) and (b) (4).

PART 55—PIPING SYSTEMS, PUMPS, REFRIGERATION MACHINERY, AND FUEL TANKS

1. Part 55 is amended to read as follows:

SUBPART 55.01—GENERAL	
Sec.	
55.01-1	Scope.
55.01-5	Definitions.
55.01-10	Plan approval.
55.01-15	Affidavit.
SUBPART 55.04—PIPING CLASSIFICATION	
55.04-1	Scope.
55.04-5	Class I piping.
55.04-10	Class II piping.
SUBPART 55.07—DETAIL REQUIREMENTS	
55.07-1	Material.
55.07-5	Design pressures and thickness of pipes.
55.07-10	Valves and fittings.
55.07-15	Joints and flange connections.
55.07-20	Bolting.
55.07-25	Installation.
55.07-30	Tests.
SUBPART 55.10—PUMPING ARRANGEMENTS AND PIPING SYSTEMS	
55.10-1	Steam and exhaust piping.
55.10-5	Safety and relief valve escape piping.
55.10-10	Boiler-feed and condensate piping.
55.10-13	Condensate pumps.
55.10-15	Blow-off piping.
55.10-20	Circulating pumps.
55.10-25	Bilge and ballast piping.
55.10-30	Bilge pumps.
55.10-35	Fuel oil and cargo oil systems.
55.10-40	Fuel oil service systems.
55.10-45	Independent fuel piping (internal combustion engines); emergency units for passenger vessels.
55.10-50	Independent fuel piping (internal combustion engines; cargo vessels).
55.10-55	Lubricating oil system.
55.10-60	Vent piping.
55.10-65	Sounding pipes.
55.10-70	Overboard discharges and shell connections.
SUBPART 55.13—REFRIGERATING MACHINERY AND PIPING	
55.13-1	Installation of refrigerating machinery.
55.13-5	Design pressure.
55.13-10	Pressure vessels and piping.
55.13-15	Tests.
55.13-20	Small self-contained and portable units.
SUBPART 55.16—INDEPENDENT INTERNAL COMBUSTION ENGINE FUEL TANKS	
55.16-1	Independent fuel tanks (internal combustion engines); emergency units for passenger vessels.
55.16-5	Independent gasoline tanks; passenger vessels.
55.16-10	Independent heavy oil tanks; passenger vessels.
55.16-15	Independent gasoline tanks; cargo vessels.
55.16-20	Independent heavy oil tanks; cargo vessels.

AUTHORITY: §§ 55.01-1 to 55.16-20 issued under R. S. 4405, 4417a, 4418, 4426, 4427, 4429, 4430, 4431, 4432, 4433, 4434, 4453, and 4491, as amended, sec. 14, 29 Stat. 690, 41 Stat. 305,

49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; and sec. 101, Reorg. Plan No. 3 of 1946; 46 U. S. C. 1, 363, 366, 367, 375, 391a, 392, 404, 405, 407-412, 435, 1333, 50 U. S. C. 1275.

SUBPART 55.01—GENERAL

§ 55.01-1 *Scope.* (a) This part contains requirements for the various ships' piping systems and appurtenances.

(b) The respective piping systems installed on vessels shall have the necessary pumps, valves, regulating valves, safety valves, relief valves, flanges, fittings, pressure gauges, liquid level indicators, thermometers, etc., for safe and efficient operation of the vessel.

§ 55.01-5 *Definitions—(a) Piping.* The word "piping" within the meaning of the regulations in this subchapter, refers to fabricated pipes or tubes with flanges and fittings attached, for use in the conveyance of vapors, gases, or liquids, regardless of whether the diameter is measured on the inside or the outside.

(b) *Nominal diameter.* The term "nominal diameter" as used in this part, except in § 55.07-5 (a), means the commercial diameter of the piping.

§ 55.01-10 *Plan approval.* (a) Plans in triplicate for new construction and major alterations showing the respective piping systems shall be submitted to the Officer in Charge, Marine Inspection, in the district in which the vessel is to be built, or alterations are to be made, except that when, due to location of the shipyard or design office, such a procedure would result in unnecessary delay in transmission, the plans may be forwarded directly to the Commandant (MMT), United States Coast Guard, Washington 25, D. C.

(b) Piping materials and appliances such as pipe, tubing, fittings, flanges, and valves, except safety valves as specified by subpart 52.65 of this subchapter, are not required to be specifically approved by the Commandant, but shall comply with the applicable requirements for materials, construction, markings, and testing. Drawings listing material specifications and showing details of welded joints for pressure-containing appurtenances of welded construction shall be submitted in accordance with paragraph (a), of this section.

(c) Prior to installation aboard ship, arrangement drawings or diagrams of the following systems shall be submitted for approval:

- (1) Steam and exhaust piping.
- (2) Boiler feed and blow-off piping.
- (3) Fuel oil service piping.
- (4) Fuel oil transfer and filling piping.
- (5) Fire extinguishing systems including firemain and sprinkling piping, steam smothering and inert gas.
- (6) Bilge and ballast piping.
- (7) Compressed air piping (class I).
- (8) Salt water tank cleaning piping.
- (9) Vent, sounding, and overflow piping.
- (10) Cargo piping.
- (11) Steam drain piping (class I).
- (12) Refrigeration piping.
- (13) Lubricating oil piping.
- (14) Condenser circulating water piping.

TABLE 55.07-1 (b)—PIPING MATERIALS¹

Material	Specification subpart	Grade	Maximum design		Limitations
			Pressure, p. s. i.	Temperature, ° F.	
Steel pipe:					
Seamless-carbon.....	51.34	A and B.....	None	850	-----
	51.37	A and B.....	None	750	-----
	51.34	P1 (C-Mn).....	None	900	-----
Seamless alloy.....	51.34	P280 (Cr-Mo).....	None	1,000	-----
	51.34	P3a, and P3b.....	None	1,000	-----
	51.34	P5a, P5b, P5c, and P11.....	None	1,100	-----
	51.34	P15.....	None	1,000	-----
Electric-resistance welded.....	51.37	A and B.....	250	650	-----
	51.40				
Furnace-welded.....	51.37	Lap-welded.....	350	450	-----
	51.37	Butt-welded.....	150	450	-----
Wrought iron pipe: Furnace-welded.....	51.43	Lap-welded.....	350	450	-----
	51.43	Butt-welded.....	150	450	-----
Brass pipe: Seamless.....	51.70	Red brass.....	None	406	-----
Copper pipe:					
Seamless.....	51.73		None	406	(2)
Brazed.....			75	320	(2)
Plates:					
Carbon steel.....	51.04	A, B, C, D.....	150	650	(4) (5)
	51.22	C.....	150	650	(4) (5)

¹ The carbon content of material listed in table 55.07-1 (b) shall not exceed 0.35 percent if welded fabrication is to be employed.

² Copper pipe shall not be used for hot oil service other than short flexible connections at the burners. Copper pipe shall be annealed prior to installation for class I piping systems.

³ Copper pipe fabricated with brazed longitudinal joints is permitted for water or saturated steam service for pressures not to exceed 75 psi.

⁴ Not permitted for hubbed flanges. Ring type flanges may be machined from plate.

⁵ For temperatures exceeding 500° F. the pressure shall not exceed that permitted by table 55.07-15 (e12).

(15) Hydraulic oil piping (steering gear, etc.).

(16) Safety valve escape piping.

(17) Internal combustion engine fuel piping.

(18) Plumbing and deck drains (passenger vessels only).

(d) Standard drawings of the following piping fabrication details shall be submitted for approval:

(1) Sea suction and discharge connections.

(2) Fabricated valves and fittings (class I and class II piping).

(3) Welded pipe joints (class I and class II piping).

(e) The plans shall include a list of material furnishing pipe diameters, wall thicknesses, design pressure, material specifications, type, size and pressure rating of valves, flanges, and fittings. Where piping systems are intended to convey superheated steam, the temperature of same shall be indicated. Pump capacities and pump shut-off heads shall appear on the piping diagrams.

§ 55.01-15 *Affidavit.* A manufacturer of pipe, tubing, valves, flanges, pipe fittings, castings, forgings, and bolting shall file with the Commandant a duly executed copy of form CG-935A, certifying that the product furnished by him conforms to all the requirements given in this subchapter.

SUBPART 55.04—PIPING CLASSIFICATION

§ 55.04-1 *Scope.* Piping shall be divided into two classes, Class I and Class II.

§ 55.04-5 *Class I piping.* Class I piping includes the various systems conveying mediums exceeding either pressures or temperatures as follows:

TABLE 55.04-5—PRESSURE AND TEMPERATURE LIMITATIONS

Service	Pressure, pounds per square inch	Temperature, ° F.
Lethal gases and liquids.....	Any.....	Any.....
Gases or vapors.....	Over 150.....	Over 1,500-650.
Water.....	Over 150.....	Over 500.
Fuel oil.....	Over 150.....	Over 150.
Lubricating oil.....	Over 150.....	Over 200.
Compressed gases.....	Over 150.....	

¹ For temperatures exceeding 500° F., the pressure shall not exceed the following: 150 pounds per square inch when the temperature is 500° F.; 140 pounds per square inch when the temperature is 550° F.; 130 pounds per square inch when the temperature is 600° F.; 120 pounds per square inch when the temperature is 650° F.

§ 55.04-10 *Class II piping.* Class II piping shall include piping systems conveying mediums at pressures or temperatures below those specified in table 55.04-5 for class I piping.

SUBPART 55.07—DETAIL REQUIREMENTS

§ 55.07-1 *Material.* (a) Materials used in the manufacture of pipe, valves, flanges or fittings shall conform with the requirements of this part as herein specified, and shall comply with the respective specifications of Part 51 unless alternate equivalent material is approved by the Commandant.

(b) Pipe and flange material are acceptable for the pressures and temperatures listed in table 55.07-1 (b).

(c) Forged steel or cast steel, conforming to the requirements of subparts 51.46 and 51.58, may be used for the construction of valves and fittings for any system and for all pressures and temperatures covered by the regulations in this subchapter. Casting and forging material of carbon steel may be used in connection with design temperatures not exceeding 850° F. and molybdenum alloy steel at design temperatures not exceeding 900° F. Special consideration will be given by the Commandant for the use of alloy steel castings and forgings at design temperatures exceeding 900° F. Grades C and D carbon steel forgings, subpart 51.46, may be used in the construction of valves and fittings for pressures and temperatures not exceeding those allowed for 300 pound service pressure rating for steel pipe flanges and flanged fittings.

(d) Bronze castings conforming to the requirements of subpart 51.76 for grade A (ounce metal) may be used in the construction of valves and fittings for pressures not exceeding 150 pounds per square inch and temperatures not exceeding 366° F. Grade B (steam bronze) and grades C1A and C1B ("G" Bronze) may be used for steam pressures not exceeding 300 pounds per square inch and temperatures not exceeding 450° F. and for hydraulic or compressed air service at higher pressures where the temperature does not exceed 150° F.

(e) (1) Malleable iron castings conforming to the requirements of subpart 51.61 for grade A material may be used in the construction of valves and fittings for pressures not exceeding 300 pounds per square inch and temperatures not exceeding 450° F. Grade B malleable iron may be used for pressures not exceeding 150 pounds per square inch and temperatures not exceeding 450° F. Cast iron conforming to the requirements of

subpart 51.64 may be used in the construction of valves and fittings for pressures not exceeding 125 pounds per square inch and temperatures not exceeding 450° F.

(2) Malleable iron and cast iron valves and fittings designed and marked for 300 pounds pressure rating may be used for refrigeration service where the foregoing pressure is not exceeded.

(3) Grade B malleable iron and cast iron are not permitted in fuel oil service systems between pump and burner irrespective of pressure.

(f) Lead pipe may be used for salt-water supply piping to plumbing fixtures and plumbing drains, also for bilge piping outside of the machinery spaces, but in all cases such pipe shall be properly protected against mechanical injury.

(g) Ferrous pipe used for salt-water service should be protected against corrosion by hot-dipped galvanizing or other suitable means.

(h) Carbon-steel bolting material conforming to the requirements of subpart 51.52 may be used for temperatures not exceeding 450° F. For temperatures exceeding 450° F., alloy-steel bolting material as specified in subparts 51.49 and 51.55 shall be employed.

(i) If it is desired to use materials other than those specified in this section, a request furnishing chemical and physical properties of the material which it is desired to employ shall be submitted to the Commandant for special consideration.

§ 55.07-5 *Design pressures and thickness of pipes.* (a) (1) The maximum allowable pressure and minimum thickness of pipes shall be calculated by the following formulas:

$$P = \frac{2S(T-C)}{D-0.8(T-C)} \quad (1)$$

$$T = \frac{PD}{2S+0.8P} + C \quad (2)$$

where:

P=maximum allowable pressure, psi.

T=thickness of pipe, inches.¹

D=external diameter of pipe, inches.

S=allowable fiber stress, psi. (Table 55.07-5 (a))

C=allowance for threading, mechanical strength and/or corrosion, inches.

= 0.065 inch for plain end steel or wrought iron pipe or tubing for nominal sizes above one inch.

= 0.05 inch for plain end steel or wrought iron pipe or tubing for nominal sizes one inch and below.

= 0.05 inch for threaded pipe 3/8 inch and below.

= depth of thread "h" for threaded pipe 1/2 inch and above.

= depth of groove for grooved pipe.

= 0.00 for plain end nonferrous pipe or tubing.

the purpose of gauging, and fitted with a screw plug to extend beyond the pipe covering. Where bends are used, the test holes shall be drilled in the outer wall of the bend. The drilling of such pipes may be omitted where pipes which are intended for bending comply with paragraph (e) of this section.

(e) The radius of a pipe bend measured from the centerline of the pipe shall be not less than three times the nominal pipe diameter, except for copper which shall have a radius of not less than twice the nominal pipe diameter.

(f) (1) Where pipe is pierced with tube holes, the ligament efficiency of the tube holes shall be employed in formula (1) of this section to determine the maximum allowable pressure of the pipe.

(2) Where branch connections are welded to pipe, reinforcement of the pierced pipe shall be provided unless the connection is adequate for the design pressure. The amount of reinforcement required shall be determined by § 52.25-20.

(3) The longitudinal joint of a welded pipe shall not be pierced with holes.

(g) (1) The combined stresses due to bending and pressure shall not exceed two-thirds of the sum of S values given in table 55.07-5 (a) for the piping material at 650° F. and the S value at the design temperature. A summary of the results of pipe stress calculations for main and auxiliary steam piping where the design temperature exceeds 700° F., together with the arrangement piping drawings shall be submitted for approval. Calculations shall be made in accordance with one of the recognized methods of stress analysis acceptable to the Commandant. The stress calculations and plans shall indicate all piping runs, connections, materials, sizes, design pressures and temperatures, anchorages, expansion, cold spring, reactions at anchorages and connections, and points of maximum stress, as well as bending, longitudinal, hoop, shear and combined stresses.

(2) In order to modify the effect of expansion and contraction a run of pipe may be cut short and sprung into place. The cold spring shall not exceed 50 percent of the computed expansion. In making stress calculations no credit will be given for cold spring.

(3) Where it is desired to employ alloy steel pipe materials of better heat resistant properties than those specified in part 51, special consideration may be given by the Commandant for an increase in the maximum combined stress, provided satisfactory evidence is furnished to establish the suitability of the material for the design temperature.

§ 55.07-10 Valves and fittings. (a) All valves shall close with a right hand (clockwise) motion of the handwheel when facing the end of the valve stem. Valves shall be of the rising stem type, preferably with outside yoke, or otherwise shall be fitted with indicators to show clearly whether same are open or closed.

(b) For class I piping, valves having diameters exceeding 2 inches shall have bolted or pressure seal bonnets and flanged or welding ends, except that

TABLE 55.07-5(a)—MAXIMUM FIBER STRESSES FOR PIPING

[Pounds per square inch]

FERROUS MATERIALS

Specification subpart	Grade	Minimum tensile strength, p. s. i.	For temperatures not exceeding °F. ¹									
			650	700	750	800	850	900	950	1000	1050	1100
<i>Seamless carbon steel</i>												
51.34	A	48,000	9,600	9,200	8,700	8,600	8,400					
51.34	B	60,000	12,000	11,400	10,400	9,100	7,400					
51.37	A	48,000	9,600	9,100	8,200							
51.37	B	60,000	12,000	11,400	9,900							
<i>Seamless alloy-steel</i>												
51.34	P1	55,000	11,000	11,000	11,000	10,700	10,500	10,000				
51.34	P280	55,000	11,000	11,000	11,000	10,700	10,500	10,000	8,000	5,000		
51.34	P5a	60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,800		
51.34	P3b	60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,800		
51.34	P5a	60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,800	3,800	2,200
51.34	P5b	60,000	12,000	12,000	12,000	11,800	11,000	8,800	6,000	4,200	3,000	2,000
51.34	P5c	60,000	11,000	11,000	11,000	11,000	10,800	10,000	8,000	5,800	3,800	2,200
51.34	P11	60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,800	3,800	2,200
51.34	P15	60,000	12,000	12,000	12,000	11,500	11,000	10,000	8,000	5,000		
<i>Electric-resistance welded carbon-steel</i>												
51.37 or 51.40	A	48,000	8,100									
	B	60,000	10,200									
<i>Furnace-welded</i>												
51.37	Steel	45,000	2 4,800									
51.43	Wrought iron	40,000	2 4,400									

NONFERROUS MATERIALS

Specification subpart	Grade	Minimum tensile strength, p. s. i.	For temperatures not exceeding °F. ¹			
			250	300	350	400
<i>Seamless pipe</i>						
51.70	Red brass	40,000	8,000	7,000	6,000	2 3,000
51.73	Copper	30,000	5,000	4,700	4,500	2 3,000
<i>Brazed pipe</i>						
	Copper		3,000	2 2,600		

¹ Intermediate values of S may be obtained by interpolation.

² Stress permitted for temperatures not to exceed 450° F.

³ The same stress may be employed for 400° F.

⁴ The same stress may be employed for 320° F.

NOTE 1: Plain end pipe or tubing includes that joined by flared compression couplings, lap (Van Stone) joints, brazing, and welding, i. e., by any method which does not reduce the wall thickness at the joint.

NOTE 2: The depth of thread h may be determined by the formula $h=0.8/n$, where, n=the number of threads per inch, or from the following values: h=0.100 inch, 0.0696 inch, and 0.0571 inch, for 8, 11 1/2, and 14 threads per inch, respectively.

(2) The value of P in the formula shall not be taken at less than 150 p. s. i. for class I piping nor less than 50 p. s. i. for nonferrous class II piping.

¹ When pipe is ordered by its nominal weight, wall thickness or schedule number, the mill tolerance plus the reduction in wall thickness caused by bending shall be added to the value T determined by the formula. The next heavier wall thickness or schedule number may then be selected from standard thickness schedules as given in table 51.37-60 (a).

(b) Superheater outlet flanges and superheated and desuperheated steam piping direct from the boiler shall be designed for not less than the maximum pressure and temperature to which they may be exposed in service under normal sustained operating conditions. Occasional increases in pressure and/or temperature are unavoidable and may be permitted without changing the normal design provided the increase of stress in the piping due to the temporary conditions does not exceed 15 percent during 10 percent of the operating period or 20 percent during 1 percent of the operating period.

(c) Carbon steel or wrought iron pipe shall have a wall thickness of not less than that of Schedule 40 pipe.

(d) Where the Officer in Charge, Marine Inspection, is not otherwise satisfied, each length of piping having a diameter exceeding 4 inches shall be drilled, for

socket type welding ends shall not be used where the diameter exceeds 2 inches. For diameters not exceeding 2 inches screwed bonnet valves of the union bonnet type or a type which will positively prevent the stem from screwing out of the body may be employed. Cast iron valves with screwed-in or screwed-over bonnets are not permitted for any service. Union bonnet type cast iron valves shall have the bonnet ring made of steel, bronze, or malleable iron.

(c) Valves, flanges, fittings and appurtenances shall be designed for the maximum pressure to which they may be subjected but in no case shall the design pressure be less than 50 psi. for the medium to be conveyed.

(d) Discs, seats, stems and other wearing parts of valves shall be made of material possessing corrosion and heat-resisting qualities suitable for the service conditions to which they may be subjected.

(e) Valves, flanges, and fittings shall be legibly marked with the manufacturer's name or registered trademark and if of alloy steel, the type and grade of alloy steel used, and the primary service pressure rating for which same are guaranteed in service, except as otherwise permitted below:

(1) Screwed malleable iron fittings of the 150 pound standard (Federal Specifications WW-P-521-a) need not carry a service pressure marking.

(2) Screwed bronze fittings of the 125 pound standard (Federal Specification WW-P-448) which are identifiable as to pressure rating by the narrow bands at the inlet and outlet widely separated at the fitting crotches need not carry a service pressure rating.

(3) Screwed bronze fittings of the 250 pound standard (Federal Specification WW-P-461) which are identifiable as to pressure rating by the heavy bands at the inlet and outlet and which meet and fill the crotches need not carry a pressure rating.

(4) Small finished or polished non-ferrous products such as trycocks need not be marked.

(f) Plugs shall be held in the bodies of cocks by glands or double nuts. Ordinary cocks where the plug is held in the body by a single nut only are not permitted.

(g) Cocks shall be marked in a straight line with the body to indicate whether same are open or closed.

§ 55.07-15 Joints and flange connections. (a) Slip-on flanges, or socket welded joints are not permitted for class I piping for diameters exceeding 2 inches, but may be used for class II piping without diameter limitation. Screwed joints are not permitted for class I piping for diameters exceeding 2 inches.

(b) Flanged or butt-welded joints are required for class I piping for diameters exceeding 2 inches.

(c) Forged or cast steel valves, flanges, and pipe fittings of the socket welding type, wherein the pipe is inserted into the socket and is secured by means of a strength fillet weld may be employed for pipe diameters not exceeding 2 inches for class I piping and without diameter limitation for class II piping.

(d) Valves, flanges and fittings may be attached to non-ferrous pipe by means of soldering where the pressures do not exceed 10 pounds per square inch at 240° F. and 100 pounds per square inch at 150° F. For temperatures between 150° F. and 240° F. the pressure shall be proportionate. Silver brazing alloy shall be employed for temperatures and pressures exceeding the foregoing.

(e) (1) Flanges shall conform in strength at least to the dimensional standards in the following tables:

TABLE 55.07-15 (c1)—CAST-IRON FLANGED FITTINGS AND COMPANION FLANGES, CLASS 125¹

[125-pound cast-iron flanged fittings. All dimensions given in inches]

Nominal pipe size (inches)	Diameter of flange	Thickness of flange (minimum)	Diameter of bolt circle	Number of bolts	Size of bolts	Metal thickness of fittings (minimum)	Diameter of hub (minimum)	Length through hub (minimum)	Length of threads (minimum)
1	4 1/4	7/16	3 1/4	4	1/2	5/16	1 1/2	1 1/2	0.68
1 1/4	4 7/8	1/2	3 7/8	4	1/2	5/16	2 1/8	1 1/2	0.76
1 1/2	5	9/16	3 7/8	4	1/2	5/16	2 1/8	1 1/2	0.87
2	6	5/8	4 3/4	4	5/8	5/16	3 1/8	1 1/2	1.00
2 1/2	7	11/16	5 1/2	4	5/8	5/16	3 1/8	1 1/2	1.14
3	8	3/4	6 1/2	4	3/4	5/16	4 1/8	1 1/2	1.29
3 1/2	8 1/2	13/16	6 1/2	4	3/4	5/16	4 1/8	1 1/2	1.39
4	9	1 1/16	7 1/2	4	3/4	5/16	5 1/8	1 1/2	1.51
5	10	1 1/8	8 1/2	4	3/4	5/16	6 1/8	1 1/2	1.65
6	11	1 1/4	9 1/2	4	3/4	5/16	7 1/8	1 1/2	1.81
8	13 1/4	1 3/4	11 1/2	4	3/4	5/16	10 1/8	1 1/2	2.17
10	16	1 7/8	14 1/4	12	1	5/8	13 1/8	1 1/2	2.45
12	19	2	17	12	1 1/4	5/8	16 1/8	1 1/2	2.83
14 O. D.	21	2 1/8	19 1/4	12	1 1/2	5/8	18 1/8	1 1/2	3.25
16 O. D.	23 1/4	2 3/8	21 1/4	16	1 1/2	5/8	20 1/8	1 1/2	3.71
18 O. D.	25 1/2	2 5/8	23 1/4	16	1 3/4	5/8	22 1/8	1 1/2	4.21
20 O. D.	27 1/4	2 7/8	25 1/4	20	1 3/4	5/8	24 1/8	1 1/2	4.75
24 O. D.	32	3 1/8	29 1/4	20	1 3/4	5/8	28 1/8	1 1/2	5.61
30 O. D.	38 3/4	3 7/8	35 1/4	24	1 3/4	5/8	34 1/8	1 1/2	6.61
36 O. D.	46	4 1/4	42 3/4	32	1 3/4	5/8	41 1/8	1 1/2	7.81

¹ All 125-pound standard flanges have a plain face.
² Sizes 14 inches and larger are to be used with O. D. pipe of the same size.
³ All blind flanges for size 12 inches (19 inches O. D.) and larger must be dished, with inside radius equal to the port diameter.

TABLE 55.07-15 (c2)—CAST-IRON FLANGED FITTINGS AND COMPANION FLANGES, CLASS 250¹

[250-pound cast-iron flanges. All dimensions given in inches]

Nominal pipe size (inches)	Diameter of flange	Thickness of flange (minimum)	Diameter of bolt circle	Number of bolts	Size of bolts	Metal thickness of fittings (minimum)	Diameter of hub (minimum)	Length through hub (minimum)	Length of threads (minimum)
1	4 1/4	7/16	3 1/4	4	1/2	5/16	1 1/2	1 1/2	0.68
1 1/4	4 7/8	1/2	3 7/8	4	1/2	5/16	2 1/8	1 1/2	0.76
1 1/2	5	9/16	3 7/8	4	1/2	5/16	2 1/8	1 1/2	0.87
2	6	5/8	4 3/4	4	5/8	5/16	3 1/8	1 1/2	1.00
2 1/2	7	11/16	5 1/2	4	5/8	5/16	3 1/8	1 1/2	1.14
3	8	3/4	6 1/2	4	3/4	5/16	4 1/8	1 1/2	1.29
3 1/2	8 1/2	13/16	6 1/2	4	3/4	5/16	4 1/8	1 1/2	1.39
4	9	1 1/16	7 1/2	4	3/4	5/16	5 1/8	1 1/2	1.51
5	10	1 1/8	8 1/2	4	3/4	5/16	6 1/8	1 1/2	1.65
6	11	1 1/4	9 1/2	4	3/4	5/16	7 1/8	1 1/2	1.81
8	13 1/4	1 3/4	11 1/2	4	3/4	5/16	10 1/8	1 1/2	2.17
10	16	1 7/8	14 1/4	12	1	5/8	13 1/8	1 1/2	2.45
12	19	2	17	12	1 1/4	5/8	16 1/8	1 1/2	2.83
14 O. D.	21	2 1/8	19 1/4	12	1 1/2	5/8	18 1/8	1 1/2	3.25
16 O. D.	23 1/4	2 3/8	21 1/4	16	1 1/2	5/8	20 1/8	1 1/2	3.71
18 O. D.	25 1/2	2 5/8	23 1/4	16	1 3/4	5/8	22 1/8	1 1/2	4.21
20 O. D.	27 1/4	2 7/8	25 1/4	20	1 3/4	5/8	24 1/8	1 1/2	4.75
24 O. D.	32	3 1/8	29 1/4	20	1 3/4	5/8	28 1/8	1 1/2	5.61
30 O. D.	38 3/4	3 7/8	35 1/4	24	1 3/4	5/8	34 1/8	1 1/2	6.61

¹ All 250-pound cast-iron standard flanges have a 1/16-inch raised face. This raised face is included in the minimum thickness of flange dimensions.
² Sizes 14 inches and larger are to be used with O. D. pipe of the same size.
³ All blind flanges for sizes 10 inches (17 1/4 inches O. D.) and larger must be dished, with inside radius equal to the port diameter.

TABLE 55.07-15 (c3)—BRONZE FLANGED FITTINGS AND COMPANION FLANGES

Nominal pipe size (inches)	Outside diameter of flange (inches)	Flange thickness, minimum ¹ (inches)	Diameter of bolt circle (inches)	Number of bolts	Size of bolts (inches)	Metal thickness of fitting, minimum (inches)	Diameter of hub, minimum (inches)	Hub diameter at base (inches)	Depth through hub (inches)
1/2	3 1/2	5/16	2 3/4	4	1/2	3/8	1 1/8	1 1/8	1 1/8
3/4	3 7/8	1/2	2 3/4	4	1/2	3/8	1 1/8	1 1/8	1 1/8
1	4 1/4	5/8	3 1/4	4	5/8	3/8	1 3/8	1 3/8	1 3/8
1 1/4	4 7/8	3/4	3 1/4	4	5/8	3/8	1 3/8	1 3/8	1 3/8
1 1/2	5	7/8	3 1/4	4	5/8	3/8	1 3/8	1 3/8	1 3/8
2	6	1	4 1/4	4	3/4	3/8	2 1/8	2 1/8	2 1/8
2 1/2	7	1 1/16	5 1/2	4	3/4	3/8	2 1/8	2 1/8	2 1/8
3	8	1 1/8	6 1/2	4	3/4	3/8	2 1/8	2 1/8	2 1/8
3 1/2	8 1/2	1 1/4	6 1/2	4	3/4	3/8	2 1/8	2 1/8	2 1/8
4	9	1 1/2	7 1/2	4	3/4	3/8	2 1/8	2 1/8	2 1/8
5	10	1 3/4	8 1/2	4	3/4	3/8	2 1/8	2 1/8	2 1/8
6	11	1 7/8	9 1/2	4	3/4	3/8	2 1/8	2 1/8	2 1/8
8	13 1/4	2 1/8	11 1/2	4	3/4	3/8	2 1/8	2 1/8	2 1/8
10	16	2 3/8	14 1/4	12	1	3/4	3 1/8	3 1/8	3 1/8
12	19	2 7/8	17	12	1 1/4	3/4	3 1/8	3 1/8	3 1/8

¹ The "flange thickness, minimum" as shown in the table is the dimension from back of flange to gasket contact face. Blind flanges may be recessed 1/16 inch with a diameter equal to the inside diameter of the flange fitting.

TABLE 55.07-15 (c4)—BRONZE FLANGED FITTINGS AND COMPANION FLANGES

Nominal pipe size (inches)	Outside diameter of flange (inches)	Flange thickness, minimum ¹		Diameter of bolt circle (inches)	Number of bolts	Size of bolts (inches)	Metal thickness of fitting, minimum (inches)	Diameter of hub, minimum (inches)	Depth through hub (inches)
		250 pounds (inches)	300 pounds (inches)						
1 1/2	3 3/4	1 1/8	1 1/8	2 3/4	4	3/4	1 1/8	1 1/8	1 1/8
3/4	4 3/8	1 1/8	1 1/8	3 3/4	4	3/4	1 1/8	1 1/8	1 1/8
1	4 7/8	1 1/8	1 1/8	3 3/4	4	3/4	1 1/8	1 1/8	1 1/8
1 1/4	5 1/4	1 1/8	1 1/8	3 3/4	4	3/4	1 1/8	1 1/8	1 1/8
1 1/2	6 1/8	1 1/8	1 1/8	4 3/4	4	3/4	1 1/8	1 1/8	1 1/8
2	7 1/4	1 1/8	1 1/8	5 1/4	4	3/4	1 1/8	1 1/8	1 1/8
2 1/2	8 1/4	1 1/8	1 1/8	6 1/4	4	3/4	1 1/8	1 1/8	1 1/8
3	9 1/4	1 1/8	1 1/8	7 1/4	4	3/4	1 1/8	1 1/8	1 1/8
3 1/2	10 1/4	1 1/8	1 1/8	8 1/4	4	3/4	1 1/8	1 1/8	1 1/8
4	11 1/4	1 1/8	1 1/8	9 1/4	4	3/4	1 1/8	1 1/8	1 1/8
5	12 1/4	1 1/8	1 1/8	10 1/4	4	3/4	1 1/8	1 1/8	1 1/8
6	14 1/4	1 1/8	1 1/8	12 1/4	12	1	1 1/8	1 1/8	1 1/8
8	18 1/4	1 1/8	1 1/8	16 1/4	12	1 1/4	1 1/8	1 1/8	1 1/8

¹ The "flange thickness, minimum" as shown in the table is the dimension from back of flange to gasket contact face. Blind flanges may be recessed 1/16 inch with a diameter equal to the inside diameter of the flange fitting.

TABLE 55.07-15 (c5)—STEEL FLANGED FITTINGS AND COMPANION FLANGES

[For maximum steam service pressure at a temperature of 500° F.]

Nominal pipe size (inches)	Outside diameter of flange (inches)	Thickness of flange, minimum ¹ (inches)	Flange thickness, minimum ¹ (inches)	Diameter of bolt circle (inches)	Number of bolts	Size of bolts (inches)	Metal thickness of fitting, minimum (inches)	Hub diameter at base (inches)
1/2	3 1/2	7/16	7/16	2 3/4	4	1/2	3/8	1 1/8
3/4	3 7/8	1/2	1/2	2 3/4	4	1/2	3/8	1 1/8
1	4 1/4	5/8	5/8	3 1/4	4	5/8	3/8	1 3/8

TABLE 55.07-15 (e10)—STEEL FLANGED FITTINGS AND COMPANION FLANGES

[For maximum steam service pressure at a temperature of 750° F.]

Table with 10 columns: Nominal pipe size (inches), Outside diameter of flange (inches), Thickness of flange, minimum (inches), Diameter of bolt circle (inches), Number of bolts, Size of bolts (inches), Metal thickness of fitting, minimum (inches), Hub diameter at base (inches). Rows for 1,500 pounds pressure.

1 A raised face of 1/4 inch is not included in the minimum thickness of flanges.

TABLE 55.07-15 (e11)—STEEL FLANGED FITTINGS AND COMPANION FLANGES

[For maximum steam service pressure at a temperature of 750° F.]

Table with 10 columns: Nominal pipe size (inches), Outside diameter of flange (inches), Thickness of flange, minimum (inches), Diameter of bolt circle (inches), Number of bolts, Size of bolts (inches), Metal thickness of fitting, minimum (inches), Hub diameter at base (inches). Rows for 2,500 pounds pressure.

1 The raised face of 1/4 inch is not included in "thickness of flange, minimum."

TABLE 55.07-15 (e8)—STEEL FLANGED FITTINGS AND COMPANION FLANGES

[For maximum steam service pressure at a temperature of 750° F.]

Table with 10 columns: Nominal pipe size (inches), Outside diameter of flange (inches), Thickness of flange, minimum (inches), Diameter of bolt circle (inches), Number of bolts, Size of bolts (inches), Metal thickness of fitting, minimum (inches), Hub diameter at base (inches). Rows for 600 pounds pressure.

1 A raised face of 1/4 inch is not included in the minimum thickness of flanges.

TABLE 55.07-15 (e9)—STEEL FLANGED FITTINGS AND COMPANION FLANGES

[For maximum steam service pressure at a temperature of 750° F.]

Table with 10 columns: Nominal pipe size (inches), Outside diameter of flange (inches), Thickness of flange, minimum (inches), Diameter of bolt circle (inches), Number of bolts, Size of bolts (inches), Metal thickness of fitting, minimum (inches), Hub diameter at base (inches). Rows for 900 pounds pressure.

1 A raised face of 1/4 inch is not included in the minimum thickness of flanges.

TABLE 55.07-15 (e6)—STEEL FLANGED FITTINGS AND COMPANION FLANGES—Continued

[For maximum steam service pressure at a temperature of 750° F.]

Table with 10 columns: Nominal pipe size (inches), Outside diameter of flange (inches), Thickness of flange, minimum (inches), Diameter of bolt circle (inches), Number of bolts, Size of bolts (inches), Metal thickness of fitting, minimum (inches), Hub diameter at base (inches). Rows for 300 pounds pressure.

1 The raised face of 1/4 inch is included in "thickness of flange, minimum."

TABLE 55.07-15 (e7)—STEEL FLANGED FITTINGS AND COMPANION FLANGES

[For maximum steam service pressure at a temperature of 750° F.]

Table with 10 columns: Nominal pipe size (inches), Outside diameter of flange (inches), Thickness of flange, minimum (inches), Diameter of bolt circle (inches), Number of bolts, Size of bolts (inches), Metal thickness of fitting, minimum (inches), Hub diameter at base (inches). Rows for 400 pounds pressure.

1 A raised face of 1/4 inch is not included in the minimum thickness of flanges.

TABLE 55.07-15 (e5)—STEEL FLANGED FITTINGS AND COMPANION FLANGES—Continued

[For maximum steam service pressure at a temperature of 500° F.]

Table with 10 columns: Nominal pipe size (inches), Outside diameter of flange (inches), Thickness of flange, minimum (inches), Diameter of bolt circle (inches), Number of bolts, Size of bolts (inches), Metal thickness of fitting, minimum (inches), Hub diameter at base (inches). Rows for 150 pounds pressure.

1 The raised face of 1/4 inch is included in "thickness of flange, minimum."

TABLE 55.07-15 (e6)—STEEL FLANGED FITTINGS AND COMPANION FLANGES

[For maximum steam service pressure at a temperature of 750° F.]

Table with 10 columns: Nominal pipe size (inches), Outside diameter of flange (inches), Thickness of flange, minimum (inches), Diameter of bolt circle (inches), Number of bolts, Size of bolts (inches), Metal thickness of fitting, minimum (inches), Hub diameter at base (inches). Rows for 300 pounds pressure.

1 The raised face of 1/4 inch is not included in "thickness of flange, minimum."

(2) The service pressure ratings for carbon steel pipe flanges and flanged fittings at design temperatures of 850° F. and below, and for alloy steel pipe flanges and flanged fittings at design temperatures of 1,000° F. and below shall conform to tables 55.07-15 (e 12) and (e 13). Service pressure ratings for alloy steel pipe and flanged fittings for use in connection with design temperatures exceeding 1,000° F. will be given special consideration by the Commandant.

TABLE 55.07-15 (e12)—SERVICE PRESSURE RATINGS FOR CARBON STEEL PIPE FLANGES AND FLANGED FITTINGS¹

Primary service pressure ratings.....	Carbon steel flanges and flanged fittings at temperatures 850° F. and below with standard facings (other than ring joints)							Carbon steel flanges and flanged fittings at temperatures 850° F. and below with ring-joint facings						
	150	300	400	600	900	1,500	2,500	150	300	400	600	900	1,500	2,500
Maximum hydrostatic shell test pressures ²	350	750	1,000	1,500	2,000	3,500	6,000	350	750	1,000	1,500	2,000	3,500	6,000
Service temperatures (° F.)	Maximum, nonshock, service pressure ratings at temperatures from 100° to 850° F.							Maximum, nonshock; service pressure ratings at temperatures from 100° to 850° F.						
100.....	230	500	670	1,000	1,500	2,500	4,170	275	600	800	1,200	1,800	3,000	5,000
150.....	220	480	640	960	1,440	2,400	4,000	255	575	765	1,150	1,725	2,875	4,790
200.....	210	465	620	930	1,395	2,325	3,875	240	550	730	1,100	1,650	2,750	4,580
250.....	200	450	600	900	1,350	2,250	3,750	225	525	700	1,050	1,575	2,625	4,375
300.....	190	435	580	870	1,305	2,175	3,625	210	500	670	1,000	1,500	2,500	4,170
350.....	180	420	560	840	1,260	2,100	3,500	195	475	635	950	1,425	2,375	3,960
400.....	170	405	540	810	1,215	2,025	3,375	180	450	600	900	1,350	2,250	3,750
Water 450.....	160	390	520	780	1,170	1,950	3,250	165	425	565	850	1,275	2,125	3,540
500.....	150	375	500	750	1,125	1,875	3,125	150	400	530	800	1,200	2,000	3,330
550.....	140	360	480	720	1,080	1,800	3,000	140	380	505	760	1,140	1,900	3,165
600.....	130	345	460	690	1,035	1,725	2,875	130	360	480	720	1,080	1,800	3,000
Steam 650.....	120	330	440	660	990	1,650	2,750	120	340	450	680	1,020	1,700	2,830
700.....	110	315	420	630	945	1,575	2,625	110	320	425	640	960	1,600	2,665
750.....	100	300	400	600	900	1,500	2,500	100	300	400	600	900	1,500	2,500
800.....	85	250	335	500	750	1,250	2,085	85	250	335	500	750	1,250	2,085
850.....	70	200	270	400	600	1,000	1,670	70	200	270	400	600	1,000	1,670

¹ All pressures are in pounds per square inch, gauge.
² All tests shall be made with water at a temperature not to exceed 125° F.
³ Primary service pressure rating.

TABLE 55.07-15 (e13)—SERVICE PRESSURE RATINGS FOR ALLOY STEEL PIPE FLANGES AND FLANGED FITTINGS¹

Primary service pressure ratings.....	Alloy steels of suitable heat resistant properties at temperatures 1,000° F. and below with standard facings (other than ring joints) ²						Alloy steels of suitable heat resistant properties at temperatures 1,000° F. and below with ring joints ²					
	300	400	600	900	1,500	2,500	300	400	600	900	1,500	2,500
Maximum hydrostatic shell test pressures ²	900	1,200	1,800	2,400	4,200	7,200	900	1,200	1,800	2,400	4,200	7,200
Service temperatures (° F.)	Maximum, nonshock, service pressure ratings at temperatures from 100° to 1,000° F.						Maximum, nonshock, service pressure ratings at temperatures from 100° to 1,000° F.					
100.....	600	800	1,200	1,800	3,000	5,000	720	960	1,440	2,160	3,600	6,000
150.....	590	775	1,180	1,770	2,950	4,905	700	925	1,400	2,100	3,500	5,825
200.....	580	750	1,160	1,740	2,900	4,810	675	900	1,350	2,025	3,375	5,625
250.....	560	725	1,120	1,680	2,800	4,645	650	875	1,300	1,950	3,250	5,425
300.....	540	700	1,080	1,620	2,700	4,480	625	825	1,250	1,875	3,125	5,200
Fluid 350.....	520	675	1,040	1,560	2,600	4,315	600	800	1,200	1,800	3,000	5,000
400.....	500	650	1,000	1,500	2,500	4,150	575	775	1,150	1,725	2,875	4,800
450.....	480	625	960	1,440	2,400	3,985	550	725	1,100	1,650	2,750	4,575
500.....	460	600	920	1,380	2,300	3,820	525	700	1,050	1,575	2,625	4,375
Water 550.....	440	575	880	1,320	2,200	3,655	500	675	1,000	1,500	2,500	4,170
600.....	420	550	840	1,260	2,100	3,490	475	625	950	1,425	2,375	3,950
650.....	400	525	800	1,200	2,000	3,325	450	600	900	1,350	2,250	3,750
700.....	380	500	760	1,140	1,900	3,160	425	575	850	1,275	2,125	3,540
Steam 750.....	360	475	720	1,080	1,800	2,995	400	525	800	1,200	2,000	3,325
800.....	340	450	680	1,020	1,700	2,830	375	500	750	1,125	1,875	3,125
850.....	320	425	640	960	1,600	2,665	350	475	700	1,050	1,750	2,925
900.....	300	400	600	900	1,500	2,500	325	425	650	975	1,625	2,700
950.....	265	350	530	795	1,325	2,205	300	400	600	900	1,500	2,500
1,000.....	190	250	380	570	950	1,580	200	275	400	600	1,000	1,675

¹ All pressures are in pounds per square inch, gauge.
² Carbon-molybdenum steel flanges and flanged fittings are not permitted for temperatures exceeding 900° F.
³ All tests shall be made with water at a temperature not to exceed 125° F.
⁴ Primary service pressure ratings.

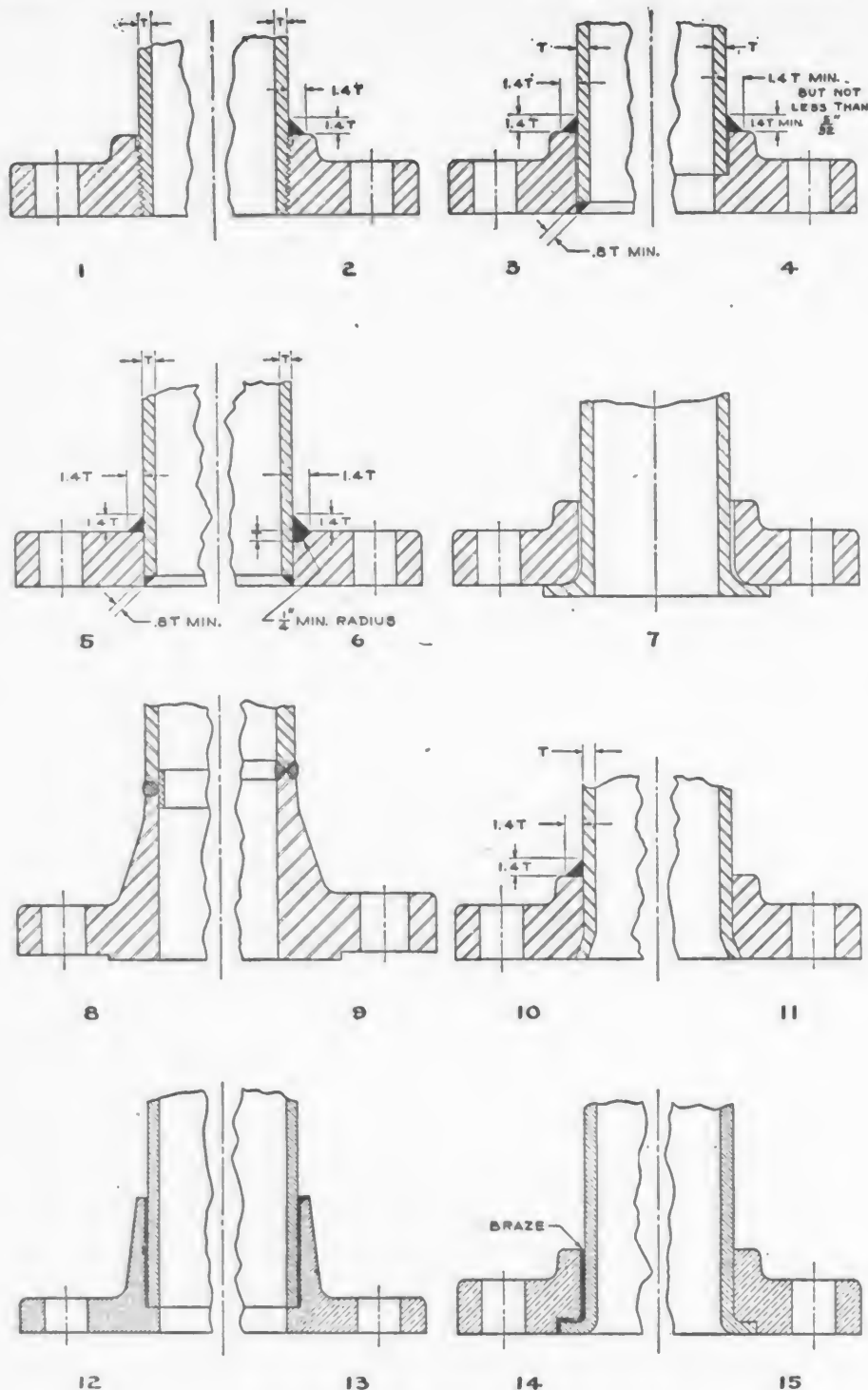


FIGURE 55.07-15 (f). Methods of attachments.

(f) Flanges shall be attached to the pipe by any method shown by figures 55.07-15 (f1) to 55.07-15 (f15), inclusive, or by any additional means that may be approved by the Commandant.

Figure 55.07-15 (f1). Flanges with screwed threads may be used for class I piping not exceeding 2 inches nominal pipe size. For class II piping, flanges with screwed threads may be used without diameter limitation.

Figure 55.07-15 (f2). Low hubbed flanges for sizes exceeding 2 inches nominal pipe size with screwed threads plus the addition of a strength fillet weld of the size as shown may be used for class I piping for pressures not to exceed 300

pounds per square inch and for temperatures not exceeding 750° F.

Figure 55.07-15 (f3). Slip-on flanges may be used for class I piping for nominal pipe size not exceeding 2 inches and for class II piping without diameter limitation.

Figure 55.07-15 (f4). Socket welding flanges may be used for class I piping of nominal pipe size not exceeding 2 inches. For class II piping, socket welding flanges may be used without diameter limitation.

Figure 55.07-15 (f5). Flanges machined from steel plate meeting the requirements of subpart 51.22 may be used for class II piping for pressures not ex-

ceeding 125 pounds per square inch and temperatures not exceeding 450° F. The machined flanges shall comply with table 55.07-15 (e5).

Figure 55.07-15 (f6). Steel plate flanges meeting the material and construction requirements listed in figure 55.07-15 (f5) may be used for class II piping for pressures not exceeding 150 pounds per square inch or temperatures not exceeding 650° F. The flange shall be attached to the pipe as shown by figure 55.07-15 (f6). For temperatures exceeding 500° F. the pressure shall not exceed that permitted by table 55.07-15 (e12).

Figure 55.07-15 (f7). Lap joint flanges (Van Stone) may be used for class I and class II piping. The Van Stone equipment shall be operated by qualified personnel and the ends of the pipe shall be heated from 1,650° F. to 1,900° F. dependent upon the size of the pipe prior to the flanging operation. The foregoing temperatures shall be carefully adhered to in order to prevent excess scaling of the pipe. The extra thickness of metal built up in the end of the pipe during the forming operation shall be machined to restore the pipe to its original diameter. The machined surface shall be free from surface defects and the back of the Van Stone lap shall be machined to a fine tool finish to furnish a line contact with the mating surface on the flange for the full circumference as close as possible to the fillet of the flange. The number of heats to be used in forming a flange shall be determined by the size of the pipe and not more than two push-ups per heat are permitted. The width of the lap flange shall be at least three times the thickness of the pipe wall and the end of the pipe shall be properly stress-relieved after the flanging operation is completed. Manufacturers desiring to employ this type of joint shall demonstrate to an inspector that they have the proper equipment and personnel to produce acceptable lap joints.

Figure 55.07-15 (f8). Welding neck flanges may be used on any piping provided the flanges are butt-welded to the pipe. The joint shall be welded as indicated by figure 55.07-15 (f8) and a backing ring employed which will permit complete penetration of the weld metal.

Figure 55.07-15 (f9). Welding neck flanges may also be attached to pipe by a double-welded butt joint as shown by figure 55.07-15 (f9).

Figure 55.07-15 (f10). Flanges may be attached by shrinking the flange on to the end of the pipe and flaring the end of the pipe to an angle of not less than 20°. A fillet weld of the size shown by figure 55.07-15 (f10) shall be used to attach the hub to the pipe. This type of flange is limited to a maximum pressure of 300 pounds per square inch at temperatures not exceeding 500° F.

Figure 55.07-15 (f11). The flange of the type described and illustrated by figure 55.07-15 (f10), except with the fillet weld omitted, may be used for class II piping for pressures not exceeding 150 pounds per square inch and temperatures not exceeding 450° F.

Figure 55.07-15 (f12). High-hub bronze flanges may be used for tempera-

tures not exceeding 406° F. The hub of the flange shall be bored to a depth of not less than that required for a threaded connection of the same diameter leaving a shoulder for the pipe to butt against. A preinserted ring of silver brazing alloy having a melting point of not less than 1,000° F. and of sufficient quantity to fill the annular clearance between the flange and the pipe shall be inserted in the groove. The pipe shall then be inserted in the flange and sufficient heat applied externally to melt the brazing alloy until it completely fills the clearance between the hub and the flange of the pipe. A suitable flux shall be applied to the surfaces to be joined to produce a satisfactory joint. (For clearances of silver soldered joints, see § 56.10-30 (e) of this chapter.)

Figure 55.07-15 (f13). The type of flange as described for figure 55.07-15 (f14) may be employed and in lieu of an annular groove being machined in the hub of the flange for the preinserted ring of silver brazing alloy, a bevel may be machined on the end of the hub and the silver brazing alloy introduced from the end of the hub to attach the pipe to the flange. (For clearances of silver soldered joints, see § 56.10-30 (e) of this chapter.)

Figure 55.07-15 (f14). Flanges may be attached to non-ferrous pipe by inserting the pipe in the flange and flanging the end of the pipe into the recess machined in the face of the flange to receive same. The width of the flange shall be not less than three times the pipe wall thickness. In addition thereto, the pipe shall be securely brazed to the wall of the flange. This flange is limited to a maximum temperature of 406° F.

Figure 55.07-15 (f15). The flange of the type described and illustrated by figure 55.07-15 (f14), except with the brazing omitted, may be used for class H piping and where the temperature does not exceed 250° F.

§ 55.07-20 *Bolting*—(a) *Scope*. (1) Valves, fittings, and flanges for piping systems shall have bolting complying with the standards for the various pressure ratings as given in tables 55.07-15 (c1) to 55.07-15 (e11), inclusive. For pressure vessels and other special flange designs the aforementioned standards are not mandatory and the bolting stress may be calculated as required in this section.

(2) Studs continuously threaded, or bolts with the unthreaded portion reduced to the same diameter as that of the root of the thread, shall be employed

when the design temperature exceeds 450° F.

(3) American Standard heavy nuts shall be employed for pipe flanges and for pressure vessels where the pressure exceeds 150 p. s. i. or the temperature exceeds 450° F.

(b) *Materials*. (1) When the temperature does not exceed 450° F., carbon-steel bolting material may be used for attaching heads, doors, covers, or flanges. For temperatures exceeding 450° F., alloy-steel bolting material complying with the requirements of subpart 51.49 shall be employed.

(2) Nut material for alloy-steel bolting shall comply with subpart 51.55. Nuts shall be semifinished, chamfered and trimmed, and shall meet the minimum requirements of American Standard heavy dimensions as given in table 55.07-20 (b). Washers are not required, but when used, same shall be of forged or rolled steel.

(3) Bolting shall have a length of thread engagement of not less than the normal thickness dimension of American Standard heavy nuts. In no case shall the size of a bolt be less than 1/2 inch in diameter.

TABLE 55.07-20 (b)—BOLTING AND NUTS
[All dimensions given are in inches]

Diameter	Bolting		American standard heavy nuts, semifinished hexagon			
	Root area	No. of threads ¹	Width across flats, minimum	Width across corners	Nut thickness	
					Nominal	Minimum
1/2	0.126	13	0.850	0.969	3/16	0.464
3/8	.162	12	.606	1.033	3/8	.526
1/4	.202	11	1.031	1.175	3/4	.587
3/16	.302	10	1.213	1.383	7/8	.710
1/8	.419	9	1.394	1.589	1 1/8	.833
1/4	.551	8	1.575	1.796	1 1/4	.956
3/8	.728	8	1.756	2.002	1 3/4	1.079
1/2	.929	8	1.928	2.209	1 7/8	1.156
3/4	1.155	8	2.119	2.416	2 1/8	1.279
1 1/8	1.405	8	2.300	2.622	2 1/4	1.402
1 1/4	1.680	8	2.481	2.828	2 3/4	1.525
1 3/8	1.980	8	2.663	3.036	3 1/8	1.648
1 1/2	2.304	8	2.844	3.242	3 1/4	1.771
2	2.652	8	3.025	3.449	3 3/4	1.894

¹ All bolting shall have threads at least as strong as American Standard screw threads.

(c) *Bolt loads*—(1) *Minimum required bolt load*. The minimum bolt load W_m shall be determined from the greater of the values obtained from formula (1) under maximum operating conditions, or from formula (2) under atmospheric temperature conditions without consideration of internal pressure.

(i) Under maximum operating conditions:

$$W_m = H + H_p = 0.785G^2P + (2b \times 3.14G \times m \times P) \quad (1)$$

(ii) Under atmospheric temperature conditions without internal pressure:

$$W_m = H_y = 3.14b \times G \times y \times r \quad (2)$$

where:

W_m = minimum required bolt load, in pounds.

H = total hydrostatic end force, in pounds.

H_p = total joint-contact surface compression load, in pounds.

G = mean diameter of gasket or joint-contact surface, in inches (except for lap joints with full face gasket in which case it is midpoint of contact between flange and lap).

P = maximum allowable pressure, in pounds per square inch.

b = effective gasket or joint-contact surface seating width, in inches (see table 55.07-20 (c1)).

m = unit contact compression factor (see table 55.07-20 (c1)).

H_y = total joint-contact seating load, in pounds.

y = gasket or joint-contact surface unit seating load, in pounds per square inch (see table 55.07-20 (c1)).

r = ratio of allowable bolt stress at maximum metal temperature to allowable bolt stress at atmospheric temperature.

NOTE 1: Under maximum operating conditions, the minimum required bolt load W_m is the load required to resist the hydrostatic end force H exerted by the maximum internal pressure upon the area bounded by the mean diameter of gasket or joint-contact surfaces and, in addition, maintain a predetermined compression load H_p on the gasket or joint-contact surface which, experience has shown, will be sufficient to insure a tight joint.

NOTE 2: Under atmospheric temperature conditions without internal pressure, the minimum required bolt load W_m is the load H_y required to initially seat the gasket or joint-contact surfaces sufficiently to insure a tight joint.

(2) *Actual bolt load*. The actual bolt load W_a shall be not less than that calculated by paragraph (c) (1) of this section, which is the force in pounds when the actual total bolt area is stressed to the design stress permitted for the maximum metal temperature, and shall be calculated by the following formula:

$$W_a = A_b \times S_b \quad (3)$$

where:

W_a = actual or allowable bolt load, in pounds.

A_b = total cross-sectional area of bolts at root of thread or section of least diameter under stress, in square inches.

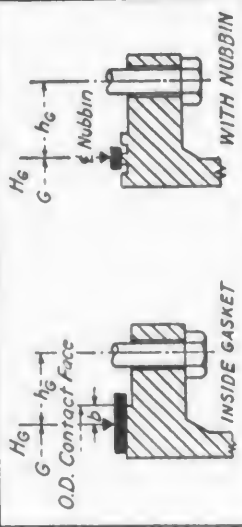
S_b = allowable bolt stress at maximum metal temperature, in pounds per square inch (see table 55.07-20 (c2)).

TABLE 66.07-20(c1) GASKET MATERIALS AND CONTACT FACINGS

GASKET FACTORS (m) FOR OPERATING CONDITIONS AND MINIMUM DESIGN STRESS (7)				EFFECTIVE GASKET WIDTH	
GASKET MATERIAL	GASKET FACTOR	MIN. DESIGN SEATING STRESS	SKETCHES	FACING LIMITATIONS	USE
Rubber without fabric or a high percentage of asbestos fiber: Below 75 Shore Durometer 75 or higher Shore Durometer	0.50 1.00	0 200		Use 1, 4, 6 only	COLUMN I $\frac{N}{2}$
Asbestos with a suitable binder for the operating conditions	2.00 2.75 3.50	1600 3700 6500			
Cloth inserted soft rubber	0.75 1.25	50 400		None	$\frac{W+T}{2} (W+N \text{ max})$ $\frac{W+3N}{8}$ $\frac{W+N}{4}$
Rubber with asbestos fabric insertion, with or without wire reinforcement	2.25 2.50 2.75	2200 2900 3700			
Vegetable fiber	1.75	1100		1, 4, 6	$\frac{W+T}{2} (W+N \text{ max})$ $\frac{W+3N}{8}$ $\frac{W+N}{4}$
Spiral-wound metal, asbestos filled	2.50 3.00	2900 4500			
Serrated steel	2.75	3700			$\frac{W+T}{2} (W+N \text{ max})$ $\frac{W+3N}{8}$ $\frac{W+N}{4}$
Corrugated metal	2.50 2.75 3.00 3.25 3.50	2900 3700 4500 5500 6500		Use 1a only	
Flat metal jacketed asbestos filled	2.75 3.00 3.25 3.50 3.75	3700 4500 5500 6500 8000 9000			$\frac{W+T}{2} (W+N \text{ max})$ $\frac{W+3N}{8}$ $\frac{W+N}{4}$
Grooved iron or soft steel with or without metal jacketed	3.25 3.50 3.75 4.00 4.25	5500 6500 7600 8800 10100		Use 1, 2, 3 only	
Solid flat metal	4.00 4.75 5.50 6.00 6.50	8800 13000 18000 21800 26000		None	$\frac{W+T}{2} (W+N \text{ max})$ $\frac{W+3N}{8}$ $\frac{W+N}{4}$
Ring joint	5.50 6.00 6.50	18000 21800 26000		Use B only	

$b = b_0$, when $b_0 \leq \frac{1}{4}$
 $b = \frac{1}{2} b_0$, when $b_0 > \frac{1}{4}$

LOCATION OF GASKET LOAD REACTION



NOTE: The gasket factors listed only apply to flanged joints in which the gasket is contained entirely within the inner edges of the bolt holes.

TABLE 55.07-20 (c 2)—MAXIMUM ALLOWABLE STRESSES

Specification subpart	Grade	For metal temperatures not exceeding °F.									
		650	700	750	800	850	900	950	1,000	1,050	1,100
51.49	BA	16,200	14,900	13,600	-----	-----	-----	-----	-----	-----	-----
51.49	BB	18,700	17,200	15,600	-----	-----	-----	-----	-----	-----	-----
51.49	BC	20,000	18,300	16,700	-----	-----	-----	-----	-----	-----	-----
51.49	B4	20,000	20,000	20,000	20,000	16,200	12,500	-----	-----	-----	-----
51.49	B5	20,000	20,000	20,000	20,000	17,200	13,700	10,300	7,300	4,800	2,700
51.49	B6	20,000	18,400	16,700	14,200	11,800	8,400	-----	-----	-----	-----
51.49	B7	20,000	20,000	20,000	20,000	15,200	12,500	-----	-----	-----	-----
51.49	B7A	20,000	20,000	20,000	20,000	17,200	13,700	10,300	7,300	4,800	2,700
51.49	B8	18,700	18,700	18,200	17,800	17,500	16,700	15,300	12,500	10,000	7,500
51.49	B8F	18,700	18,700	18,200	-----	-----	-----	-----	-----	-----	-----
51.49	B11	20,000	20,000	20,000	20,000	17,200	13,700	10,300	7,300	4,800	2,700
51.49	B12	20,000	18,400	16,700	-----	-----	-----	-----	-----	-----	-----
51.49	B13	20,000	20,000	20,000	20,000	17,200	13,700	10,300	7,300	-----	-----
51.49	B14	20,000	20,000	20,000	20,000	18,700	16,900	14,200	11,000	6,200	2,700
51.49	B15	20,000	20,000	20,000	20,000	17,200	13,700	10,300	7,300	-----	-----
51.52	-----	6,500	-----	-----	-----	-----	-----	-----	-----	-----	-----

1 Material not permitted for temperatures exceeding 450° F.

§ 55.07-25 *Installation.* (a) Provision shall be made for expansion and contraction either by expansion bends, slip joints, or other approved means. Unless positive means are provided to prevent the end of the pipe from pulling out, slip joints shall not be installed where the joints are not always accessible. This requirement is not applicable to piping installed in cargo oil tanks.

(b) Piping shall be installed to avoid excessive strains and shall be adequately supported by hangers or guides so that the weight of the piping is not transmitted to valves and fittings. All pipe supports shall be so designed and located as not to interfere with the expansion and contraction of the piping. Fixed anchors shall be located at the main junction points of piping subject to temperatures exceeding 450° F. in order to prevent excessive strains on branch connections. All such piping sections between fixed anchor points shall be fitted with expansion bends or other suitable means to take up the expansion and contraction.

(c) Pumps used to transfer oil shall have no discharge connections to fire-mains, boiler feed systems, or condensers unless approved positive means are provided to prevent oil from being accidentally discharged into any of the aforementioned systems.

(d) Piping may be run through deep tanks or fuel tanks, provided a pipe tunnel is installed. Where a pipe tunnel is installed, the watertight integrity of the bulkheads shall be maintained, and if the tunnel is not of sufficient size to afford easy access, no valve or fitting shall be located therein. Bilge and ballast piping may be run through such tanks without a pipe tunnel, where the thickness of the piping is not less than Schedule 80, expansion bends are fitted, and all joints within the tanks are welded.

(e) Where pipes are carried through watertight or oiltight bulkheads, decks or tank tops, the watertight integrity of the structure shall be maintained. Where plate insert pads are used, bolted connections shall have threads tapped into the plate to a depth of not less than the diameter of the bolt. If welded, the pipe or flange shall be welded to both sides of the plating. Openings in structure through which pipes pass shall be reinforced where necessary. Flanges shall not be bolted to bulkheads so that the plate forms a part of the joint.

(f) Piping shall not be located above switchboards or other electrical equipment if avoidable, but where it cannot be avoided means shall be provided to prevent water from dripping upon and damaging the equipment.

(g) Fresh water piping shall not run through oil tanks nor oil piping through fresh water tanks. Care should be taken to prevent the accidental contamination of fresh water from salt water lines.

(h) Stuffing boxes shall not be used on deep tank bulkheads, double bottoms or in any position where they cannot be easily examined. This requirement does not apply to ore carriers operating on the Great Lakes or cargo lines of oil tankers.

(i) Piping systems shall be installed so that under no condition will the operation of safety or relief valves be impaired.

(j) Remote valve controls shall always be accessible under service conditions and an indicator shall be fitted to show whether the valve is open or closed. Reach rods shall be adequately protected and only solid reach rods shall be used in tanks containing liquids.

(k) Suitable drains shall be provided at low points of piping systems.

(l) Valves and cocks shall be located so as to be easily accessible and valves or cocks attached to the shell of the vessel or to sea chests located below the floor plating shall be operable from above the floor plates.

(m) When welded fabrication is employed, a sufficient number of detachable joints shall be provided to facilitate overhauling and maintenance of machinery and appurtenances. The joints shall be located so that adequate space is provided for welding, and the location of the welds shall be indicated on the plans.

(n) Pipes piercing the collision bulkhead shall be fitted with screw-down valves operable from above the bulkhead deck and the valve shall be secured to the bulkhead fitting inside the forepeak tank. Passenger vessels shall not have the collision bulkhead pierced below the margin line by more than one pipe conveying liquids in the forepeak tank.

(o) Valves and cocks not forming part of a piping system are not permitted in watertight subdivision bulkheads.

(p) Piping systems which may be subjected to pressures exceeding that for which same are designed shall be provided with a reducing valve, and on the

low pressure side a relief valve and pressure gauge shall also be installed. Piping systems conveying water at temperatures below 212° F. need not have a reducing valve.

(q) Fuel oil service, cargo and fuel oil transfer, boiler feed and fire pumps shall be provided with a pressure gauge. Relief valve shall also be installed in the discharge line provided the piping system or appurtenances are not designed for the pressure which such pumps are capable of developing when operating under shut-off head.

(r) Valves for fuel oil equalizing lines in machinery spaces shall comply with § 55.10-35 (d). Where flooding equalizing cross-connections are required for stability considerations, the arrangement shall be approved by the Commandant.

(s) Where pipes are run through cargo spaces and coal bunkers, they shall be substantially encased to protect them from mechanical injury. In coal bunkers such casings shall be made of steel.

§ 55.07-30 *Tests.* (a) The following hydrostatic tests of piping shall be witnessed by an inspector:

(1) Class I steam, feed water, blow-off, and air piping after fabrication and attachment of flanges to twice the maximum allowable pressure but not greater than the allowable pressure plus 1000 p. s. i., and 1½ times the maximum allowable pressure after installation. Where the pipe is fabricated in place aboard ship, it may be tested to twice the allowable pressure but not greater than the allowable pressure plus 1000 p. s. i. in lieu of the tests required above.

(2) Fuel oil discharge piping between the pumps and burners after installation to twice the maximum allowable pressure, but not less than 500 p. s. i.

(3) High pressure piping for tank cleaning operations after installation to twice the maximum allowable pressure.

(4) Inflammable or corrosive liquids, and compressed gas cargo piping after installation to twice the maximum allowable pressure, but not less than 150 p. s. i.

(5) Cargo oil piping after installation to 1½ times the maximum allowable pressure.

(6) Hydraulic oil piping after installation to twice the maximum allowable pressure, but to not more than the maximum allowable pressure plus 1,000 p. s. i.

(7) Any class I piping not specifically listed after installation to twice the maximum allowable pressure, but not greater than the allowable pressure plus 1,000 p. s. i.

(8) Firemains after installation to 1½ times the maximum allowable pressure, but not less than 150 p. s. i.

(9) Fuel oil transfer and filling piping to 1½ times the maximum allowable pressure.

(b) Refrigeration piping after installation shall be leak tested to the design pressures as indicated in table 55.13-5 of this subchapter.

(c) Piping systems not specifically listed above shall be tested after installation under working conditions.

(d) The setting of the safety or relief valve is considered as establishing the

maximum allowable pressure of the system.

(e) Steel valves and fittings shall be tested by their manufacturer to a hydrostatic pressure in accordance with the requirements of tables 55.07-15 (e 12) and 55.07-15 (e 13). Bronze, cast iron, or malleable iron valves and fittings for steam service or other services for temperatures exceeding 150° F. shall be tested to at least 2½ times the steam rating marked thereon. Valves and fittings made of bronze, cast iron, or malleable iron and used for liquid or gas service for temperatures not exceeding 150° F. shall be tested to at least 1½ times the secondary pressure marked thereon.

(f) Special valves such as manifolds, scuppers, seacocks and appurtenances shall be tested to twice the design pressure stamped thereon.

SUBPART 55.10—PUMPING ARRANGEMENTS AND PIPING SYSTEMS

§ 55.10-1 Steam and exhaust piping.

(a) Steam stop valves in sizes exceeding six inches shall be fitted with by-passes for heating the line and equalizing the pressure before the valve is opened.

(b) In multiple boiler installations, the steam stop valves shall be of the stop check type.

(c) Main and auxiliary steam stop valves shall be arranged to seat against boiler pressure.

(d) Where vessels are equipped with more than one boiler, the auxiliary steam piping shall be so arranged that steam for the whistle, steering gear, and electric-lighting plant may be supplied from any power boiler.

(e) Steam and exhaust pipes shall not be led through bunkers or cargo spaces unless approved by the Commandant.

(f) Steam piping with the exception of the steam heating system shall not be led through passageways, crew and passenger quarters, or public spaces unless the arrangement is approved by the Commandant. Steam pressure for space heating shall not exceed 45 p. s. i.

(g) Where shut-off valves are fitted in exhaust lines of machinery, a relief valve shall be fitted between the turbine or steam engine and the shut-off valves to warn of excess pressure should the exhaust valve be closed when the unit is started.

§ 55.10-5 Safety and relief valve escape piping. (a) Escape piping from the boiler drum and superheater safety valves shall have an area of not less than that of the combined areas of the outlets of all valves discharging thereto and shall be led as near vertical as practicable to atmosphere.

(b) Expansion joints or flexible pipe connections shall be fitted in escape piping. The piping shall be adequately supported and installed so that no stress is transmitted to the safety valve body.

(c) Safety or relief valve discharges, when permitted to terminate in the machinery space, shall be led below the floor plates or to a remote position to minimize the hazardous effect of the escaping steam.

§ 55.10-10 Boiler-feed and condensate piping. (a) Steam vessels shall have at

least two entirely separate means of supplying feed water for power boilers except donkey boilers, and installations where the unit feed system is employed. All feed pumps shall be fitted with the necessary connections for this purpose.

(b) Group feed systems shall be provided with pumps as follows:

(1) Ocean-going and Great Lakes steam vessels having a feed pump attached to the main propelling unit shall be provided with at least one independently driven feed pump. Each of these pumps shall be used exclusively for feed purposes and shall be capable of supplying all the boilers at their normal operating capacity. In addition, a second independently driven pump, capable of supplying all the boilers at 75 percent of their normal operating capacity, shall be provided for emergency use and this pump may be used for other purposes.

(2) If two independently driven pumps are provided, each capable of supplying all the boilers at their normal operating capacity, and neither of which is used for other purposes, the third or emergency feed pump is not required.

(3) River or harbor steam vessels shall have at least two means for feeding the boilers; one of which shall be an independently driven pump, the other may be by an attached pump, an additional independently driven pump, or an injector.

(c) (1) The unit feed system may be used on vessels having two or more boilers. When this system is employed each boiler shall have its own independently driven main feed pump capable of supplying the boiler at its normal operating capacity. In addition there shall be an auxiliary independently driven feed pump of the same capacity which can be operated in place of and in conjunction with the main feed pump. In vessels with two boilers there shall be provided one auxiliary pump for each boiler. In vessels with three or more boilers, not more than two boilers may be served by any one auxiliary pump. The auxiliary pump may be so interconnected that any pump can feed any boiler.

(2) In the unit feed system, a separate feed line shall be provided for each boiler from its pumps. A separate auxiliary feed line is not required in the unit feed system. The discharge from each pump and the feed supply to each boiler shall be automatically controlled by the level of the water in that boiler. In addition to the automatic control, manual control shall be provided.

(d) Feed pumps for water-tube boilers shall have fresh water connections only.

(e) Feed stop valves shall be fitted in each line and shall be attached directly to the boiler drum feed inlet nozzle or to the economizer feed inlet nozzle when the economizer forms part of the boiler. Where the installation will not permit direct attachment to the boiler or economizer a distance piece may be installed between the inlet nozzle and the stop valve.

(f) Each feed line shall be fitted with a check valve installed adjacent to the stop valve or as close thereto as possible. An approved feed water regulator

may be interposed between the check and stop valves.

(g) Boilers fitted with economizers shall have a check valve fitted between the steam drum and the economizer. Where an economizer bypass is fitted, the feed stop and check valves shall be installed as required by paragraphs (e) and (f) of this section. A sentinel relief valve shall be provided on economizers fitted with bypasses.

(h) Feed discharge piping shall be designed for not less than either (1) 120 percent of the maximum allowable pressure of the boiler; or, (2) the feed pump relief valve setting, or shut-off head when a pump relief valve is not fitted; whichever is the greater.

(i) Feed water heaters, grease extractors, and feed water regulators, where installed, shall be fitted with bypasses. Economizers forming an integral part of the boiler are not required to be so fitted. Feed water regulator bypasses shall be fitted with stop and check valves or shall be so arranged that the regular stop and check valves are in operation while the bypass is in use.

§ 55.10-13 Condensate pumps. Two means shall be provided for discharging the condensate from the main condenser, one of which shall be independent of the main propelling machinery. If one of the independent feed pumps is fitted with a direct suction from the condenser and a discharge to the feed tank, same will be acceptable for this purpose. On lakes (including Great Lakes), bays, sounds or rivers vessels, where provision is made to operate noncondensing, only one condensate unit will be required.

§ 55.10-15 Blow-off piping. (a) Where blow-off valves are connected to a common discharge from two or more boilers, a non-return valve shall be provided in the line from each boiler to prevent accidental blow-back in the event the boiler blow-off valve is left open.

(b) Blow-off piping external to the boiler shall be designed for not less than 120 percent of the maximum allowable pressure of the boiler.

(c) Boiler blow-off piping which discharges above the load line of a vessel shall be arranged so that the discharge is deflected downward.

(d) Valves such as the globe type so designed as to form pockets in which sediment may collect shall not be used for blow-off service.

§ 55.10-20 Circulating pumps. (a) A main circulating pump and emergency means for circulating water through the main condenser shall be provided. The emergency means may consist of a connection from an independent power pump fitted between the main circulating pump and the condenser.

(b) Independent sea suction shall be provided for the main circulating and the emergency pumps.

(c) A cross connection between the circulating pumps in the case of multiple units will be acceptable in lieu of an independent power pump connection.

(d) On lakes (including Great Lakes), bays, sounds, or rivers vessels, where provision is made to operate noncondensing, only one circulating unit will be required.

§ 55.10-25 *Bilge and ballast piping.*

(a) All vessels shall be provided with a satisfactory pumping plant capable of pumping from and draining any compartment when the vessel is on an even keel and either upright or listed. For this purpose wing suction will generally be necessary except in narrow compartments at the ends of the vessel. Arrangements shall be made whereby water in the compartments will drain to the suction pipes. Efficient means shall be provided for draining water from all tank tops, other watertight flats and holds. Peak tanks, chain lockers and decks over peak tanks may be drained by eductors, ejectors or hand pumps. Where piping is led through the forepeak bulkhead see § 55.07-25 (n).

(b) Passenger vessels shall have provision made to prevent the compartment served by any bilge suction piping from being flooded in the event the pipe is severed or otherwise damaged by collision or grounding in any other compartment. Where the piping is located within one-fifth of the beam of the side of the vessel¹ or in a ductkeel, a non-return valve shall be fitted to the end of the pipe in the compartment which it serves.

(c) Bilge suction shall be led from manifolds, which shall be controlled above the floor plating in the compartment in which they are located, and shall be easily accessible at all times. Valves in the machinery space controlling bilge suction from various compartments shall be of the stop-check type.

(d) The internal diameter of bilge suction pipes shall be determined by the following formulas, except that the nearest commercial size not more than one-fourth inch under the required diameter may be used.

(1) For suction to each main bilge pump:

$$d = \sqrt{\frac{L(B+D)}{2,500}} + 1 \text{ inch} \quad (1)$$

(2) For branch suction to cargo and machinery spaces:

$$d = \sqrt{\frac{l(B+D)}{1,500}} + 1 \text{ inch} \quad (2)$$

where:

L=length of vessel, in feet on load water line.

B=breadth of vessel, in feet.

D=molded depth to bulkhead deck, in feet.

l=length of compartment, in feet.

d=required internal diameter of suction pipe, in inches.

NOTE: For tankers L may be reduced by the combined length of the cargo oil tanks.

(3) No main suction piping shall be less than 2½ inches internal diameter. No branch piping need be more than 4 inches nor less than 2 inches in diameter, except for drainage of small pockets or spaces in which case 1½ inch diameter may be used.

(4) For vessels of 100 gross tons or less the bilge pipe sizes computed by formulas (1) and (2) of this paragraph

are not mandatory, but in no case shall the size be less than one inch nominal pipe size.

(5) The number, location, and size of bilge suction in the boiler and machinery compartments shall be determined when the piping arrangement is submitted for approval and shall be based upon the size of the compartments and the drainage arrangements.

(e) One of the independent bilge pumps shall have a suction of a diameter not less than that given by formula (2) led directly from the engine room bilge entirely independent of the bilge main, and on passenger vessels such direct suction is to be provided on each side of the compartment in which the pump is located. If watertight bulkheads separate the engine and boiler rooms, a direct suction or suction shall be fitted to each compartment unless the pumps available for bilge service are distributed throughout these compartments, in which case at least one pump in each such compartment shall be fitted with direct suction in its compartment.

(f) Main circulating pumps shall be fitted with direct suction connections provided with nonreturn valves in the machinery space. The diameter of such suction pipes shall be not less than two-thirds of the diameter of the main sea inlet. Where coal is used as fuel and no water-tight bulkhead is provided between the engine and boiler rooms, a direct discharge overboard shall be fitted from at least one circulating pump, or a by-pass may be fitted to the circulating discharge.

(g) For internal-combustion engine installations, the emergency bilge suction shall be connected to the largest available pump in the engine room and shall have an area equal to the full suction inlet of the pump. This requirement is in addition to the independent bilge suction stipulated in paragraph (e) of this section.

(h) Each individual bilge suction shall be fitted with a suitable bilge strainer having an open area of not less than three times that of the suction pipe. In addition a mud box or basket strainer shall be fitted in an accessible position between the bilge suction manifold and the pump.

(i) Pipes for draining cargo or machinery spaces shall be separate from pipes which are used for filling or emptying spaces where water or oil is carried and shall be controlled by separate valves at the pumps so arranged as to preclude the entrance of water or oil into cargo or machinery spaces. The requirements of this paragraph do not apply to bilge and ballast systems on Great Lakes cargo vessels which may employ a common line for the bilge and ballast system for the cargo spaces.

(j) When cargo is to be carried in deep tanks, arrangements shall be made for disconnecting or blanking-off the oil and ballast lines, and the bilge suction shall be blanked off when oil is carried. Blind flanges or a reversible pipe fitting may be employed for this purpose.

§ 55.10-30 *Bilge pumps*—(a) *Self-propelled passenger and cargo vessels (180 feet in length or more).* (1) Ocean,

coastwise, and Great Lakes vessels, 180 feet in length or more, shall have at least three power pumps connected to the bilge main. For passenger vessels operating more than 200 miles offshore, one of the required pumps shall be an emergency pump of a reliable submersible type, the source of power for which shall be located above the bulkhead deck.

(2) When the criterion numeral exceeds 30 an additional independent power pump shall be provided.

NOTE: See § 46.4 of Subchapter E—Load Lines of this chapter for determination of criterion numeral.

(3) One of the required bilge pumps may be attached to the main propelling engine.

(4) Lakes (other than Great Lakes), bays, sounds, or rivers vessels shall have at least two power pumps connected to the bilge main.

(b) *Small self-propelled passenger and cargo vessels below 180 feet in length.*

(1) All vessels below 180 feet in length shall have at least two power pumps connected to the bilge main.

(2) One of the required bilge pumps may be attached to the main propelling engine, except as provided for in subparagraph (b) (4) of this paragraph.

(3) On lakes (including Great Lakes), bays, sounds, or rivers vessels where steam is always available, or where suitable water supply is available from a power pump of adequate pressure and capacity, syphons or eductors may be substituted for one of the required power pumps provided a syphon or eductor is permanently installed in each cargo hold or compartment.

(4) A vessel of 100 gross tons or less shall have at least one power pump or two suitable hand pumps. The pumps shall meet the requirements of paragraph (f) of this section, but in no case shall the capacity be less than 50 gallons per minute.

(c) *Self-propelled tank vessels.* (1) Two power driven bilge pumps shall be connected to the bilge main in the machinery space of each tank ship.

(2) One of the required bilge pumps may be attached to the main propelling engine.

(3) The bilges forward of the cargo tanks may be drained by a power or hand pump, syphons, or eductors. If syphons or eductors are employed, the same shall be permanently installed in each compartment.

(d) *Ocean-going sailing vessels and barges.* Efficient hand pumps which can be operated from above the bulkhead deck or the highest convenient level which is always accessible shall be installed on ocean-going sailing vessels and barges. There shall be one pump for each compartment or two pumps connected to a bilge main having at least one branch to each compartment. Where power is always available two power pumps connected to the bilge main may be substituted for the hand pumps.

(e) *River or harbor service, unmanned barges.* Suitable hand or power-operated pumps or syphons, portable or fixed, carried either on board the barge or on the towing vessel shall be provided on

¹ Measured at right angles to the center line at the level of the deepest subdivision load line or deep load line, where subdivision load line is not assigned.

unmanned barges for river or harbor service.

(f) *Independent power bilge pumps.* Each independent power bilge pump shall be capable of drawing the water through their suction pipes at a velocity of not less than 400 feet per minute under ordinary working conditions.

(g) *Priming.* Suitable means shall be provided for priming centrifugal pumps.

(h) *Location.* The power bilge pumps shall be located in separate watertight compartments where practicable.

(i) *Other pumps.* Sanitary, ballast, and general service pumps may be accepted as independent power bilge pumps if fitted with the necessary connections to the bilge pumping system; *Provided,* That they are of the required capacity.

§ 55.10-35 *Fuel oil and cargo oil systems.* (a) Oil-piping systems for the transfer or discharge of cargo or fuel oil shall be separate from other piping systems as far as practicable, and positive means shall be provided to prevent dangerous interconnection in service.

(b) When it is necessary to heat the oil to facilitate its transfer, heating coils shall be properly installed in the tanks. The drains from the heating coils as well as the steam drains from oil heaters in the service system shall be run to an open inspection tank or other suitable oil detector before being returned to the feed tank.

(c) Filling pipes may be led directly from the deck into the tanks or to a manifold in an accessible location permanently marked to indicate tanks to which they are connected and from which the oil can be distributed to the various tanks through the piping system. The end of filling pipes shall be fitted with a shut-off valve which shall be kept closed when not in use. Alternate arrangements where gravity systems for filling are employed will be given special consideration by the Commandant.

(d) Piping subject to head pressure from oil in the tank shall be fitted with shut-off valves at the tank which shall be remotely controlled from a readily accessible and safe location outside of the compartment in which the valves are located. Valves installed on the outside of oil tanks shall be made of steel. If valves are installed on the inside, they may be made of cast iron, but additional local control shall be provided in the machinery space at the fuel oil settling tanks. Remote operation for shut-off valves on small independent fuel-oil tanks will be specially considered in each case where the size of tanks and their location may warrant the omission of remote operating rods.

(e) Fuel oil tanks overhanging boilers are prohibited.

(f) Outlets for drawing fuel or draining water from the fuel oil system are not permitted in machinery spaces. Test cocks or gauge glasses shall not be fitted to fuel oil settling tanks or deep tanks.

(g) All piping passing through oil tanks, including heating coils, shall be of wrought iron or steel.

§ 55.10-40 *Fuel oil service systems.* (a) All discharge piping from the fuel-oil service pumps to the burners shall be of Schedule 80 seamless steel conforming

to the requirements of subparts 51.34 or 51.37.

(b) All vessels having oil fired power boilers shall have at least two fuel oil service pumps each of sufficient capacity to supply all the boilers at full power, and arranged so that one may be overhauled while the other is in service. At least two fuel oil heaters of approximately equal capacity shall be installed and so arranged that any heater may be overhauled while the other(s) are in service. Suction and discharge strainers shall be of the duplex or other type capable of being cleaned without interrupting the oil supply.

(c) Piping between service pumps and burners shall be located so as to be readily observable. The relief valve located at the pump and the relief valves fitted to the fuel oil heaters may discharge back into the settling tank or the suction side of the pump. The return line from the burners shall be so arranged that the suction piping cannot be subjected to discharge pressure.

(d) If screwed-bonnet valves are employed, same shall be of the union-bonnet type capable of being packed under pressure.

(e) Unions shall not be used for pipe diameters of one inch and above.

(f) Bushings and street ells are not permitted in fuel oil discharge piping.

(g) Service oil pumps shall be equipped with means of control from a readily accessible position outside of the boiler room which will always be accessible in the event of fire occurring in the compartment in which the pumps are located.

§ 55.10-45 *Independent fuel piping (internal combustion engines); emergency units for passenger vessels—*(a) *Piping connection.* (1) The fuel piping for all tanks shall comply with the applicable requirements of this part.

(2) The piping shall be run in sight wherever practicable, and shall be protected from mechanical injury and effectively secured against vibration.

(3) The filling pipe shall enter the top of the tank. If the filling pipe is run nearly to the bottom of the tank, it may serve as a combined filling and sounding pipe.

(4) The supply pipe to the engine shall enter the top of the tank and extend nearly to the bottom of the tank. The return pipe from the engine shall enter the top of the tank.

(5) Shut-off valves or cocks of a suitable type shall be installed in supply lines and located in accessible positions at the tank. Similar shut-off valves shall be located in the supply lines close to the carburetor or fuel pumps.

(6) Outlets for drawing fuel are not permitted in engine compartments. Open drains for removing water from the fuel tanks are not permitted.

(b) *Filling and sounding connections.* Filling and sounding pipes for fuel tanks shall terminate on deck and be fitted with suitable shut-off valves or deck plugs.

(c) *Vents.* Each tank shall be fitted with a vent the cross-sectional area of which shall be not less than the area of the filling pipe. The vents shall termi-

nate in the atmosphere at least 2 feet above the deck and not less than 3 feet from any opening into living quarters. All vent pipes shall terminate with U-bends and shall be fitted with flame screens or flame arresters.

§ 55.10-50 *Independent fuel piping (internal combustion engines); cargo vessels—*(a) *Gasoline fuel piping.* (1) The fuel piping for gasoline engines shall be run in sight wherever practicable, be protected from mechanical injury, and effectively secured against vibration.

(2) Shut-off valves or cocks of a suitable type shall be installed in supply lines located in accessible positions at tanks. Similar shut-off valves shall be located in the supply lines close to the carburetors or fuel pumps.

(3) Outlets for drawing gasoline and drains for removing water from fuel tanks are not permitted in engine compartments.

(4) Filling and sounding pipes shall enter the top and shall extend nearly to the bottom of the tank. Such pipes shall terminate on the weather deck.

(5) The supply pipe to the engine shall enter the top and extend nearly to the bottom of the tank. The fuel return line from the engine shall also enter the top of the tank.

(6) Vent pipes shall terminate at least two feet above the deck and not less than three feet from any opening into the living quarters.

(7) The cross-sectional area of the vent pipes shall not be less than the cross-sectional area of the filling pipe. Vent pipes shall terminate with U-bends fitted with corrosion-resistant 30 x 30 flame screens or flame arresters.

(b) *Heavy oil piping.* (1) Independent heavy oil piping arrangements shall comply with § 55.10-35.

(2) Vent, sounding, and overflow piping shall comply with §§ 55.10-60, 55.10-65, and 55.10-70, except that the aggregate area of vents and overflow piping need not exceed that of the filling connection at the tank.

§ 55.10-55 *Lubricating oil system.* (a) The lubricating oil system shall be designed to function satisfactorily when the vessel is permanently inclined to an angle of 15 degrees athwartship and 5 degrees fore or aft.

(b) When pressure or gravity forced lubrication is employed for the main propelling machinery an independent auxiliary lubricating oil pump shall be provided.

(c) The lubricating oil piping shall be independent of the other piping systems and the system shall be provided with the necessary coolers, heaters, strainers, etc., for proper operation.

(d) Oil coolers shall be provided with two separate means of circulating water through the coolers and oil heaters shall be fitted with by-passes.

(e) Diesel engine lubrication systems shall be so arranged that vapors from the sump tank may not be discharged back into the engine crank case of engines of the dry sump type.

(f) Steam driven propulsion and auxiliary generating machinery depending on forced lubrication shall be arranged

to shut down automatically upon failure of the lubricating system.

§ 55.10-60 *Vent piping.* (a) The structural arrangement in double bottom and other tanks shall be such as to permit the free passage of air and gases from all parts of the tanks to vent pipes.

(b) Tanks having a comparatively small surface, such as fuel oil settling tanks, need be fitted with only one vent pipe, but tanks having a comparatively large surface shall be fitted with at least two vent pipes. The vents shall be located so as to provide venting of the tanks under any service condition.

(c) Vent pipes for fuel oil tanks if not run vertically shall, wherever possible, be inclined not less than 30 degrees from the horizontal except on common headers where both ends are adequately drained to a tank.

(d) Vents of fresh water tanks shall extend above the weather deck unless same terminate within the machinery space, in which case they shall terminate well above the deep load line. Vents from ballast and fuel oil tanks shall extend above the weather deck and the vents from oil tanks shall terminate not less than 3 feet from any opening into living quarters.

(e) Vents from fuel oil and other tanks extending above the freeboard or superstructure deck, shall be of substantial construction. The height from the deck to the opening shall be at least 36 inches in wells on freeboard decks, 30 inches on raised quarterdecks and 18 inches on other superstructure decks, except on Great Lakes vessels where the height from the deck to the opening shall be, when practical, at least 30 inches in wells on freeboard decks, 24 inches on raised quarter-decks, and 12 inches on other superstructure decks. Where height of vent pipes on Great Lakes vessels may interfere with the working of the vessel a lower height may be approved provided the vent cap is properly protected. Satisfactory means shall be provided for closing the openings of the vents.

(f) Vent outlets from oil tanks shall be fitted with a single screen of corrosion-resistant wire, of at least 30 by 30 mesh, or two screens of at least 20 by 20 mesh, spaced not less than 1/2 inch nor more than 1 1/2 inches apart. The clear area through the mesh shall not be less than the required area of the pipe. Satisfactory means shall be provided for closing the openings of air pipes without damaging flame screens.

(g) The diameter of each vent pipe shall not be less than 1 1/2 inches for fresh water tanks, 2 inches for water ballast tanks and 2 1/2 inches for fuel oil tanks.

(h) Where tanks may be filled by a pressure head exceeding that for which the tank is designed, the aggregate area of the vents in each tank shall be at least equal to the area of the filling line unless the tanks are protected by overflows, in which case the area of the overflow shall not be less than that of the filling line.

(i) Where deep tanks are intended for the occasional carriage of dry or liquid cargo, a "spectacle" or ring and blank

flange may be fitted in the overflow pipe so arranged as not to interfere with venting when the tanks contain oil.

§ 55.10-65 *Sounding pipes.* (a) Oil tanks and fresh water tanks shall be provided with manual means of sounding. In addition, tank level indicating apparatus may be fitted as an auxiliary means of liquid level indicator. All other tanks and hold compartments which are not at all times accessible shall be fitted with sounding pipes of not less than 1 1/2 inches nominal pipe size which shall be led as straight as possible from within 2 inches of the lowest part of the tank or compartment to a position which is always accessible.

(b) Where sounding pipes terminate below the freeboard deck on cargo vessels, same shall be fitted with gate valves, and on passenger vessels, where the valves terminate below the bulkhead deck, same shall be fitted with self-closing gate valves.

(c) The upper ends of sounding pipes terminating at a deck shall be protected by a screw cap or plug. No perforations or openings will be permitted throughout the length of a sounding pipe where fitted to oil tanks. Provision shall be made to prevent damage to the vessel's plating by the striking of the sounding rod.

§ 55.10-70 *Overboard discharges and shell connections.* (a) (1) All inlets and discharges led through the vessel's sides shall be fitted with efficient and accessible means for preventing the accidental admission of water into the vessel in the event of fracture of such pipes.

(2) The number of scuppers, sanitary discharges, tank overflows, and other similar openings in vessel's sides shall be reduced to a minimum, either by making each discharge serve for as many as possible of the sanitary and other pipes, or in any other satisfactory manner.

(b) (1) Each separate overboard discharge led through the vessel's side from spaces below the freeboard deck, shall be provided with one automatic nonreturn valve fitted with a positive means of closing from above freeboard deck, or, alternatively, with two automatic nonreturn valves without positive means of closing, provided the upper valve is so located above the deepest load line as to be always accessible for examination under service conditions, and is of a type which is normally closed.

(2) Where a nonreturn valve with positive means of closing is fitted, the operating position above the freeboard deck shall always be readily accessible, and means shall be provided for indicating whether the valve is open or closed. Suitable arrangement shall be made to insure the valve not being closed by unauthorized persons and a notice shall be posted in a conspicuous place at the operating station to the effect that the valve shall not be closed except as may be required in an emergency.

(c) All overflow pipes which discharge through the vessel's side shall be located as far above the deepest load line as practicable, and shall be provided with nonreturn valves located at the vessel's side. Where the overflows do not extend above the freeboard deck before

discharging overboard, additional nonreturn valves shall be provided as required by paragraph (b) of this section, except that the two nonreturn valves shall always be used unless it is impractical to locate the upper valve in an accessible position, in which case the one nonreturn valve with positive means of closing will be acceptable.

(d) (1) Scuppers in the weather portions of decks shall be led overboard and scuppers in fully enclosed superstructures on the freeboard deck and lower decks shall be led to the bilges, unless they are led overboard and fitted with valves as required by paragraph (b) of this section. Where scuppers in partially enclosed superstructures lead overboard, they shall be fitted with nonreturn valves at the vessel's side; or, alternatively, they may be led to the bilges: *Provided*, That the scuppers are fitted with efficient and accessible means for closing in an emergency.

(2) Conditional upon the type and location of the inboard ends of sanitary and other similar discharges, the provisions of paragraph (b) of this section may be required as to discharges from spaces within enclosed superstructures.

(e) The inboard openings of ash and rubbish-chute discharges shall be fitted with efficient covers. If the inboard opening is located below the freeboard deck, the cover shall be watertight, and in addition, an automatic nonreturn valve shall be fitted in the chute in an easily accessible position above the deepest load line. Means shall be provided for securing both the cover and the valve when the chute is not in use. When ash ejectors or similar expelling devices located in the boiler room have the inboard openings below the deepest load line, they shall be fitted with efficient means for preventing the accidental admission of water. The thickness of pipe for ash-ejector discharge shall be not less than that of schedule 80 pipe.

(f) Pump connections led through the vessel's sides below the freeboard deck shall be fitted with shut-off valves located as near the shell plating as practicable. The thickness of pipe for pump connections shall be not less than that of schedule 80 pipe.

(g) On tank vessels and tank barges special consideration will be given to arrangements where scuppers and other deck or sanitary drains discharge through the shell plating in way of cargo tanks. Drains from sanitary fixtures in living quarters and other similar discharges which pass through cargo tanks shall be provided with water seals, valves, or other suitable means for preventing the entrance of gases into such quarters.

(h) (1) Pipes terminating at the shell plating shall be fitted with bends or elbows between the outboard openings and the first rigid connection inboard. In no case shall such pipes be fitted in a direct line between the shell opening and the first inboard connection.

(2) Sea chests and overboard discharge fittings shall be of substantial construction and as short as possible.

(3) Sea chests shall be so located as to minimize the possibility of blanking off the suction.

(i) On new installations or replacements in vessels of 150 gross tons and over, cast iron is not permitted for any connection to the shell plating below the freeboard deck nor shall cast iron valves be secured to sea chests.

(j) For vessels receiving subdivision load lines, the bulkhead deck shall apply to the requirements prescribed in this section when it is higher than the freeboard deck. For vessels not assigned load lines, such as certain inland vessels and barges, the weather deck shall be taken as the freeboard deck.

SUBPART 55.13—REFRIGERATING MACHINERY AND PIPING

§ 55.13-1 *Installation of refrigerating machinery.* (a) Where refrigerating machines are installed in which anhydrous ammonia is used as a refrigerant, such machines shall be located in a well-ventilated, isolated compartment, preferably on the deck, but in no case shall it be permissible to install such machines in the engine-room space unless it is vented and isolated so as to eliminate any hazard from gas escaping to the engine room. Absorption machines using a solution of aqua ammonia and machines using carbon anhydride (CO₂ gas) are exempt from this requirement, provided the maximum charges that might be released in the event of breakage do not exceed 300 pounds.

(b) Machinery compartments containing equipment for ammonia shall be fitted with a sprinkler system providing an effective water spray and having a remote control device located outside the compartment.

(c) All refrigeration compressor spaces shall be effectively ventilated and drained and shall be separated from the insulated spaces by watertight plating, unless otherwise approved.

§ 55.13-5 *Design pressure.* The pressure vessels, compressors, piping, and controls shall be designed for the minimum pressures given in table 55.13-5.

TABLE 55.13-5—REFRIGERANT DESIGN PRESSURES

Refrigerant		Design pressure	
		High side (p. s. i.)	Low side (p. s. i.)
Ammonia.....	NH ₃	300	150
Carbon dioxide.....	CO ₂	1,500	1,000
Freon-11.....	CCl ₃ F.....	40	40
Freon-12.....	CCl ₂ F ₂	235	150
Freon-21.....	CHClF ₂	75	40
Freon-22.....	CHClF.....	1,300	1,150
Freon-113.....	C ₂ Cl ₃ F ₃	30	30
Freon-114.....	C ₂ Cl ₂ F ₄	85	45

¹ Permitted for watercooled installations only.

§ 55.13-10 *Pressure vessels and piping.*

(a) Each pressure vessel containing refrigerants, which may be isolated, shall be protected by a relief valve set to relieve at a pressure not exceeding the design pressure. When a pressure vessel forms an integral part of a system having a relief valve, such vessel need not have an individual relief valve.

(b) Relief valves fitted on the high pressure side may discharge to the low pressure side before relieving to atmosphere. When relieving to atmosphere a

relief valve shall be fitted in the atmospheric discharge connection from the receivers and condensers set to relieve at a pressure not greater than the design pressure. A rupture disk may be fitted in series with the relief valve, provided the bursting pressure of the rupture disk is not in excess of the relief valve set pressure. Where a rupture disk is fitted on the downstream side of the relief valve, the relief valve shall be of the type not affected by back pressure.

(c) A relief valve shall be fitted on or near the compressor on the gas discharge side between the compressor and the first stop valve with the discharge therefrom led to the suction side.

(d) A check valve shall be fitted in the atmospheric discharge line if it is led through the side of the vessel below the freeboard deck, or a shut-off valve may be employed if it is locked in the open position.

(e) All piping materials shall be suitable for handling the primary refrigerant, brine, or fluid used, and shall be of such chemical and physical properties as to remain ductile at the lowest operating temperature.

§ 55.13-15 *Tests.* (a) All pressure vessels, compressors, piping and direct expansion cooling coils shall be leak tested with gas after installation to their design pressures as required by § 55.13-5.

(b) No gas tests shall be made aboard ship higher than the design pressure of the part of the system being tested. The refrigerant in the system may be used for this test. If the refrigerant has been removed, oil pumped dry nitrogen or bone dry carbon dioxide with a detectable amount of the refrigerant added, should be used as a testing medium. (Carbon dioxide should not be used to leak test an ammonia system.) In no case should air, oxygen, any flammable gas or any flammable mixture of gases be used for testing.

§ 55.13-20 *Small portable self-contained units.* The requirements of this subpart shall not apply to small, portable, self-contained units.

SUBPART 55.16—INDEPENDENT INTERNAL COMBUSTION ENGINE FUEL TANKS

§ 55.16-1 *Independent fuel tanks (internal combustion engines); emergency units for passenger vessels—(a) Scope.* Passenger vessels constructed prior to July 1, 1935, may carry gasoline as fuel not exceeding 40 gallons to supply the emergency electric system. Passenger vessels constructed subsequent to June 30, 1935, may carry such quantities of diesel fuel as required to supply the emergency electrical system. The independent tanks containing emergency fuels shall be constructed and installed in accordance with §§ 55.16-5 and 55.16-10.

NOTE: Emergency systems converted subsequent to June 30, 1935, shall use diesel fuel for internal combustion units.

(b) *Outage.* When filling the tanks with gasoline or other petroleum products, an outage of 2 percent shall be provided.

§ 55.16-5 *Independent gasoline tanks; passenger vessels—(a) Construction.*

The tanks shall be of cylindrical form and may be constructed of any of the following materials: Wrought iron, mild steel, or corrosion-resistant alloys suitable for the purpose, and shall have a minimum thickness of $\frac{1}{8}$ inch. Tanks constructed of ferrous metals less than $\frac{3}{16}$ inch in thickness shall be galvanized by the hot-dipped process both inside and outside. Joints shall be riveted, brazed, or welded, except that soldered joints may be used on small tanks of 20 gallons or less capacity, provided the solder used has a melting point of not less than 450° F. All spuds for pipe connections shall be securely riveted, welded, brazed or soldered to the tank. No tubular gauge glasses or try-cocks shall be fitted to tanks.

(b) *Installation.* The tanks shall be located on the uppermost deck outside the engine compartment as close to the engine as practicable and so arranged as to permit a free circulation of air all around them. When installed, longitudinal seams shall be located as near the top of tank as practicable. The tanks shall be properly secured and accessible for complete external examination.

(c) *Tests.* Tanks shall be tested to a hydrostatic pressure of 15 pounds per square inch gauge after installation.

§ 55.16-10 *Independent heavy oil tanks; passenger vessels—(a) Construction.* The tanks may be of either cylindrical or rectangular form and may be constructed of any of the following materials: Wrought iron, mild steel, or of any corrosion-resistant alloys suitable for the purpose. Tanks designed for capacities of 40 gallons or less shall have a minimum thickness of $\frac{1}{16}$ inch. Tanks designed for capacities of over 40 gallons shall have a minimum thickness of $\frac{1}{8}$ inch. Joints shall be riveted, brazed, or welded, except that soldered joints may be used on small tanks of 20 gallons or less capacity provided that the solder used has a melting point of not less than 450° F. Tanks shall be provided with swash plates and braces where necessary. The material used shall be the same as the tank. All spuds for pipe connections shall be securely riveted, welded, brazed, or soldered to the tank. No tubular gauge glasses or try-cocks shall be fitted to the tanks.

(b) *Installation.* The tanks shall be located on an open deck or in an adequately ventilated metal compartment on the deck above the weather deck. No tank shall be located in any compartment where the temperature exceeds 150° F. When cylindrical tanks are installed, longitudinal seams shall be located as near the top of the tank as practicable. The tanks shall be properly secured and accessible for complete internal and external examination.

(c) *Tests.* Tanks shall be tested to a hydrostatic pressure of 10 pounds per square inch gauge after installation.

§ 55.16-15 *Independent gasoline tanks; cargo vessels.* (a) The plans and specifications showing the proposed construction of all gasoline fuel tanks shall be submitted for approval.

(b) All gasoline fuel tanks vented to the atmosphere shall be constructed of

metal not less than $\frac{1}{16}$ inch in thickness, provided, however, tanks constructed of ferrous metal less than three-sixteenths inch in thickness shall be galvanized by the hot-dipped process, both inside and outside.

(c) Seams shall be riveted, brazed, or welded, except that rolled and soldered joints may be used on small tanks of 20 gallon or less capacity, provided the solder used has a melting point of not less than 450° F.

(d) Tanks shall be provided with swash plates and braces, where necessary. The material used shall be the same as the tank.

(e) Cylindrical tanks with longitudinal seams shall be arranged horizontally where practicable, so that such seams are located as near the top as possible.

(f) All spuds for pipe connections shall be securely riveted, welded, brazed, or soldered to the tank. No gauge glasses or try-cocks shall be fitted to tanks.

(g) All tanks shall be securely fastened and shall be arranged as to be readily inspected or movable for inspection.

(h) Tanks vented to atmosphere shall be tested to a pressure of at least 5 pounds per square inch gauge after installation.

(i) All gasoline fuel tanks not vented to the atmosphere, shall be constructed and tested in accordance with Part 54 of this chapter.

§ 55.16-20 *Independent heavy oil tanks; cargo vessels.* (a) The construction of independent tanks for heavy fuel oil service on cargo vessels shall comply with § 55.16-15.

(b) Independent heavy fuel oil tanks shall be installed as required by § 55.16-10 (b).

PART 57—INSTALLATIONS, TESTS, INSPECTIONS, REPAIRS AND MISCELLANEOUS REQUIREMENTS

SUBPART 57.05—INSTALLATIONS

1. Section 57.05-20 *Installation of refrigerating machinery* is deleted.

SUBPART 57.10—TESTS AND INSPECTIONS

2. Section 57.10-15 (i) is amended to read as follows:

§ 57.10-15 *Tests and inspections of boilers and main steam pipes in service.* * * *

(i) The inspector may require any boiler to be drilled to determine the actual thickness at any time if doubt exists as to its safety. However, after a scotch, western river, or other fire tube or flue boiler has been installed for 10 years, the inspector, at the first annual inspection thereafter, and at such subsequent periods as may be deemed necessary, shall cause the boiler to be drilled at or near the water line and bottom, and at such other places as he may deem necessary, for the purpose of gauging the shell to determine if it has deteriorated. If the thickness found by actual measurement is less than the original thickness, the maximum allowable pressure shall be recalculated and shall not exceed the minimum pressure permitted by the applicable boiler design formulas. For the purpose of such recalculation the formulas found in Parts 50 to 57, of this

subchapter shall be used for boilers made or contracted for on or after July 1, 1935. The design formulas specified in Part 58 of this subchapter may be used for boilers made or contracted for prior to July 1, 1935, or alternatively the design formulas set forth in Parts 50 to 57 of this subchapter may be used for such boilers.

(R. S. 4417a, 4418, 4426, 4429-4434, 49 Stat. 1544, 54 Stat. 346, 1028, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 1, 367, 391a, 392, 404, 407-412, 463a, 1333, 50 U. S. C. 1275)

SUBPART 57.15—REPAIRS

3. Section 57.15-5 (i) is amended to read as follows:

§ 57.15-5 *Welding repairs to defective carbon-steel castings.* * * *

(i) After repair of defective castings has been completed a hydrostatic test as outlined in table 55.07-15 (e12) or 55.07-15 (e13) based upon the primary service pressure rating shall be applied.

(R. S. 4417a, 4418, 4426, 4429-4434, 49 Stat. 1544, 54 Stat. 346, 1028, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 1, 367, 391a, 392, 404, 407-412, 463a, 1333, 50 U. S. C. 1275)

Subchapter G—Ocean and Coastwise; General Rules and Regulations

PART 59—BOATS, RAFTS, BULKHEADS, AND LIFESAVING APPLIANCES (OCEAN)

1. Section 59.3 is amended to read as follows:

§ 59.3 *Strength and operation of davits.* (a) The davits shall be of such strength that the boats can be lowered with their full complement of persons and equipment, the vessel being assumed to have a list of 15°. For construction of davits see subpart 160.032 in Subchapter Q of this chapter.

(b) The davits shall be fitted with a gear of sufficient power to insure that the boat can be turned out against the maximum list under which the lowering of the boats is possible on the vessel in question.

(c) The Commandant is authorized by the Seamen's Act (sec. 14, 38 Stat. 1178, 1181; 46 U. S. C. 481) and Executive Order No. 9083 (7 F. R. 1609) in specific cases to exempt existing vessels from the requirements of this section that the davits shall be of such strength and shall be fitted with a gear of sufficient power to insure that the boats can be lowered with their full complement of persons and equipment, the vessel being assumed to have a list of 15°, where their strict application would not be practicable or reasonable.

(d) Each set of davits shall have a boat of the first class attached to it, provided that the number of open boats of the first class attached to davits shall not be less than the minimum number fixed by the preceding table.

(e) If it is neither practicable nor reasonable to place on a vessel the minimum number of sets of davits required, a smaller number of sets of davits may be fitted, provided always that this number shall never be less than the minimum number of open boats of the first class required by the table. If a large pro-

portion of the persons on board is accommodated in boats whose length is greater than 50 feet, a further reduction in the number of sets of davits may be allowed exceptionally, if the arrangements are in all respects satisfactory: *Provided, however,* That in all cases in which a reduction in the minimum number of sets of davits or other equivalent appliances required by the rules is allowed, the owner of the vessel in question shall be required to prove, by a test made in the presence of an inspector, that all the boats can be efficiently launched in a minimum time. The conditions of this test shall be as follows:

(1) The vessel is to be upright and in smooth water.

(2) The time is the time required from the beginning of the removal of the boat covers, or any other operation necessary to prepare the boats for lowering, until the last boat or pontoon raft is afloat.

(3) The number of men employed in the whole operation shall not exceed the total number of boat hands that will be carried on the vessel under normal service conditions.

(4) Each boat when being lowered shall have on board at least two men and its full equipment as required by this part.

(5) The time allowed for this test shall not exceed 10 minutes.

(f) Vessels of class (c) shall be equipped with davits or other practicable means for properly launching the lifeboats. Mechanical davits, when installed on vessels of class (c), shall be subject to all the tests required by this section.

(g) No type or make of mechanical or gravity davit shall be used unless it has first been approved by the Commandant.

(h) No mechanical davits of a character which require manual or other power to turn the boats out to the position for lowering into the water shall be fitted on any vessel the keel of which is laid after September 1, 1941, if such davits are to handle a lifeboat which, without its complement of persons on board, but having on board all air tanks and other lifeboat equipment, exceeds 5,000 pounds total weight: i. e., 2,500 pounds for a single davit arm.

(i) Davits of an approved type, which are capable of swinging the boats into the lowering position without the application of any effort or external force other than that necessary to operate the releasing mechanism, allowing the boat to move from the stowed position to the lowering position by the force of gravity, shall be provided to handle all lifeboats the total weight of which, including air tanks and lifeboat equipment, but without the complement of persons on board, exceeds 5,000 pounds.

(j) No davit arm or frame comprising mechanical or gravity davits shall be placed on board any vessel until all the requirements of this section and subpart 160.032 of Subchapter Q of this chapter have been fully complied with. Whenever mechanical or gravity davits or parts of davits, such as davit arms, or frames, are installed on vessels, to take the place of davits, davit arms, or frames which have become damaged or broken, such davits or frames shall have the

manufacturer's name plate affixed thereto.

(R. S. 4488, 4491, 49 Stat. 1544, 54 Stat. 346, sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 481, 489, 1333, 50 U. S. C. 1275)

2. Section 59.3a is amended to read as follows:

§ 59.3a *Mechanical means for lowering.* (a) On all passenger vessels where the height of a boat deck exceeds 20 feet from the lightest seagoing draft, wire falls and mechanical means for lowering shall be provided for each set of davits.

(b) Winches proposed for use in new installations shall be of an approved type and constructed in accordance with subpart 160.015 of Subchapter Q of this chapter.

(c) Suitable fabric covers shall be provided, so fitted over exposed mechanisms, that ice formations may be readily broken adrift when necessary to operate the winch.

(d) Installation and tests: Mechanical means for lowering shall be so located that the operator can observe the movement of the lifeboat during the lowering operation. The lead of the falls to the winch shall be such that the distance from the centerline of the winch drum to the center of the nearest block is not less than 8 feet. Upon the completion of the installation of all mechanical means for lowering lifeboats, and before the vessel is certificated for service, the following tests and examinations shall be made in the presence of an inspector:

(1) Swing lifeboat out from chocks and lower to level for loading, at which point lifeboat shall be loaded with dead weight equivalent to the number of persons allowed (165 pounds per person) together with weight of equipment, plus 10 percent of the total load. The boat should then be lowered to water, stopping at approximately 6-foot intervals by action of the counterweight alone. During this test the following observations should also be made:

(i) Brake action shall be smooth, but positive. Brakes exposed to the weather shall also be tested under the load lowering condition with the braking surface wetted.

(ii) Counterweight shall be capable of stopping and holding boat when released.

(iii) Winch shall be capable of controlling the speed of lowering. This should not in general exceed 100 feet per minute.

(iv) No part of lowering gear shall show any distress under load.

(v) Deck under winch and davits must be of sufficient strength to prevent any undue stress of the deck under load.

(vi) Mechanical davits shall swing to extreme outboard position without slackening winch brake.

(vii) Action of governor brake and lowering speed permitted by same should be noted.

(viii) Determine that falls are of sufficient length to lower lifeboats to light load line with vessel listed to 15° either way.

(2) If nested boats are used, the hand operated quick recovery mechanism shall be tested and the action must be easy enough to permit one man to recover falls.

(3) A report of the results of the installation tests covering all the above points shall be recorded.

(R. S. 4488, 4491, 49 Stat. 1544, 54 Stat. 346, sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 1, 367, 481, 489, 1333, 50 U. S. C. 1275)

3. Section 59.4 is amended to read as follows:

§ 59.4 *Lifeboats required: Vessels of classes (a) and (b).* (a) Vessels of classes (a) and (b) shall be equipped with lifeboats in accordance with the preceding table: *Provided*, That such vessels shall not be required to carry more lifeboat capacity than is necessary to accommodate all persons on board. If the lifeboats attached to davits do not provide accommodations for the vessel's actual complement of passengers and crew, additional lifeboats shall be installed to accommodate all persons on board, or to bring the complement of lifeboat capacity up to the minimum provided by the table, or to 75 percent of the complement of people on board, whichever is the greater. The remainder of the required equipment shall be provided by lifeboats or approved life rafts.

(b) One of the lifeboats on each side of the vessel shall be of suitable size and design for doing emergency work at sea. Each of these emergency boats shall be provided with at least four life lines fitted to a span between the davit heads of sufficient length to reach the water at the vessel's lightest seagoing draft. A releasing gear of the type which may be unhooked under tension is recommended in these boats. A sea painter should be passed along forward on the vessel when at sea and in the lifeboat a long eye, strop, and toggle should be fitted.

(R. S. 4428, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended, 46 U. S. C. 367, 481, 1333, 50 U. S. C. 1275)

4. Section 59.4a (a) is amended to read as follows:

§ 59.4a *Buoyant apparatus required.*

(a) They shall not impede in any way prompt handling of lifeboats, or the mustering of persons on board at launching stations.

5. Section 59.5 (e) is amended to read as follows:

§ 59.5 *Motor-propelled lifeboats.* * * *

(e) Motor-propelled lifeboats shall comply with the requirements for an oar-propelled lifeboat; and the volume of the internal buoyancy shall be increased in sufficient proportion to compensate for the difference between the weight of the motor, the searchlight, and the radiotelegraph installation and their accessories, and the weight of the additional persons which the boat could accommodate if the motor, searchlight, and the radiotelegraph installation and their accessories were removed.

(R. S. 4488, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 481, 1333, 50 U. S. C. 1275)

6. Section 59.11 is amended by changing paragraphs (u) and (y) to read as follows:

§ 59.11 *Lifeboat equipment.* * * *
(u) *Propellers (hand-operated).* Lifeboats may be fitted with a hand-operated propeller of an approved type, but all lifeboats, except motorboats, having a capacity of 60 or more persons, shall be fitted with a hand-operated propeller of an approved type, constructed in accordance with subpart 160.034 of subchapter Q of this chapter. The above propelling gear shall be required in all such lifeboats fitted on new vessels and to the lifeboat replacements on existing vessels.

(y) *Rudder.* One rudder and tiller. For construction of rudder and tiller see § 160.035-3 (t) of subchapter Q of this chapter.

(R. S. 4488, 4491; 49 Stat. 1544, 54 Stat. 346, sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 481, 489, 1333, 50 U. S. C. 1275)

7. Section 59.11a is amended to read as follows:

§ 59.11a *Motor lifeboat equipment.*
(a) *Equipment required.* In addition to the equipment required by § 59.10a and the provisions of § 59.11, motor lifeboats shall carry 2 fire extinguishers of the carbon tetrachloride type, but need not carry a mast or sails nor more than four rowing oars and one steering oar. All motor lifeboats carried in compliance with § 59.5 shall be fitted with a radio installation and a searchlight.

(b) *Motor and accessories.* (1) The engine for motor-propelled lifeboats shall be of a reliable, marine, heavy-duty type, permanently installed inside the lifeboat. The motor of each lifeboat shall be operated ahead and astern for a period of not less than 5 minutes at least once in every seven days to test its readiness for service, such operation to be part of a lifeboat drill and included in a report of such drill.

(2) The fuel tank shall be emptied and the fuel changed at least once a year. The storage of fuel outside the lifeboat is prohibited.

(3) Motor-propelled lifeboats certified for 100 or more persons shall be fitted with at least two bilge pumps, one of which shall be an efficient hand pump. The bilge pumps are each to be capable of pumping from each compartment. Motor-propelled lifeboats certified for less than 100 persons shall be fitted with a bilge pump, either hand or power, having suitable suction or drainage to different parts of the boat.

(c) *Searchlight.* A searchlight shall be provided for a motor propelled lifeboat fitted with radio cabin. The source of power for the searchlight shall be capable of operating the light intermittently for a period of 6 hours and continuously for a period of 3 hours. Where the power for the radio equipment and the searchlight are derived from the same

source, this shall be sufficient to provide for the adequate working of both appliances. Two spare bulbs shall be provided for the searchlight and carried in the lifeboat. Searchlights installed on new motor-propelled lifeboats or installed as replacements on existing motor-propelled lifeboats shall be of an approved type and constructed in accordance with subpart 161.006 of Subchapter Q of this chapter. The Convention requirements for searchlights are also contained in Subpart 161.006 of Subchapter Q of this chapter.

(d) *Radio installation.* The radio installation shall comply with the requirements of the Federal Communications Commission for this purpose.

(R. S. 4488, 4491, 49 Stat. 1544, 50 Stat. Part 2, 1246, 54 Stat. 346, sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 481, 489, 1333, 50 U. S. C. 1275)

8. Section 59.12 *Standard types of lifeboats* is deleted.

9. Section 59.13 *Drawings, specifications, name plate* is deleted.

10. Section 59.15 is amended to read as follows:

§ 59.15 *Construction of lifeboats.* Lifeboats shall be of an approved type and constructed in accordance with subpart 160.025 of Subchapter Q of this chapter.

11. Section 59.16 *Construction of wooden lifeboats* is deleted.

12. Section 59.17 *Open boats with internal and external buoyancy; class 1B* is deleted.

13. Section 59.19 *Boats equivalent to boats of class 1B* is deleted.

14. Section 59.20 *Pontoon boats in which persons cannot be accommodated below deck, having a well deck and fixed watertight bulwarks; class 1C* is deleted.

15. Section 59.21 *Boats of the second class* is deleted.

16. Section 59.22 *Open boats having the upper part of the sides collapsible; class 2A* is deleted.

17. Section 59.23 *Pontoon boats having a well deck and collapsible bulwarks; class 2B* is deleted.

18. Section 59.24 *Pontoon boats in which persons cannot be accommodated below deck, having a flush deck and collapsible bulwarks; class 2C* is deleted.

19. Section 59.25 *Arrangements for clearing pontoon lifeboats of water* is deleted.

20. Section 59.26 *Type of boat equivalent to boat of class 2* is deleted.

21. Section 59.30 is amended to read as follows:

§ 59.30 *Air tanks in lifeboats.* Before any lifeboat is passed and accepted, the air tanks thereof shall be tested in the presence of an inspector by an air pressure of not more than 1 pound per square inch. At each subsequent annual inspection, or oftener if in the opinion of the inspectors it is necessary or desirable, the inspectors shall satisfy themselves that the tanks are in good condition, but pressure need not be applied unless the inspectors are in doubt regarding the efficiency of the tanks. This does not take from the inspectors the right and authority to satisfy themselves

at any time, either by examination or pressure, as to the condition of the tanks.

(R. S. 4481, 4488, 4492, 35 Stat. 428, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 396, 474, 481, 490, 1333, 50 U. S. C. 1275)

22. Section 59.31 *Cubic capacity of open boats of the first class* is deleted.

23. Section 59.32 *Deck area of pontoon boats and open boats of the second class* is deleted.

24. Section 59.33 *Capacity limits* is deleted.

25. Section 59.34 *Equivalents for and weight of the persons* is deleted.

26. Section 59.36 is amended to read as follows:

§ 59.36 *Lifeboats and life rafts kept clear for launching.* The decks on which lifeboats or life rafts are carried shall be kept clear of freight or any other obstruction that would interfere with the immediate launching of the lifeboats or life rafts.

27. Section 59.39 is amended to read as follows:

§ 59.39 *Tests of lifeboats at annual inspection.* The inspectors shall satisfy themselves that every lifeboat, together with its equipment, of all vessels, is in every respect in good condition and ready for immediate use. Every lifeboat, with its required equipment, of passenger vessels, shall be lowered to near the water and loaded to its allowed capacity, evenly distributed throughout its length, and then lowered into the water afloat. In making this test, persons or deadweight may be used. If persons are used, the weight of each person shall average at least 165 pounds. When deadweight is used, the weight shall be equivalent to at least 165 pounds for each person allowed.

28. Section 59.42 *Life rafts: Drawings, specifications, name plate, and how marked* is deleted.

29. Section 59.44 is amended to read as follows:

§ 59.44 *Construction of life rafts.* Life rafts shall be of an approved type. For new vessels and replacements on existing vessels, life rafts shall be of the Type A and constructed in accordance with subpart 160.018 of Subchapter Q of this chapter.

30. Section 59.47 *Approved life rafts* is deleted.

31. Section 59.50 *Capacity and allowance of life rafts* is deleted.

32. Section 59.54a is amended to read as follows:

§ 59.54a *Buoyant apparatus.* Buoyant apparatus shall be of an approved type and constructed in accordance with subpart 160.010 of Subchapter Q of this chapter.

33. Section 59.57 *Self-igniting water lights* is deleted.

34. Section 59.62 is amended to read as follows:

§ 59.62 *Steering apparatus; existing installations.* (a) Suitable steering apparatus shall be provided. Extra steering apparatus consisting of relieving tackle, or of auxiliary power or hand

steering gear attached to the rudder stock independent of the regular steering gear shall be provided.

(b) Where reasonable and practicable, the emergency steering wheel shall be located on the after weather deck, and an efficient means of communication shall be provided between the pilot-house, the emergency steering station, and the steering engine room.

(R. S. 4480, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended, 46 U. S. C. 1, 367, 473, 1233, 50 U. S. C. 1275)

35. Part 59 is amended by adding a new § 59.62a, reading as follows:

§ 59.62a *Steering apparatus; new installations.* (a) All new vessels and all replacements on existing vessels shall have suitable means of steering capable of swinging the rudder from hard right to hard left in 30 seconds with the vessel proceeding ahead at the maximum design speed. An additional effective auxiliary means shall be provided for actuating the rudder through an independent tiller, or its equivalent, designed to swing the rudder from 15 degrees right of center to 15 degrees left of center within 60 seconds with the vessel proceeding at one-half the maximum design speed or seven knots, whichever is the greater.

(b) The main steering gear on vessels exceeding 250 feet in length shall be power driven and approved means shall be provided for operating the auxiliary steering gear.

(c) An auxiliary steering gear consisting of a block and tackle operating an independent tiller of suitable design so arranged as to be operated by a power driven winch or other suitable machinery is considered a satisfactory auxiliary power steering gear.

(d) When the main steering gear is of the double-acting dual-power hydraulic type attached to a yoke on the rudder post an auxiliary steering gear secured to a separate tiller is not required provided the yoke of the main gear is designed for strength in excess of that of the rudder stock.

(e) Small vessels where the main quadrant or tiller is of suitable design, located above the deck and provided with acceptable means for attaching a block and tackle for emergency steering gear, are not required to have a separate auxiliary tiller.

(f) Power driven main steering gears shall be fitted with positive means for stopping the gear before the rudder stops are reached. The arrangement shall be synchronized with the movement of the rudder stock or position of the gear rather than with the steering gear control system.

(g) Brakes shall be fitted to the rudder stock or brake drum attached thereto for holding the rudder in case of an emergency on all ocean-going vessels required to have power-operated steering gear. When the gear is of the four-ram hydraulic type, a hand-operated filling and drain pump connected to the ram cylinder and capable of producing a torque equal to one-fourth of the maxi-

mum ahead torque may be substituted for the brake.

(h) Vessels fitted with power-operated steering gear shall have suitable buffers fitted to prevent damage caused by the quadrant striking stops and shock being transmitted to the gear.

(i) An emergency steering wheel shall be located on the after weather deck of vessels in which power driven steering gear is installed except for arrangements wherein the Commandant considers such impracticable. Suitable means of communication shall be provided between the pilot house, the emergency steering station, and the steering engine room.

(j) Steering wheels at steering stations shall be installed in a vertical position and arranged for steering by the helmsman when standing abaft the wheel and facing forward. The top of the steering wheel, the rudder blades, and the head of the ship shall move in the same direction.

(k) When a "trick" wheel is installed in the steering gear room for use in warming up and testing the gear as well as for steering purposes, and the wheel is installed in a vertical position, it shall meet the requirements of paragraph (j) of this section.

(l) If the "trick" wheel is installed in a horizontal position it shall turn in a clockwise direction for "right rudder" and in a counter-clockwise direction for "left rudder". With this arrangement, the helmsman need not stand abaft the wheel.

(m) Where "trick" wheel or other device is installed in the steering gear room for the sole purpose of warming up and testing the gear, it may be installed to best suit design and operating conditions of the gear. A plate shall be fitted on this wheel or device with indicating arrows showing the direction of movement to produce "right rudder" and "left rudder".

(n) When auxiliary steering gear is installed in lieu of relieving tackles, the steering wheel or device used for operating the gear shall meet all requirements given in paragraph (j) of this section.

(o) At all steering stations, there shall be installed a suitable notice on the wheel or device, or in such other position as to be directly in the helmsman's line of vision, to indicate the direction in which the wheel or device must be turned for "right rudder" and for "left rudder".

(p) Where no regular rudder is fitted and steering action is obtained by a change of setting of the propelling unit, emergency steering gear is not required nor will the requirements of this section generally be applicable. Special consideration will be given by the Commandant for such installations.

(q) The arrangement of piping for hydraulic gears shall be such that a change from the main to the auxiliary gear can be readily effected. A relief valve shall be provided for the protection of the hydraulic system. Pressure piping shall meet the requirements of Part 55 of Subchapter F (Marine Engineering) of this chapter.

(R. S. 4480, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended,

46 U. S. C. 1, 367, 473, 1333, 50 U. S. C. 1275)

36. Section 59.68 is amended to read as follows:

§ 59.68 *Disengaging apparatus.* (a) Lifeboats shall be fitted with suitable disengaging apparatus. Mechanical disengaging apparatus, if fitted, shall be of an approved type and constructed in accordance with subpart 160.033 of subchapter Q of this chapter.

(b) All lifeboats installed on new ocean and coastwise passenger vessels of over 3,000 gross tons, and all lifeboats installed as replacements to existing equipment on such vessels, shall be fitted with mechanical disengaging apparatus so arranged as to make it possible for the lifeboats to be launched while such vessels are under way or stopped, and for both ends of the lifeboat to be released simultaneously, under tension, by one person. The gears shall be capable of being released from one position in the lifeboat while the boat is fully loaded with allowed persons and equipment. Simultaneous release shall be effected by partially rotating a shaft which shall be continuous and extend from point of contact with the hooks.

(c) Where lifeboats on new ocean and coastwise cargo vessels of over 3,000 gross tons are fitted with mechanical disengaging apparatus, such apparatus shall comply with the requirements of paragraph (b) of this section. Replacements to equipment on existing cargo vessels of over 3,000 gross tons shall comply with the requirements of paragraph (b) of this section if the lifeboat being replaced is fitted with mechanical disengaging apparatus.

(R. S. 4488, 4491, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 1, 367, 481, 489, 1333, 50 U. S. C. 1275)

PART 60—BOATS, RAFTS, BULKHEADS, AND LIFESAVING APPLIANCES (COASTWISE)

1. Section 60.2 is amended to read as follows:

§ 60.2 *Lifeboats and life rafts required on vessels of class (a).* (a) Vessels of class (a) shall be required to have lifeboat and life raft capacity to accommodate all persons on board. Not less than 75 percent of the total capacity shall be in lifeboats and 25 percent may be in life rafts of an approved type.

(b) Vessels of class (a) during the interval between May 15th and September 15th in any one year, both dates inclusive, shall be required to be equipped with lifeboats, life rafts, and buoyant apparatus to accommodate all persons on board, not less than 35 percent of which shall be in lifeboats, 35 percent in life rafts, and 30 percent may be in buoyant apparatus.

(R. S. 4488, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 1, 481, 1333, 50 U. S. C. 1275)

2. Section 60.3 is amended to read as follows:

§ 60.3 *Lifeboats and life rafts required on vessels of class (b).* Vessels of class

(b) shall be required to have lifeboat and life raft capacity to accommodate all persons on board throughout the year, not less than 75 percent of which shall be in approved lifeboats and 25 percent may be in life rafts of an approved type.

(R. S. 4488, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 1, 481, 1333, 50 U. S. C. 1275)

3. Section 60.9 is amended by changing paragraphs (u) and (y) to read as follows:

§ 60.9 *Lifeboat equipment.* (See § 59.11 of this chapter, as amended, which is identical with this section except for paragraph (f).)

4. Section 60.10 *Drawings, specifications, name plate* is deleted.

5. Section 60.12 is amended to read as follows:

§ 60.12 *Construction of lifeboats.* (See § 59.15 of this chapter, as amended, which is identical with this section.)

6. Section 60.13 is amended to read as follows:

§ 60.13 *Air tanks in lifeboats.* (See § 59.30 of this chapter, as amended, which is identical with this section.)

7. Section 60.14 *Construction of wooden lifeboats* is deleted.

8. Section 60.15 *Carrying capacity of lifeboats* is deleted.

9. Section 60.17 is amended to read as follows:

§ 60.17 *Tests of lifeboats at annual inspection.* (See § 59.39 of this chapter, as amended, which is identical with this section.)

10. Section 60.21 is amended to read as follows:

§ 60.21 *How lifeboats shall be carried; davits required.* (a) All lifeboats on vessels carrying passengers shall, if practicable, be carried under substantial davits of an approved type, but if it is not practicable so to carry all the lifeboats required, the remainder shall be stowed near at hand, so as to be easily and readily launched. Such davits and necessary gear shall be such as will enable the lifeboats to be lowered to the water in less than 2 minutes from the time the clearing away of the boats is begun.

(b) Each lifeboat carried under davits shall be provided with two separate davits. Such davits and the blocks and falls thereof, on all vessels, shall be of sufficient strength to carry the boat with its full load while maintaining a factor of safety of six.

(c) Vessels of class (c) shall be equipped with davits or other practical means for properly launching the lifeboats.

(d) No type or make of mechanical or gravity davit shall be used unless it has first been approved by the Commandant. For construction of davits see subpart 160.032 of Subchapter Q of this chapter.

(e) No mechanical davits of a character which require manual or other power to turn the boats out to the position for lowering into the water shall be fitted on any vessel the keel of which is laid after September 1, 1941, if such davits are to handle a lifeboat which, without

its complement of persons on board, but having on board all air tanks and other lifeboat equipment, exceeds 5,000 pounds total weight; i. e., 2,500 pounds for a single davit arm.

(f) Davits of an approved type, which are capable of swinging the boats into the lowering position without the application of any effort or external force other than that necessary to operate the releasing mechanism, allowing the boat to move from the stowed position to the lowering position by the force of gravity, shall be provided to handle all lifeboats the total weight of which, including air tanks and lifeboat equipment, but without the complement of persons on board, exceed 5,000 pounds.

(g) No davit arm or frame comprising mechanical or gravity davits shall be placed on board any vessel until all the requirements of the rules of this section and subpart 160.032 of Subchapter Q of this chapter have been fully complied with. Whenever mechanical or gravity davits or parts of davits, such as davit arms, or frames, are installed on vessels to take the place of davits, davit arms, or frames, which have been damaged or broken, such davits or frames shall have the manufacturer's name plate affixed thereto.

(R. S. 4488, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 1, 481, 1333; 50 U. S. C. 1275)

11. Section 60.21a is amended to read as follows:

§ 60.21a *Mechanical means for lowering.* (See § 59.3a of this chapter, as amended, which is identical with this section.)

12. Section 60.22 is amended to read as follows:

§ 60.22 *Lifeboats and life rafts kept clear for launching.* (See § 59.36 of this chapter, as amended, which is identical with this section.)

13. Section 60.26 *Inclosed lifeboats* is deleted.

14. Section 60.29 *Life rafts: Drawings, specifications, name plate, and how marked* is deleted.

15. Section 60.31 is amended to read as follows:

§ 60.31 *Construction of life rafts.* (See § 59.44 of this chapter, as amended, which is identical with this section.)

16. Section 60.34 *Approved life rafts* is deleted.

17. Section 60.35 *Carrying capacity of life rafts* is deleted.

18. Section 60.47a is amended to read as follows:

§ 60.47a *Buoyant apparatus.* (a) Buoyant apparatus shall be of an approved type and constructed in accordance with subpart 160.010 of Subchapter Q of this chapter.

(b) Buoyant apparatus shall be stowed as follows:

(1) They shall not impede in any way prompt handling of lifeboats, or the mustering of persons on board at launching stations.

(2) They shall be stowed in such a manner as to be readily launched.

(3) They shall not be secured to the deck except by lashings which can be easily slipped; but may be stowed in tiers one above the other, in which case the separate units shall be kept apart sufficiently to prevent sticking together, and supported on suitable distance pieces.

(4) Means shall be provided to prevent shifting.

(54 Stat. 346, and sec. 5(e), 55 Stat. 244, as amended; 46 U. S. C. 1, 1333, 50 U. S. C. 1275)

19. Section 60.50 *Self-igniting water lights* is deleted.

20. Section 60.55 is amended to read as follows:

§ 60.55 *Steering apparatus; existing installations.* (See § 59.62 of this chapter, as amended, which is identical with this section.)

21. Part 60 is amended by adding a new § 60.55a, reading as follows:

§ 60.55a *Steering apparatus; new installations.* (See § 59.62a of this chapter, which is identical with this section.)

22. Section 60.51 is amended to read as follows:

§ 60.61 *Disengaging apparatus.* (See § 59.68 of this chapter, as amended, which is identical with this section.)

PART 63—INSPECTION OF VESSELS

1. Section 63.15 *Copies of specifications and/or blueprints* is deleted.

PART 64—DUTIES OF INSPECTORS

1. Section 64.18 is amended to read as follows:

§ 64.18 *Inspection of lifeboat-disengaging apparatus.* The inspectors, when inspecting or reinspecting vessels, shall carefully examine the lifeboat-disengaging apparatus and the blocks and falls thereof to satisfy themselves that the same are in good condition. The inspectors shall indicate in Form CG 840A at annual inspection the name and record of all lifeboat-disengaging apparatus found. If unable to identify such lifeboat-disengaging apparatus by name, the inspectors will within a reasonable time take the matter up with the Coast Guard District Commander in order that such apparatus may be traced for identification and approval record.

(R. S. 4417, 4418, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 391, 392, 1333; 50 U. S. C. 1275)

PART 65—STEAM YACHTS

1. Section 65.2 is amended to read as follows:

§ 65.2 *Lifeboats and life rafts required on vessels of class (a).* Vessels of class (a) shall be required to have lifeboat and life raft capacity for all persons on board. Not less than 75 percent of the total capacity shall be in lifeboats and 25 percent may be in life rafts of an approved type.

(R. S. 4488, as amended; 46 U. S. C. 481)

2. Section 65.3 is amended to read as follows:

§ 65.3 *Lifeboats and life rafts required on vessels of class (b).* (a) Vessels of class (b) shall be required to have lifeboats and life raft capacity to accommodate all persons on board. Not less than 75 percent of the total capacity shall be in lifeboats and 25 percent may be in approved life rafts.

(b) Vessels of class (b) during the interval between May 15 and October 15 in any 1 year, both dates inclusive, shall only be required to be equipped with lifeboats and life rafts to accommodate 70 percent of all persons on board, not less than 50 percent of which shall be in lifeboats and 50 percent may be in life rafts of an approved type.

(R. S. 4488, as amended; 46 U. S. C. 481)

3. Section 65.5 *Air tanks on vessels of class (a)* is deleted.

4. Section 65.6 *Air tanks on vessels of class (b)* is deleted.

5. Section 65.7 *Carrying capacity of lifeboats* is deleted.

6. Section 65.11 *Drawings, specifications, name plate* is deleted.

Subchapter H—Great Lakes: General Rules and Regulations

PART 76—BOATS, RAFTS, BULKHEADS, AND LIFESAVING APPLIANCES

1. Section 76.3 is amended to read as follows:

§ 76.3 *Lifeboats and life rafts required on vessels of class (a).* Vessels of class (a) shall be required to have lifeboat and life raft capacity to accommodate all persons on board. Not less than 75 percent of the total capacity shall be in lifeboats and 25 percent may be in lifeboats or life rafts of an approved type. Vessels of this class navigating during the interval between May 15 and September 15 in any one year, both dates inclusive, shall be required to be equipped with only such lifeboats and life rafts as will accommodate 50 percent of all persons on board, of which accommodation not less than two-fifths shall be in lifeboats and three-fifths may be in lifeboats or life rafts of an approved type.

(R. S. 4488, as amended; 46 U. S. C. 1, 481)

2. Section 76.4 is amended to read as follows:

§ 76.4 *Lifeboats and life rafts required on vessels of class (b).* Vessels of class (b) shall be required to have lifeboat and life raft capacity to accommodate all persons on board. Not less than 25 percent of the total capacity shall be in lifeboats and 75 percent may be in lifeboats or life rafts of an approved type. Vessels of this class navigating during the interval between May 15 and September 15 in any one year, both dates inclusive, shall be required to be equipped with only such lifeboats and life rafts as will accommodate 10 percent of all persons on board, of which accommodation not less than 25 percent shall be in lifeboats and 75 percent may be in lifeboats or life rafts of an approved type.

(R. S. 4488, as amended; 46 U. S. C. 1, 481)

3. Section 76.5 is amended to read as follows:

§ 76.5 *Lifeboats and life rafts required on vessels of class (c)*. Vessels of class (c) shall be required to have lifeboat and life raft capacity to accommodate all persons on board. Not less than 25 percent of the total capacity shall be in lifeboats and 75 percent may be in lifeboats or life rafts of an approved type. Vessels of this class navigating during the interval between May 15 and September 15 in any one year, both dates inclusive, shall be required to be equipped with only such lifeboats and life rafts as will accommodate 10 percent of all persons on board, of which accommodation not less than 25 percent shall be in lifeboats and 75 percent may be in lifeboats or life rafts of an approved type.

(R. S. 4488, as amended; 46 U. S. C. 1, 481)

4. Section 76.6 is amended to read as follows:

§ 76.6 *Lifeboats and life rafts required on vessels of class (d)*. Vessels of class (d) shall be required to have lifeboat and life raft capacity to accommodate all persons on board. Not less than 75 percent of the total capacity shall be in lifeboats and 25 percent may be in lifeboats or life rafts of an approved type. Vessels of this class navigating during the interval between May 15 and September 15 in any one year, both dates inclusive, shall be required to be equipped with only such lifeboats and life rafts as will accommodate 50 percent of all persons on board, of which accommodation not less than two-fifths shall be in lifeboats, and three-fifths may be in lifeboats or life rafts of an approved type.

(R. S. 4488, as amended; 46 U. S. C. 1, 481)

5. Section 76.8 is amended by changing the first undesignated paragraph to read as follows:

§ 76.8 *Lifeboats and life rafts required on vessels of class (f)*. Steam vessels of 50 gross tons and over not carrying passengers shall be required to have lifeboat and life raft capacity to accommodate all persons on board, of which accommodation not less than 50 percent shall be in lifeboats and 50 percent may be in lifeboats or life rafts of an approved type.

(R. S. 4488, as amended; 46 U. S. C. 1, 481)

6. Section 76.13 is amended to read as follows:

§ 76.13 *Motor-propelled lifeboats on vessels*. Any vessel under the jurisdiction of the Coast Guard may be allowed to carry one motor-propelled lifeboat as a part of the lifeboat equipment required on such vessel, except that on vessels carrying more than six lifeboats under davits two of such lifeboats may be equipped with motors. Storage of gasoline other than in the lifeboats using it shall not be allowed under any circumstances.

(R. S. 4488, as amended; 46 U. S. C. 1, 481)

7. Section 76.14 is amended by changing paragraph (q) and by adding paragraph (v), which paragraphs read as follows:

§ 76.14 *Equipment for lifeboats on vessels of classes (a), (b), (c), (d), and (e)*.

(q) *Rudder*. One rudder and tiller. For construction of rudder and tiller, see § 160.035-3 (t) of Subchapter Q of this chapter.

(v) *Propellers (hand-operated)*. Lifeboats may be fitted with a hand-operated propeller of an approved type, but all lifeboats, except motorboats, having a capacity of 60 or more persons, shall be fitted with a hand-operated propeller of an approved type, constructed in accordance with subpart 160.034 of Subchapter Q of this chapter. The above propelling gear shall be required in all such lifeboats fitted on new vessels and to the lifeboat replacements on existing vessels.

(R. S. 4488, as amended; 46 U. S. C. 1, 481)

8. Section 76.14a is amended by changing paragraph (j) and by adding paragraph (l), which paragraphs read as follows:

§ 76.14a *Equipment for lifeboats on vessels of class (f)*.

(j) *Steering oar or rudder*. One steering oar with rowlock or becket, or one rudder with tiller. For construction of rudder and tiller, see § 160.035-3 (t) of Subchapter Q of this chapter.

(l) *Propellers (hand-operated)*. Lifeboats may be fitted with a hand-operated propeller of an approved type, but all lifeboats, except motorboats, having a capacity of 60 or more persons, shall be fitted with a hand-operated propeller of an approved type, constructed in accordance with subpart 160.034 of Subchapter Q of this chapter. The above propelling gear shall be required in all such lifeboats fitted on new vessels and to the lifeboat replacements on existing vessels.

(R. S. 4488, as amended; 46 U. S. C. 1, 481)

9. Section 76.15 is amended to read as follows:

§ 76.15 *How lifeboats shall be carried; davits and cranes required*. (a) All lifeboats on vessels carrying passengers shall, if practicable, be carried under substantial davits, but if it is not practicable to so carry all the lifeboats required, the remainder shall be stowed near at hand, so as to be easily and readily launched. Such davits and necessary gear shall be such as will enable the lifeboats to be lowered to the water in less than 2 minutes from the time the clearing away of the boats is begun.

(b) Each lifeboat carried under davits shall be provided with two separate davits. Such davits and the blocks and falls thereof, on all passenger vessels except ferryboats, shall be of sufficient strength to carry the boat with its full

load while maintaining a factor of safety of six.

(c) Vessels of class (e) and (f) shall be equipped with davits or other practicable means for properly launching the lifeboats. Mechanical davits, when installed on vessels of class (e) and (f), shall be subject to all the tests required by this section.

(d) No type or make of mechanical or gravity davit shall be used unless it has first been approved by the Commandant. For construction of davits, see subpart 160.032 of subchapter Q of this chapter.

(e) No mechanical davits of a character which require manual or other power to turn the boats out to the position for lowering into the water shall be fitted on any vessel the keel of which is laid after September 1, 1941, if such davits are to handle a lifeboat which, without its complement of persons on board, but having on board all air tanks and other lifeboat equipment, exceeds 5,000 pounds total weight; i. e., 2,500 pounds for a single davit arm.

(f) Davits of an approved type, which are capable of swinging the boats into the lowering position without the application of any effort or external force other than that necessary to operate the releasing mechanism, allowing the boat to move from the stowed position to the lowering position by the force of gravity, shall be provided to handle all lifeboats the total weight of which, including air tanks and lifeboat equipment, but without the complement of persons on board, exceeds 5,000 pounds.

(g) No davit arm or frame comprising mechanical or gravity davits shall be placed on board any vessel until all of the requirements of the rules of this section and subpart 160.032 of subchapter Q of this chapter have been fully complied with. Whenever mechanical or gravity davits or parts of davits, such as davit arms, or frames, are installed on vessels to take the place of davits, davit arms, or frames which have become damaged or broken, such davits or frames shall have the manufacturer's name plate affixed thereto.

(R. S. 4488, as amended; 46 U. S. C. 1, 481)

10. Section 76.15a is amended to read as follows:

§ 76.15a *Mechanical means for lowering*. (See § 59.3a of this chapter, as amended, which is identical with this section.)

11. Section 76.16 *Drawings, specifications, name plate* is deleted.

12. Section 76.18 is amended to read as follows:

§ 76.18 *Construction of lifeboats*. Lifeboats shall be of an approved type and constructed in accordance with subpart 160.035 of Subchapter Q of this chapter.

13. Section 76.19 *Construction of wooden lifeboats* is deleted.

14. Section 76.20 is amended to read as follows:

§ 76.20 *Air tanks in lifeboats*. (See § 59.30 of this chapter, as amended, which is identical with this section.)

15. Section 76.21 *Carrying capacity of lifeboats* is deleted.

16. Section 76.23 is amended to read as follows:

§ 76.23 *Lifeboats and life rafts kept clear for launching.* (See § 59.36 of this chapter, as amended, which is identical with this section.)

17. Section 76.26 is amended to read as follows:

§ 76.26 *Tests of lifeboats at annual inspection.* (See § 59.39 of this chapter, as amended, which is identical with this section.)

18. Section 76.28 *Inclosed lifeboats* is deleted.

19. Section 76.32 *Life rafts: Drawings, specifications, name plates, and how marked* is deleted.

20. Section 76.34 is amended to read as follows:

§ 76.34 *Construction of life rafts.* Life rafts shall be of an approved type and constructed in accordance with subpart 160.018 of Subchapter Q of this chapter.

21. Section 76.37 *Approved life rafts* is deleted.

22. Section 76.51a is amended to read as follows:

§ 76.51a *Buoyant apparatus.* (See § 60.47a of this chapter, as amended, which is identical with this section.)

23. Section 76.54 *Self-igniting water lights* is deleted.

24. Part 76 is amended by adding a new § 76.55 reading as follows:

§ 76.55 *Steering apparatus: Existing installations.* (See § 59.62 of this chapter, as amended, which is identical with this section.)

25. Section 76.56 is amended to read as follows:

§ 76.56 *Steering apparatus; new installations.* (a) All new vessels and all replacements on existing vessels shall have suitable means of steering capable of swinging the rudder from hard right to hard left in 30 seconds with the vessel proceeding ahead at the maximum design speed. An additional effective auxiliary means shall be provided for actuating the rudder through an independent tiller, or its equivalent, designed to swing the rudder from 15 degrees right of center to 15 degrees left of center within 60 seconds with the vessel proceeding at one-half the maximum design speed or seven knots, whichever is the greater.

(b) The main steering gear on vessels exceeding 250 feet in length shall be power driven and approved means shall be provided for operating the auxiliary steering gear.

(c) An auxiliary steering gear consisting of a block and tackle operating an independent tiller of suitable design so arranged as to be operated by a power driven winch or other suitable machinery is considered a satisfactory auxiliary power steering gear.

(d) When the main steering gear is of the double-acting dual-power hydraulic type attached to a yoke on the rudder post an auxiliary steering gear secured to a separate tiller is not required provided the yoke of the main

gear is designed for strength in excess of that of the rudder stock.

(e) Small vessels where the main quadrant or tiller is of suitable design, located above the deck and provided with acceptable means for attaching a block and tackle for emergency steering gear, are not required to have a separate auxiliary tiller.

(f) Power driven main steering gears shall be fitted with positive means for stopping the gear before the rudder stops are reached. The arrangement shall be synchronized with the movement of the rudder stock or position of the gear rather than with the steering gear control system.

(g) Vessels fitted with power-operated steering gear shall have suitable buffers fitted to prevent damage caused by the quadrant striking stops and shock being transmitted to the gear.

(h) An emergency steering wheel shall be located on the after weather deck of vessels in which power driven steering gear is installed except for arrangements wherein the Commandant considers such impracticable. Suitable means of communication shall be provided between the pilothouse, the emergency steering station, and the steering engine room.

(i) Steering wheels at steering stations shall be installed in a vertical position and arranged for steering by the helmsman when standing abaft the wheel and facing forward. The top of the steering wheel, the rudder blades, and the head of the ship shall move in the same direction.

(j) When a "trick" wheel is installed in the steering gear room for use in warming up and testing the gear as well as for steering purposes, and the wheel is installed in a vertical position, it shall meet the requirements of paragraph (i) of this section.

(k) If the "trick" wheel is installed in a horizontal position it shall turn in a clockwise direction for "right rudder" and in a counter-clockwise direction for "left rudder". With this arrangement, the helmsman need not stand abaft the wheel.

(l) Where "trick" wheel or other device is installed in the steering gear room for the sole purpose of warming up and testing the gear, it may be installed to best suit design and operating conditions of the gear. A plate shall be fitted on this wheel or device with indicating arrows showing the direction of movement to produce "right rudder" and "left rudder".

(m) When auxiliary steering gear is installed in lieu of relieving tackles, the steering wheel or device used for operating the gear shall meet all requirements given in paragraph (i) of this section.

(n) At all steering stations, there shall be installed a suitable notice on the wheel or device, or in such other position as to be directly in the helmsman's line of vision, to indicate the direction in which the wheel or device must be turned for "right rudder" and for "left rudder".

(o) Where no regular rudder is fitted and steering action is obtained by a change of setting of the propelling unit, emergency steering gear is not required

nor will the requirements of this section generally be applicable. Special consideration will be given by the Commandant for such installations.

(p) The arrangement of piping for hydraulic gears shall be such that a change from the main to the auxiliary gear can be readily effected. A relief valve shall be provided for the protection of the hydraulic system. Pressure piping shall meet the requirements of Part 55 of Subchapter F (Marine Engineering) of this chapter.

(R. S. 4480, as amended, 46 U. S. C. 1, 473)

26. Section 76.62 is amended to read as follows:

§ 76.62 *Disengaging apparatus.* Lifeboats shall be fitted with suitable disengaging apparatus. Mechanical disengaging apparatus, if fitted, shall be of an approved type and constructed in accordance with subpart 160.033 of Subchapter Q of this chapter. Excluding the emergency boats, not more than one type of releasing gear shall be fitted in the lifeboats of a particular vessel.

(R. S. 4488 and 4491, as amended; 46 U. S. C. 1, 481, 489)

PART 79—INSPECTION OF VESSELS

1. Section 79.21 *Copies of specifications and/or blueprints* is deleted.

Subchapter I—Bays, Sounds, and Lakes Other Than the Great Lakes: General Rules and Regulations

PART 94—BOATS, RAFTS, BULKHEADS, AND LIFESAVING APPLIANCES

1. Section 94.2 is amended by changing the last undesignated paragraph to read as follows:

§ 94.2 *Lifeboats and life rafts required on steam vessels carrying passengers.* * * *

Three-fourths of the lifeboat capacity required on lake, bay, and sound steam vessels carrying passengers may be in approved life rafts. Approved life floats may be substituted for life rafts on vessels carrying passengers operated south of the thirty-third parallel of north latitude and on vessels carrying passengers operated north of the thirty-third parallel of north latitude during the interval between the 15th day of May to the 15th day of October, in any one year, both dates inclusive.

(R. S. 4488, as amended; 46 U. S. C. 1, 481)

2. Section 94.3 is amended to read as follows:

§ 94.3 *Lifeboats required on steam vessels of 50 gross tons and over not carrying passengers.* All steam vessels other than steam vessels carrying passengers, except as otherwise hereinafter provided for, shall be equipped with lifeboats of sufficient capacity to accommodate at one time all persons on board. One-half of such equipment may be in approved life rafts.

(R. S. 4488, as amended; 46 U. S. C. 1, 481)

3. Section 94.9 is amended to read as follows:

§ 94.9 *Wooden surfboat or seine boat.* Vessels engaged exclusively in the business of seine fishing or wrecking may substitute a wooden surfboat or wooden seine boat for the lifeboat as described by § 94.17.

(R. S. 4488, as amended; 46 U. S. C. 1, 481)

4. Section 94.12 is amended to read as follows:

§ 94.12 *Motor-propelled lifeboats on vessels.* (See § 76.13 of this chapter, as amended, which is identical with this section.)

5. Section 94.13 is amended by changing paragraph (l) and by adding a new paragraph (n), which paragraphs read as follows:

§ 94.13 *Equipment for lifeboats.*

(l) *Steering oar or rudder.* One steering oar with rowlock or becket, or rudder with tiller. For construction of rudder and tiller, see § 160.035-3 (t) of subchapter Q of this chapter.

(n) *Propellers (hand-operated).* Lifeboats may be fitted with a hand-operated propeller of an approved type, but all lifeboats, except motorboats, having a capacity of 60 or more persons, shall be fitted with a hand-operated propeller of an approved type, constructed in accordance with subpart 160.034 of subchapter Q of this chapter. The above propelling gear shall be required in all such lifeboats fitted on new vessels and to the lifeboat replacements on existing vessels.

(R. S. 4488, as amended; 46 U. S. C. 481)

6. Section 94.14 is amended to read as follows:

§ 94.14 *How lifeboats shall be carried; davits and cranes required.* (a) All lifeboats on vessels carrying passengers shall, if practicable, be carried under substantial davits or cranes, but if it is not practicable so to carry all the lifeboats required, the remainder shall be stowed near at hand, so as to be easily and readily launched. Such davits, cranes, and necessary gear shall be such as will enable the lifeboats to be lowered to the water in less than two minutes from the time the clearing away of the boats is begun.

(b) Each lifeboat carried under davits shall be provided with two separate davits. When a single crane is properly adapted to lower a lifeboat, it may be allowed to take the place of the two davits. Such davits or cranes, and the blocks and falls thereof, on all passenger vessels except ferryboats, shall be of sufficient strength to carry the boat with its full load.

(c) All steam vessels, other than steam vessels carrying passengers, shall be equipped with davits or other practicable means for launching the lifeboats. Mechanical davits, when installed on steam vessels not carrying passengers, shall be subject to all the tests required by this section.

(d) No type or make of mechanical or gravity davit shall be used unless it has first been approved by the Commandant.

(e) No mechanical davits of a character which require manual or other power to turn the boats out to the position for lowering into the water shall be fitted on any vessel the keel of which is laid after September 1, 1941, if such davits are to handle a lifeboat which, without its complement of persons on board, but having on board all air tanks and other lifeboat equipment, exceeds 5,000 pounds total weight; i. e., 2,500 pounds for a single davit arm.

(f) Davits of an approved type, which are capable of swinging the boats into the lowering position without the application of any effort or external force other than that necessary to operate the releasing mechanism, allowing the boat to move from the stowed position to the lowering position by the force of gravity, shall be provided to handle all lifeboats the total weight of which, including air tanks and lifeboat equipment, but without the complement of persons on board, exceeds 5,000 pounds.

(g) No davit arm or frame comprising mechanical or gravity davits shall be placed on board any vessel until all of the requirements of the rules of this section and subpart 160.032 of Subchapter Q of this chapter have been fully complied with. Whenever mechanical or gravity davits or parts of davits, such as davit arms, or frames, are installed on vessels to take the place of davits, davit arms, or frames which have become damaged or broken, such davits or frames shall have the manufacturer's name plate affixed thereto.

(R. S. 4488, as amended; 46 U. S. C. 1, 481)

7. Section 94.14a is amended to read as follows:

§ 94.14a *Mechanical means for lowering.* (See § 59.3a of this chapter, as amended, which is identical with this section.)

8. Section 94.15 *Drawings, specifications, name plate* is deleted.

9. Section 94.17 is amended to read as follows:

§ 94.17 *Construction of lifeboats.* Lifeboats shall be of an approved type and constructed in accordance with subpart 160.035 of Subchapter Q of this chapter.

10. Section 94.18 *Construction of wooden lifeboats* is deleted.

11. Section 94.19 is amended to read as follows:

§ 94.19 *Air tanks in lifeboats.* (See § 59.30 of this chapter, as amended, which is identical with this section.)

12. Section 94.20 *Carrying capacity of lifeboats* is deleted.

13. Section 94.22 is amended to read as follows:

§ 94.22 *Lifeboats and life rafts kept clear for launching.* (See § 59.36 of this chapter, as amended, which is identical with this section.)

14. Section 94.25 is amended to read as follows:

§ 94.25 *Tests of lifeboats at annual inspection.* (See § 59.39 of this chapter, as amended, which is identical with this section.)

15. Section 94.29 *Inclosed lifeboats* is deleted.

16. Section 94.32 *Life rafts: Drawings, specifications, name plate, and how marked* is deleted.

17. Section 94.34 is amended to read as follows:

§ 94.34 *Construction of life rafts.* Life rafts shall be of an approved type and constructed in accordance with subpart 160.018 of Subchapter Q of this chapter.

18. Section 94.35 *Capacity and allowance of catamaran life rafts* is deleted.

19. Section 94.38 *Approved life rafts* is deleted.

20. Section 94.54 is amended to read as follows:

§ 94.54 *Steering apparatus—existing installations.* (See § 59.62 of this chapter, as amended, which is identical with this section.)

21. Section 94.55 is amended to read as follows:

§ 94.55 *Steering apparatus—new installations.* (See § 76.56 of this chapter, as amended, which is identical with this section.)

22. Section 94.59 is amended to read as follows:

§ 94.59 *Disengaging apparatus.* (See § 76.62 of this chapter, as amended, which is identical with this section.)

PART 97—INSPECTION OF VESSELS

1. Section 97.19 *Copies of specifications and/or blueprints* is deleted.

PART 102—BAY, SOUND, AND LAKE STEAM YACHTS

1. Section 102.3 *Carrying capacity of lifeboats* is deleted.

2. Section 102.6 *Drawings, specifications, name plate* is deleted.

Subchapter J—Rivers: General Rules and Regulations

PART 113—BOATS, RAFTS, BULKHEADS, AND LIFESAVING APPLIANCES

1. Section 113.4 is amended to read as follows:

§ 113.4 *Lifeboats and life rafts or life floats required on steam vessels carrying passengers.* Steam vessels carrying passengers shall be equipped with lifeboats of sufficient capacity to accommodate at one time at least 10 percent of all persons on board, including passengers and crew. Three-fourths of such equipment may be in approved life rafts or approved life floats.

(R. S. 4481, as amended; 46 U. S. C. 1, 474)

2. Section 113.6 is amended to read as follows:

§ 113.6 *Motor-propelled lifeboats on vessels.* (See § 76.13 of this chapter, as amended, which is identical with this section.)

3. Section 113.7 is amended to read as follows:

§ 113.7 *Wooden surfboat or seine boat.* Vessels engaged exclusively in the business of seine fishing or wrecking may substitute a wooden surfboat or wooden seine boat for the lifeboat described in subpart 160.035 of Subchapter Q of this chapter, provided the capacity of such surfboat or seine boat is calculated in accordance with § 160.035-8 of Subchapter Q of this chapter.

(R. S. 4481, as amended; 46 U. S. C. 1, 474)

4. Section 113.10 *Lifeboats: Drawings, specifications, name plate* is deleted.

5. Section 113.12 is amended to read as follows:

§ 113.12 *Air tanks in lifeboats.* (See § 59.30 of this chapter, as amended, which is identical with this section.)

6. Section 113.13 is amended to read as follows:

§ 113.13 *Construction of lifeboats.* Lifeboats shall be of an approved type and constructed in accordance with subpart 160.035 of Subchapter Q of this chapter.

7. Section 113.14 *Carrying capacity of lifeboats* is deleted.

8. Section 113.15 *Capacity of metal, scow-shaped lifeboats* is deleted.

9. Section 113.16 is amended to read as follows:

§ 113.16 *Tests of lifeboats at annual inspection.* (See § 59.39 of this chapter, as amended, which is identical with this section.)

10. Section 113.19 *Inclosed lifeboats* is deleted.

11. Section 113.22 is amended by changing paragraph (l) and by adding a new paragraph (n), which paragraphs read as follows:

§ 113.22 *Equipment for lifeboats on vessels on all rivers except western rivers whose waters flow in the Gulf of Mexico and the Yukon River.* * * *

(l) *Steering oar or rudder.* One steering oar with rowlock or becket, or rudder with tiller. For construction of rudder and tiller see § 160.035-3 (t) of Subchapter Q of this chapter.

(n) *Propellers (hand-operated).* Lifeboats may be fitted with a hand-operated propeller of an approved type, but all lifeboats, except motorboats, having a capacity of 60 or more persons, shall be fitted with a hand-operated propeller of an approved type, constructed in accordance with subpart 160.034 of Subchapter Q of this chapter. The above propelling gear shall be required in all such lifeboats fitted on new vessels and to lifeboat replacements on existing vessels.

(R. S. 4481, as amended; 46 U. S. C. 1, 474)

12. Section 113.23 is amended to read as follows:

§ 113.23 *How lifeboats shall be carried; davits and cranes required.* (a) All

lifeboats on vessels carrying passengers shall, if practicable, be carried under substantial davits or cranes, but if it is not practicable so to carry all the lifeboats required, the remainder shall be stowed near at hand, so as to be easily and readily launched. Such davits, cranes, and necessary gear shall be such as will enable the lifeboats to be lowered to the water in less than 2 minutes from the time the clearing away of the boats is begun.

(b) Each lifeboat carried under davits shall be provided with two separate davits. When a single crane is properly adapted to lower a lifeboat, it may be allowed to take the place of the two davits. Such davits or cranes and the blocks and falls thereof, on all passenger vessels except ferryboats, shall be of sufficient strength to carry the boat with its full load.

(c) All steam vessels, other than steam vessels carrying passengers, shall be equipped with davits or other practicable means for launching the lifeboats. Mechanical davits, when installed on steam vessels not carrying passengers, shall be subject to all the tests required by this section.

(d) No type or make of mechanical or gravity davit shall be used unless it has first been approved by the Commandant.

(e) No mechanical davits of a character which require manual or other power to turn the boats out to the position for lowering into the water shall be fitted on any vessel the keel of which is laid after December 31, 1942, if such davits are to handle a lifeboat which, without its complement of persons on board, but having on board all air tanks and other lifeboat equipment, exceeds 5,000 pounds total weight; i. e., 2,500 pounds for a single davit arm.

(f) Davits of an approved type, which are capable of swinging the boats into the lowering position without the application of any effort or external force other than that necessary to operate the releasing mechanism, allowing the boat to move from the stowed position to the lowering position by the force of gravity, shall be provided to handle all lifeboats the total weight of which, including air tanks and lifeboat equipment, but without the complement of persons on board, exceeds 5,000 pounds.

(g) No davit arm or frame comprising mechanical or gravity davits shall be placed on board any vessel until all the requirements of the rules of this section and subpart 160.032 of subchapter Q of this chapter have been fully complied with. Whenever mechanical or gravity davits or parts of davits, such as davit arms, or frames, are installed on vessels to take the place of davits, davit arms, or frames which have become damaged or broken, such davits or frames shall have the manufacturer's name plate affixed thereto.

(R. S. 4481, as amended; 46 U. S. C. 1, 474)

13. Section 113.25 is amended to read as follows:

§ 113.25 *Lifeboats and life rafts kept clear for launching.* (See § 59.36 of this

chapter, as amended, which is identical with this section.)

14. Section 113.29 *Life rafts: Drawings, specifications, name plate, and how marked* is deleted.

15. Section 113.31 is amended to read as follows:

§ 113.31 *Construction of life rafts.* Life rafts shall be of an approved type and constructed in accordance with subpart 160.018 of Subchapter Q of this chapter.

16. Part 113 is amended by adding a new § 113.32 reading as follows:

§ 113.32 *Tests of air tanks of life rafts.* Before any life raft is passed and accepted, the air tanks thereof shall be tested in the presence of an inspector by an air pressure of not more than 1 pound to the square inch. At each subsequent annual inspection, or oftener, if in the opinion of the inspectors it is necessary or desirable, the inspectors shall satisfy themselves that the tanks are in good condition, but pressure need not be applied unless the inspectors are in doubt regarding the efficiency of the tanks. This does not take from the inspectors the right and authority to satisfy themselves at any time, either by examination or pressure, as to the condition of the tanks:

17. Section 113.41 *Carrying capacity of catamaran life rafts* is deleted.

18. Section 113.45 is amended to read as follows:

§ 113.45 *Wood floats.* (a) Vessels navigating rivers and carrying passengers shall be allowed to use wood floats, one for each deck or steerage passenger, which shall be constructed in accordance with subpart 160.039 of subchapter Q of this chapter.

(b) At each annual inspection of any vessel, and oftener if deemed necessary, it shall be the duty of the inspectors making the inspection to examine and inspect all wood floats in the equipment of such vessel for compliance with the requirements of subpart 160.039 of Subchapter Q of this chapter. When found to be in accordance with the requirements, the inspector shall plainly stamp such wood floats with a stamp bearing the word "Passed", his initials, the inspector's port, and date.

(R. S. 4482, as amended; 46 U. S. C. 1, 475)

19. Section 113.46a is amended to read as follows:

§ 113.46a *Steering apparatus; existing installations.* (See § 59.62 of this chapter, as amended, which is identical with this section.)

20. Section 113.47 is amended to read as follows:

§ 113.47 *Steering apparatus; new installations.* (See § 76.56 of this chapter, as amended, which is identical with this section.)

PART 116—INSPECTION OF VESSELS

1. Section 116.19 *Copies of specifications and/or blueprints* is deleted.

Subchapter Q—Specifications

PART 160—LIFESAIVING EQUIPMENT

Part 160 is amended by adding the new subparts 160.012, 160.015, 160.032, 160.033, 160.034, and 160.035, which read as follows:

SUBPART 160.012—LIGHTS, WATER: SELF-IGNITING (CALCIUM CARBIDE—CALCIUM PHOSPHIDE TYPE), FOR MERCHANT VESSELS

Sec.

- 160.012-1 Applicable specifications.
 160.012-2 Type.
 160.012-3 Materials, workmanship, construction, and performance requirements.
 160.012-4 Sampling, inspections, and tests.
 160.012-5 Marking.
 160.012-6 Packing.
 160.012-7 Procedure for approval.

SUBPART 160.015—LIFEBOAT WINCHES FOR MERCHANT VESSELS

- 160.015-1 Applicable specifications.
 160.015-2 General requirements for lifeboat winches.
 160.015-3 Construction of lifeboat winches.
 160.015-4 Capacity of lifeboat winches.
 160.015-5 Inspection and testing of lifeboat winches.
 160.015-6 Procedure for approval of lifeboat winches.

SUBPART 160.032—DAVITS FOR MERCHANT VESSELS

- 160.032-1 Applicable specifications.
 160.032-2 General requirements for davits.
 160.032-3 Construction of davits.
 160.032-4 Capacity of davits.
 160.032-5 Inspection and testing of davits.
 160.032-6 Procedure for approval of davits.

SUBPART 160.033—MECHANICAL DISENGAGING APPARATUS, LIFEBOAT, FOR MERCHANT VESSELS

- 160.033-1 Applicable specifications.
 160.033-2 General requirements for mechanical disengaging apparatus.
 160.033-3 Construction of mechanical disengaging apparatus.
 160.033-4 Inspection and testing of mechanical disengaging apparatus.
 160.033-5 Procedure for approval of mechanical disengaging apparatus.

SUBPART 160.034—HAND PROPELLING GEAR, LIFEBOAT, FOR MERCHANT VESSELS

- 160.034-1 Applicable specifications.
 160.034-2 General requirements for hand propelling gear.
 160.034-3 Construction of hand propelling gear.
 160.034-4 Inspection and testing of hand propelling gear.
 160.034-5 Procedure for approval of hand propelling gear.

SUBPART 160.035—LIFEBOATS FOR MERCHANT VESSELS

- 160.035-1 Applicable specifications.
 160.035-2 General requirements for lifeboats.
 160.035-3 Construction of steel oar-propelled lifeboats.
 160.035-4 Construction of steel hand-propelled lifeboats.
 160.035-5 Construction of steel motor-propelled lifeboats, with and without radio cabin.
 160.035-6 Construction of aluminum oar-, hand-, and motor-propelled lifeboats.
 160.035-7 Construction of wood oar-, hand-, and motor-propelled lifeboats.
 160.035-8 Cubic capacity of lifeboats.
 160.035-9 Number of persons allowed in lifeboats.
 160.035-10 Inspection and testing of lifeboats.

Sec.

160.035-11 Procedure for approval of lifeboats.

AUTHORITY: §§ 160.012-1 to 160.035-11 issued under R. S. 4405, 4417a, 4426, 4481, 4488, 4491, 35 Stat. 428, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 1, 367, 375, 391a, 396, 404, 474, 481, 489, 1333, 50 U. S. C. 1275.

SUBPART 160.012—LIGHTS, WATER: SELF-IGNITING (CALCIUM CARBIDE—CALCIUM PHOSPHIDE TYPE), FOR MERCHANT VESSELS

§ 160.012-1 *Applicable specifications.* (a) There are no other specifications applicable to this subpart.

§ 160.012-2 *Type.* (a) Self-igniting water lights specified by this subpart shall be of one type which shall consist essentially of a cylindrical container weighted at the bottom to float upright in the water with interior divisions containing calcium carbide and calcium phosphide, and with bottom and top openings for inlet of water and outlet of burning gases with plug or device for freeing both openings when the light is to be used in the water.

§ 160.012-3 *Materials, workmanship, construction, and performance requirements—*(a) *Materials.* All materials shall be corrosion-resistant to salt water and spray. The cylinder shall be sheet copper not less than 0.022 inch thick. The calcium carbide and calcium phosphide shall be fresh stock entirely free from the powdery substance resulting from exposure to the air.

(b) *Workmanship.* Self-igniting water lights shall be of first class workmanship and shall be free from imperfections of manufacture affecting the serviceability or operation of the light.

(c) *Construction.* Self-igniting water lights shall be designed and constructed so as to be non-explosive. The light shall float in the water and be sufficiently weighted in the bottom to cause the light to recover and maintain an upright position when floating in the water. All circumferential and longitudinal seams of the cylinder shall be hook-jointed and soldered. The cylinder shall be provided with a plug or other device of such character that when removed from the cylinder sufficient water will be admitted to insure the prompt and efficient action of the light, regardless of whether or not the cylinder when first striking the water becomes completely submerged.

(d) *Performance.* The light shall be self-igniting after removal of the plug or device within one minute after reaching the surface of the water and shall burn with a flame of at least 150 candlepower for a continuous period of not less than 45 minutes. If during this period the flame is extinguished, due to the total submersion of the light, the light shall self-ignite upon coming to the surface. The removal of the plug or device shall be effected by the operation of a lanyard attached to the water light, and shall be so arranged that the plug or device will disengage with a static load of not less than 40 pounds nor more than 100 pounds.

§ 160.012-4 *Sampling, inspections, and tests—*(a) *General.* Self-igniting water

lights specified by this subpart are not inspected at regularly scheduled factory inspections of production lots, but the Commander of the Coast Guard District may detail an inspector at any time to visit any place where such lights are manufactured to check materials and construction methods and to conduct such tests and examinations as may be required to satisfy himself that the lights are being manufactured in compliance with the requirements of this specification and with the manufacturer's plans and specifications approved by the Commandant. The manufacturer shall provide a suitable place and the apparatus necessary for the use of the inspector in conducting tests at the place of manufacture.

(b) *Burning time.* Measure by stop watch from time of positive flame emission until cessation, disregarding any temporary cessation due to light being temporarily under water or washed over by seas.

(c) *Candlepower.* Measure by photometer or other generally used government or commercial standard, computing the average value of not less than 15 readings distributed over the minimum required burning time of the light.

(d) *Susceptibility to explosion.* Submerge specimen light under one foot of water not warmer than 30° C. for six hours. This test is to be accomplished in the open air away from buildings in a location where personnel are excluded until the six hours have elapsed. In order to avoid delayed explosion danger, the test specimen shall be disposed of immediately at the end of the six hours by pulling the plug and allowing the light to burn until all gases are exhausted.

§ 160.012-5 *Marking.* (a) The cylinder shall be legibly marked by embossing at its top end the word "TOP" and the year of manufacture. The cylinder shall be legibly marked by embossing the cylindrical shell with the brand name of the light, the words "Self-igniting water light", the name and address of the manufacturer, and the Coast Guard Approval number assigned to the device.

§ 160.012-6 *Packing.* (a) Self-igniting water lights shall be packed in individual cartons or boxes for shipping in such fashion as to preclude damage to the light during ordinary handling and stowage before being placed on shipboard.

§ 160.012-7 *Procedure for approval—*(a) *General.* Self-igniting water lights are approved only by the Commandant, U. S. Coast Guard, Washington 25, D. C. Correspondence relating to the subject matter of this specification shall be addressed to the Commander of the Coast Guard District in which the factory is located.

(b) *Manufacturer's plans and specifications.* In order to obtain approval of self-igniting water lights, submit detailed plans and specifications including a complete bill of material, assembly drawing, and parts drawings descriptive of the arrangement and construction of the device, to the Commander of the Coast Guard District in which the factory is located. Each drawing shall have an

identifying drawing number, date, and an identification of the device; and the general arrangement or assembly drawing shall include a list of all drawings applicable, together with drawing numbers and alteration numbers. At the time of selection of the pre-approval sample, the manufacturer shall furnish to the inspector four copies of all plans and specifications, corrected as may be required, for forwarding to the Commandant.

(c) *Pre-approval sample.* After the first drawings and specifications have been examined and found to appear satisfactory, a marine inspector will be detailed to the factory to observe the production facilities and manufacturing methods and to select at random, from not less than 25 signals already manufactured, a sample of not less than 12 specimens which will be forwarded prepaid by the manufacturer to the Commandant for the necessary examinations and tests to determine compliance with this subpart for qualification for type or brand approval for use on merchant vessels.

SUBPART 160.015—LIFEBOAT WINCHES FOR MERCHANT VESSELS

§ 160.015-1 *Applicable specifications—*

(a) *Specifications.* The following specifications of the issue in effect on the date lifeboat winches are manufactured, form a part of this subpart:

(1) A. I. E. E. Standard No. 45, Recommended Practice for Electrical Installations on Shipboard.

§ 160.015-2 *General requirements for lifeboat winches.* (a) The requirements of this subpart apply to all new construction of lifeboat winches. Lifeboat winches approved and in use prior to the regulations in this subpart may be continued in service if in satisfactory condition.

(b) Lifeboat winches for use with gravity davits shall have grooved drums of such size that there will be only one wrap of wire on the drum. Lifeboat winches for use with mechanical davits need not be grooved and may be designed to take more than one wrap.

(c) Lifeboat winches shall be designed to lower under the force of gravity alone. There shall be no provisions for power lowering. A suitable hand wheel shall be attached to the winch to overhaul the falls in addition to any hand cranks provided.

(d) If the lifeboat winch is to be used in conjunction with nested lifeboats where the same falls are used for both boats, suitable means shall be provided for rapidly retrieving the falls by hand power.

(e) The installation of lifeboat winches shall be such that the fleet angle for grooved drums does not exceed 8 degrees, and for nongrooved drums does not exceed 4 degrees.

(f) Suitable hand cranks shall be provided for hoisting in addition to any other means for hoisting.

(g) Suitable fabric covers shall be provided, so fitted over exposed mechanisms, that ice formations may be readily broken adrift when necessary to operate the winch.

(h) Falls leading from winches intended for use with gravity davits shall lead up from the winch drums to the head of the davit trackways.

(i) Falls for winches intended for use with mechanical davits shall be led from the bottom of the drums and as close to the deck as practical. The winch shall be so designed that the falls do not lead past any position that may be needed for the operation of the winch, such as hand cranks or pay-out wheels.

(j) Lifeboat winches shall be so designed that when located aboard merchant vessels the operator can observe the movement of the lifeboat during the lowering operation.

(k) For the purpose of calculations and conducting tests, the weight of persons shall be taken at 165 pounds each.

(l) The requirements of this subpart shall be complied with unless other arrangements in matters of construction details, design, strength, equivalent in safety and efficiency are approved by the Commandant.

§ 160.015-3 *Construction of lifeboat winches.* (a) Lifeboat winches shall be of such strength that the lifeboat may be lowered safely with its full complement of persons and equipment. A minimum factor of safety of six on the ultimate strength of the materials shall be maintained at all times based on the approved working load.

(b) Worm gears, spur gears, or a combination of both, may be used in the construction of lifeboat winches. All gears shall be machine cut and made of steel, bronze, or other suitable material properly keyed to shafts. The use of cast iron is not permitted for these parts.

(c) Screws, nuts, bolts, pins, keys, etc., securing moving parts shall be fitted with suitable lock washers, cotter pins, or locks to prevent them from coming adrift.

(d) Drums shall be so arranged as to keep the falls separate, and to pay out the falls at the same rate. Clutches between the drums shall not be permitted unless bolted locking devices are used.

(e) The diameter of the drums shall be at least 16 times the diameter of the falls.

(f) A weighted lever hand brake shall be used to control the lowering by the lifeboat winch. It shall be of a type which is normally in the "on" position unless manually held in the "off" position, and shall return to the "on" position as soon as the brake lever is released.

(g) In addition to the hand brake, a governor type brake shall be fitted so as to control the speed of lowering of the lifeboat. This brake shall be of such design as to limit the speed of lowering of a lifeboat to not more than 100 feet per minute.

(h) Positive means of lubrication shall be provided for all bearings. When worm gears are used the worm wheel shall operate in an oil bath. Means shall be provided so that the oil level in the gear case may be easily checked. The manufacturer shall furnish a lubrication chart for each winch together with a plate attached to the winch indicating the lubricant recommended for extremes in temperature.

(i) When lifeboat winches are fitted with power for hoisting, a suitable clutch

shall be fitted to disengage the power installation during the lowering operation.

(j) Where power driven lifeboat winches are used, positive means shall be provided for controlling the power to the lifeboat winch. This shall be so arranged that the operator must hold the master switch or controller in the "on" or "hoist" position for hoisting, and when released will immediately shut off the power.

(k) Limit switch and emergency cut-off switch requirements:

(1) Where power driven winches are used with gravity davits, two limit switches, one on each davit, shall be provided to limit the travel of the davit arms as they approach the final stowed position in order to prevent damage to the installation. These switches shall be connected in series and so arranged in the power circuit that the opening of either switch will interrupt the supply. As an alternative arrangement, one limit switch will be allowed if positive means are provided on both davit arms to trip the limit switch before either has reached its stowage position.

(2) A main line emergency cut-off switch shall be provided near the winch operator's position. Suitable means for employing this emergency switch as a combination emergency switch and limit switch will be considered.

(l) Where power driven winches are used, satisfactory means shall be provided to disconnect power to the winch before a hand crank can be engaged with the winch operating shaft, and this interruption of power shall be maintained while the hand crank is so engaged. Mechanical means for accomplishing the above will be given special consideration.

(m) Motors, switches, controls, cables, etc., shall be of the waterproof type if installed on an open deck. Controls may be of the drip-proof type if installed in a deck house or under deck. Installations shall be in accordance with A. I. E. E. Standard No. 45.

(n) All moving parts shall have suitable guards.

(o) Welding, when employed, shall be performed by welders certified by the U. S. Coast Guard, American Bureau of Shipping, or U. S. Navy Department, and the electrodes used shall be of an approved type.

(p) Inspection openings shall be provided in the winch housing or the housing itself shall be so arranged as to permit examination of the internal working parts.

(q) Motor clutches, when used, shall be of either frictional or positive engaging type. When one motor is used for two winches, the clutch shall be so arranged that only one winch shall be engaged at any one time. The clutch operating lever shall be capable of remaining in any position when subject to vibration and shall be so arranged that when in neutral position, both lifeboats may be lowered simultaneously.

§ 160.015-4 *Capacity of lifeboat winches.* (a) A lifeboat winch shall be approved for a working load after it has been demonstrated by detailed calcula-

tions that this working load can be carried with a minimum factor of safety of six based on the ultimate strengths of the materials. It will also be necessary to conduct the tests specified in § 160.015-5.

§ 160.015-5 *Inspection and testing of lifeboat winches*—(a) *Material testing.*

(1) The manufacturer shall furnish affidavits relative to the physical and chemical properties of the materials. Such affidavits shall be furnished by the foundry or mill supplying the material.

(b) *Factory test for initial approval.*

(1) Lifeboat winches shall be set up similar to a shipboard installation, and shall be tested for strength and operation at the place of manufacture in the presence of an inspector. In the case of a lifeboat winch with non-grooved drums, the drums shall be built up or sufficiently filled with wire simulating the maximum number of wraps for which the winch is approved. The tests to be conducted are as noted in subparagraphs (2) to (8) of this paragraph.

(2) A direct pull on the drums equal to 2.2 times the working load shall be applied in a direction similar to a shipboard installation. This load shall be lowered through a distance of approximately 20 feet at which time the load shall be stopped by the action of the counterweight alone.

(3) A test identical to that noted in subparagraph (2) of this paragraph shall be conducted after the braking surfaces have been thoroughly wetted. The load shall be stopped by the action of the counterweight alone. The test need only be applied to lifeboat winches having external brakes.

(4) It shall be determined by test that the governor brake will limit the speed of lowering of the working load to not more than 100 feet per minute and not less than 30 feet per minute.

(5) A load of 0.5 times the working load shall be applied to determine the efficiency and speed of lowering of the equivalent to the empty boat. The speed of lowering with this load shall not be materially different from that obtained with the full working load.

(6) A load of 1.1 times the working load shall be lowered and raised a sufficient number of times so that the combined lowering distance is not less than 500 feet. This test is to determine the efficiency of the winch for prolonged service.

(7) Hand operation of the winch shall be demonstrated by hoisting handily, a load of 0.5 times the working load. In the case of gravity davits, it shall be demonstrated that this load can be carried easily over the radius of the trackways and up to the stowed position of the boat.

(8) Where a quick return mechanism is installed it shall be demonstrated that a weight equal to 2.2 times the weight of the empty blocks can be handily retrieved through the regular reaving of the falls at a rate of not less than 40 feet per minute at the drum by one man.

(9) After the tests noted in subparagraphs (2) to (8) of this paragraph have been conducted, the winch shall be completely disassembled and the inspector

shall ascertain that no undue stress or wear has been incurred.

(c) *Factory testing after approval.*

(1) After a design of a lifeboat winch has been approved, subsequent winches of the same design shall be individually tested as described in subparagraph (2) of this paragraph.

(2) Each lifeboat winch shall be set up in a manner similar to that described in paragraph (b) (1) of this section and a load of 1.1 times the working load shall be lowered through a distance of approximately 20 feet at which time the load shall be stopped by the action of the counterweight alone. This test is to demonstrate the operation of the winch, and if satisfactory no further test need be required. However, if the inspector is not satisfied with the operation of the winch a complete test as noted in paragraph (b) of this section may be required.

(d) *Name plate.* (1) A corrosion resistant name plate shall be affixed to each lifeboat winch on which shall be stamped the name of the manufacturer, approval number, maximum working load in pounds pull at the drums, maximum working load in pounds pull per fall, type and serial number, together with the inspector's initials, the date, and the letters U. S. C. G.

§ 160.015-6 *Procedure for approval of lifeboat winches.*

(a) Before action is taken on any design of lifeboat winch, detail plans covering fully the arrangement and construction of the lifeboat winch, together with a complete bill of material setting forth the physical properties of the materials used, shall be submitted to the Commandant through the Commander of the Coast Guard District having jurisdiction over the construction of the lifeboat winch.

(b) If the drawings required in paragraph (a) of this section are satisfactory, the Commander of the Coast Guard District in which the lifeboat winch is to be built, shall be notified in writing when fabrication is to commence. An inspector will be assigned to supervise the construction in accordance with the plans and upon completion, conduct the tests required by § 160.015-5.

(c) At the time that the tests are successfully completed, the manufacturer shall present to the inspector four corrected copies of the plans noted in paragraph (a) of this section, including any corrections, changes, or additions which may have been found necessary during construction or testing. If the manufacturer desires more than one set of approved plans, additional copies shall be submitted at that time.

(d) Upon receipt of corrected drawings and satisfactory test report, the Commandant will issue a certificate of approval. No change shall be made in the design or construction without first receiving permission of the Commandant via the commander of the Coast Guard District in which the lifeboat winch is built.

SUBPART 160.032—DAVITS FOR MERCHANT VESSELS

§ 160.032-1 *Applicable specifications*—(a) *Specifications.* The follow-

ing specifications of the issue in effect on the date davits are manufactured, form a part of this subpart.

(1) A. S. T. M. Specifications:

A7-46, Specification for Steel for Bridges and Buildings;

A27-46T, Specification for Mild to Medium-Strength Carbon Steel Castings for General Application;

A216-47T, Specification for Carbon-Steel Castings Suitable for Fusion Welding for High Temperature Service.

§ 160.032-2 *General requirements for davits.* (a) The requirements of this section apply to all new construction. Davits approved and in use prior to the regulations in this subpart may be continued in service if in satisfactory condition.

(b) Davits may be either of the mechanical or gravity types.

(1) Mechanical davits shall be designed to be swung out by screws, gears, or other means, using manual power for operation. Radial type davits with mechanical means for operating are not acceptable under this category.

(2) Gravity davits shall be designed to be swung out without the use of manual, electric, steam, or other power supplied by the vessel.

(3) Other types of davits will be given special consideration.

(c) Davits shall be so designed that it will not be necessary to take up or slack the falls in order to crank out the davits.

(d) For the purpose of calculations and conducting tests, the weight of the persons shall be taken at 165 pounds each.

(e) The requirements of this subpart shall be complied with unless other arrangements in matters of construction details, design, strength, equivalent in safety and efficiency are approved by the Commandant.

§ 160.032-3 *Construction of davits*—

(a) *Strength required.* Davits shall be of such strength that the lifeboat may be lowered safely with its full complement of persons and equipment, it being assumed that the vessel is heeled 15 degrees. A minimum factor of safety of six on the ultimate strength of the materials shall be maintained at all times based on the approved working load.

(b) *Turning out.* (1) Mechanical davits shall be designed so that they may be operated from the full inboard to the full outboard position when the lifeboat is fully equipped, but not loaded with persons, it being assumed that the vessel is heeled 15 degrees inboard.

(2) Gravity davits shall be designed so that they may be operated automatically from the full inboard to the full outboard position when the lifeboat is fully equipped, but not loaded with persons, it being assumed that the vessel is heeled 15 degrees inboard. This operation shall be accomplished by merely releasing the brake of the lifeboat winch.

(c) *Materials.* (1) Structural steel made by the open-hearth or electric furnace process shall be in accordance with A. S. T. M. Standard Specification A7-46.

(2) Steel castings not intended for fusion welding shall be in accordance with A. S. T. M. Standard Specification

A27-46T, Grades U-60-30, 60-30, 65-30, 65-35, and 70-36.

(3) Steel castings intended to be fabricated by fusion welding shall be in accordance with A. S. T. M. Standard Specification A216-47T, Grades WCA and WCB.

(4) Cast iron shall not be used in the construction of davits.

(5) Special consideration shall be given to the use of other materials. Proper affidavits concerning these materials will be required.

(d) *Bearings.* Bearings of davits shall be of non-ferrous metal, or shall be of the roller or ball-bearing type. Positive means of retaining the bearings in position and of lubricating same shall be provided except that self-lubricated bearings in sheaves of manila rope blocks will be acceptable. The manufacturer shall furnish a lubrication chart for each davit together with a plate attached to the davit indicating the lubricants recommended for extremes in temperature.

(e) *Guards.* All moving parts shall have suitable guards.

(f) *Welding.* Welding, when employed, shall be performed by welders certified by the U. S. Coast Guard, American Bureau of Shipping, or U. S. Navy Department, and the electrodes used shall be of an approved type.

§ 160.032-4 *Capacity of davits.* (a) Davits shall be approved for a working load after it has been demonstrated by detailed calculations that this working load can be carried with a minimum factor of safety of six based on the ultimate strength of the materials. It will also be necessary to conduct the tests specified in § 160.032-5.

§ 160.032-5 *Inspection and testing of davits—(a) Material testing.* (1) Where davit arms and frames are fabricated of steel castings, an inspector shall be present at the foundry where such castings are made to witness the tests prescribed by the applicable specification. The manufacturer shall furnish an affidavit stating that the material complies with the requirement of the specification noted in § 160.032-2 (c) (2) or § 160.032-3 (c) (3). The inspector shall stamp the casting with the letters U. S. C. G., the initials of his name, the letters F. T., and the date of inspection.

(2) The manufacturer shall furnish an affidavit stating that the structural steel complies with the requirements of the specification noted in § 160.032-3 (c) (1).

(3) The affidavits referred to above shall be obtained from the foundry or mill supplying the material.

(b) *Factory tests for initial approval.*

(1) Mechanical davits shall be tested for strength and operation at the place of manufacture in the presence of an inspector. The davits shall be completely assembled. The tests to be conducted are as noted in subparagraphs (2) through (4) of this paragraph.

(2) A weight equal to 2.2 times the working load shall be suspended from the eye or end of the davit arm. With this load suspended from the davit it shall be operated from the full inboard to the full outboard position using the same oper-

ating crank or device used in actual practice aboard ship. The load shall then be swung in a fore and aft direction through an arc of approximately 5 degrees, each side of the vertical. The davit arm and frame shall show no permanent set or undue stress from this test. While this test is being conducted, the frame and arm, if of cast material, shall be subjected to a test by being hammered to satisfy the inspector that the castings are sound and without flaws.

(3) A weight equal to 0.5 times the normal working load shall be suspended from the eye or end of the davit arm. This load shall be moved from the full inboard to the full outboard position using the actual handles supplied with the davit. The time required for this operation shall not exceed 90 seconds. The above test shall also be conducted with the davits set up to simulate a 15-degree inboard list to determine that the davits may be satisfactorily operated in that condition. The above test shall also be conducted with the davits set up to simulate a 15-degree outboard list. This test shall determine that the davit arms will not run out under the weight of the light boat.

(4) A load of 1.1 times the normal working load shall be moved from the full outboard to the full inboard position to demonstrate the strength of operation of the return mechanism.

(5) Gravity davits shall be tested for strength and operation at the place of manufacture in the presence of an inspector. The davit arms, tracks, frames, attachments, etc., shall be set up in a manner similar to an actual shipboard installation. This installation shall include a lifeboat winch suitable for gravity davits and the falls shall be reeved in the normal manner. The tests to be conducted are as noted in subparagraphs (6) to (8) of this paragraph.

(6) A weight equal to 1.1 times the working load shall be run from the full inboard to the full outboard position with the davit assembly in the normal upright condition. The davit arm, trackways, etc., shall show no permanent set or undue stress from this test.

(7) A weight equal to 2.2 times the working load shall be attached to the falls and suspended from the davit arm when in the full outboard position. The load shall be swung in a fore and aft direction through an arc of approximately 5 degrees each side of the vertical. The davit arm and trackways shall show no permanent set or undue stress from this test.

(8) The entire davit assembly shall then be heeled inboard 15 degrees. In this condition a weight equal to 0.5 times the working load shall be suspended from the falls and shall be operated from the full inboard to the full outboard position. This test shall demonstrate that the load is sufficient to turn out the davit by merely releasing the brake on the winch. Stops shall be made at intervals between the inboard and outboard positions to assure that the davit will start from any position.

(c) *Factory testing after approval.* (1) After the design of a mechanical davit has been approved, subsequent

davits of the same design shall be individually tested as described in paragraph (b) (2) of this section.

(2) After the design of a gravity davit has been approved, subsequent davit arms of the same design shall be individually tested as described in paragraph (b) (7) of this section, except that the swing test may be eliminated if not practicable.

(d) *Name plate.* (1) A corrosion resistant name plate shall be affixed to each davit arm and frame on which shall be stamped the name of the manufacturer, approval number, type and serial number of the davit, maximum working load in pounds per arm, together with the inspector's initials, the date, and the letters "U. S. C. G."

§ 160.032-6 *Procedure for approval of davits.* (a) Before action is taken on any design of davit, detailed plans covering fully the arrangement and construction of the davit together with stress diagrams and calculations relative to the strength of the davit, and a complete bill of material setting forth the physical properties of all materials used shall be submitted to the Commandant through the Commander of the Coast Guard District having jurisdiction over the construction of the davit.

(b) If the drawings required in paragraph (a) of this section are satisfactory, the Commander of the Coast Guard District in which the davits are to be built, shall be notified in writing when fabrication is to commence. An inspector will be assigned to supervise the construction in accordance with the plans and upon completion conduct the tests required by § 160.032-5.

(c) At the time that the tests are successfully completed, the manufacturer shall present to the inspector four corrected copies of the plans noted in paragraph (a) of this section, including any corrections, changes, or additions which may have been found necessary during construction or testing. If the manufacturer desires more than one set of approved plans, additional copies shall be submitted at that time.

(d) Upon receipt of corrected drawings and satisfactory test report, the Commandant will issue a certificate of approval. No change shall be made in the design or construction without first receiving permission of the Commandant via the Commander of the Coast Guard District in which the davits are built.

SUBPART 160.033—MECHANICAL DISENGAGING APPARATUS, LIFEBOAT, FOR MERCHANT VESSELS

§ 160.033-1 *Applicable specifications—(a) Specifications.* The following specifications of the issue in effect on the date mechanical disengaging apparatus is manufactured form a part of this subpart.

(1) Coast Guard Specifications:

160.035, Specification for Lifeboats for Merchant Vessels.

§ 160.033-2 *General requirements for mechanical disengaging apparatus.* (a) The requirements of this subpart apply to all new construction. Mechanical disengaging apparatus approved and in use

prior to the regulations in this subpart may be continued in service if in satisfactory condition.

(b) Mechanical disengaging apparatus installed in approved lifeboats shall be designed to release both ends of the lifeboat simultaneously under tension.

(c) Other types of mechanical disengaging apparatus will be considered for lifeboats fitted on vessels operating on waters other than ocean and coastwise, or for vessels of under 3,000 gross tons operating in ocean and coastwise service. Such types will also be considered for lifeboats fitted on vessels of over 3,000 gross tons in ocean and coastwise service when used as replacements of existing equipment.

§ 160.033-3 *Construction of mechanical disengaging apparatus.* (a) Mechanical disengaging apparatus shall be of such strength that the lifeboat in which installed may be safely lowered with its full complement of persons and equipment. A minimum factor of safety of six on the ultimate strength of the materials used shall be maintained at all times based on the approved working load per hook.

(b) Mechanical disengaging apparatus shall be designed to release both ends of the lifeboat simultaneously under tension, which shall be effected by partially rotating a shaft which shall be continuous and extend from point of contact with the hooks. The control effecting the rotation of the shaft shall be painted bright red and shall have thereon in raised letters the words "Danger—Lever Releases Hooks". The control shall be readily accessible, secured to a permanent part of the lifeboat structure, and so installed as not to interfere with the inspection of any removable parts of the lifeboat or its equipment.

(c) If closed type hooks are used, arrangements shall be made to effect the release of the falls in the event that the gear is inoperable.

(d) Positive means of lubrication shall be provided for all bearings.

(e) Welding, when employed, shall be performed by welders certified by the U. S. Coast Guard, American Bureau of Shipping, or U. S. Navy Department, and the electrodes used shall be of an approved type.

§ 160.033-4 *Inspection and testing of mechanical disengaging apparatus—(a) Inspection.* Mechanical disengaging apparatus shall be inspected during the course of construction to determine that the arrangement and materials entering into the construction are in accordance with the approved plans.

(b) *Factory tests for initial approval.* (1) Mechanical disengaging apparatus shall be tested to destruction in a jig built in accordance with the drawing required in § 160.033-5 (a). This test shall be conducted in the presence of an inspector.

(2) Universal connections used to transmit the release power from the throw lever to the hook release shall be set up in a jig with the angles of leads set at 0, 30, and 60 degrees, respectively. A load of 200 pounds shall be applied at the end of a lever arm 24 inches long. This load shall be applied with the con-

necting rod secured beyond the universal and with the lever arm in the horizontal position. This test shall demonstrate that the universals have strength adequate for the purpose intended. There shall be no permanent set, or undue stress as a result of this test. Consideration will be given to arrangements other than universals submitted for this transmission of power.

(c) *Installation test prior to passing first unit installed.* Each new type or arrangement of mechanical disengaging apparatus shall be tested by suspending a fully loaded lifeboat by its own hooks. The release lever shall then be thrown over with this load suspended until the lifeboat is released. This test shall demonstrate the efficiency of the installation in an actual lifeboat. (This test may be conducted ashore by suspending the boat just clear of the ground.)

(d) *Factory testing after approval.* In general, no factory tests after approval are required. However, each lifeboat in which mechanical disengaging apparatus is fitted shall be tested in accordance with § 160.035-10 (e) of subpart 160.035 which requires that the lifeboat in light condition be suspended and the mechanism operated to insure that the gear is properly installed.

(e) *Name plate.* A corrosion resistant name plate shall be attached to each hook assembly giving the manufacturer's name, approval number, and approved working load (as installed).

§ 160.033-5 *Procedure for approval of mechanical disengaging apparatus.* (a) Before action is taken on any design of mechanical disengaging apparatus, detailed plans covering fully the arrangement and construction of the apparatus, together with stress diagrams and calculations relative to the strength, proposed test jig to be used in the test prescribed in § 160.033-4 (b) (1), and a complete bill of material setting forth the physical and chemical properties of all the materials used shall be submitted to the Commandant through the Commander of the Coast Guard District having jurisdiction over the construction of the mechanical disengaging apparatus.

(b) If the drawings required in paragraph (a) of this section are satisfactory, the Commander of the Coast Guard District in which the mechanical disengaging apparatus is to be built, shall be notified in writing when fabrication is to commence. An inspector will be assigned to supervise the construction in accordance with the plans and upon completion, conduct the tests required by § 160.033-4.

(c) At the time that the tests are successfully completed, the manufacturer shall present to the inspector four corrected copies of the plans noted in paragraph (a) of this section, including any corrections, changes, or additions which may have been found necessary during construction or testing. If the manufacturer desires more than one set of approved plans, additional copies shall be submitted at that time.

(d) Upon receipt of corrected drawings and satisfactory test report, the Commandant will issue a certificate of approval. No change shall be made in the design or construction without first re-

ceiving permission of the Commandant via the Commander of the Coast Guard District in which the mechanical disengaging apparatus is built.

SUBPART 160.034—HAND PROPELLING GEAR, LIFEBOATS, FOR MERCHANT VESSELS

§ 160.034-1 *Applicable specifications—(a) Specifications.* The following specifications of the issue in effect on the date hand propelling gears are manufactured, form a part of this subpart:

(1) Coast Guard Specification:

160.035, Specification for Lifeboats for Merchant Vessels.

§ 160.034-2 *General requirements for hand propelling gear.* (a) The requirements of this subpart apply to all new hand propelling gear for lifeboats. Hand propelling gear approved and in use prior to the regulations in this subpart may be continued in service if in satisfactory condition.

(b) Hand propelling gear shall be substantially constructed and fitted in a lifeboat in an efficient manner and be such that the lifeboat may be readily maneuvered away from the ship's side after being launched, and steerage way maintained under adverse weather conditions. The gear shall be of such character that it may be operated by persons untrained in its use. It shall be such that it can be operated satisfactorily when the lifeboat is flooded and will be effective in propelling the lifeboat when fully or partially loaded.

(c) Hand propelling gear shall be fitted in all lifeboats having a capacity of 60 or more persons except where such lifeboats are fitted with a motor. The gear may be fitted in lifeboats of less than 60 persons capacity if desired.

(d) The requirements of this subpart shall be complied with unless other arrangements in matters of construction details, design, strength, equivalent in safety and efficiency are approved by the Commandant.

§ 160.034-3 *Construction of hand propelling gear.* (a) The gear, propeller shaft, handles, etc., shall be of such strength that if the propeller shaft is secured to prevent rotation, the parts making up the gear will show no permanent set or undue stress when subjected to a maximum pull of 200 pounds on each of the handles operating the gear.

(b) The exposed parts of the hand propelling gear shall be constructed of corrosion resistant materials and the gears shall be fully inclosed and operate in an oil bath. The oil shall be of a grade that will not materially thicken at low temperatures. Screws, nuts, bolts, pins, keys, etc., securing moving parts, shall be fitted with suitable lock washers, cotter pins, locks, or other devices to keep them from coming adrift.

(c) The hand propelling gear shall be fitted with a clutch having "ahead", "neutral", and "reverse" positions and these positions shall be plainly and permanently marked at the clutch lever.

§ 160.034-4 *Inspection and testing of hand propelling gear—(a) Factory tests for initial approval.* (1) Hand propelling gear shall be inspected during the course of construction to determine that

the arrangements and materials entering into the construction are in accordance with the approved plans, and to insure that the workmanship is of good quality.

(2) The hand propelling gear shall be tested to determine that there is sufficient room to handle the hand propelling gear in a lifeboat loaded with its allowed capacity of persons.

(3) With the propeller shaft secured and the clutch in the "ahead" position, a man shall be seated at each station. With these men exerting as much pull as possible on the ends of the handles, there shall be no failure, permanent set, or undue stress in the entire assembly. This same test shall be conducted with the clutch in the "astern" position.

(4) The hand propelling gear shall be tested for its operating characteristics by manning each of the handles and ballasting a lifeboat to its fully loaded condition with either persons or equivalent weight. It must be demonstrated that the hand propelling gear will propel the lifeboat with only a normal amount of effort while maintaining an average speed of not less than 3 knots over a measured course of not less than 1,000 feet. The backing and steering qualities shall be tested under the full load condition and it must be demonstrated that no material stopping time or effort is required to shift from ahead to astern or vice versa.

(5) The hand propelling gear shall be tested to determine its efficiency with the propeller partially out of water by removing the complement other than those at the handles, or the equivalent weight, if so provided. It must be demonstrated that the hand propelling gear will propel the lifeboat with only a normal amount of effort while maintaining an average speed of not less than 3 knots over a measured course. The backing and steering qualities shall be tested in this condition and it must be demonstrated that no material stopping time or effort is required to shift from ahead to astern or vice versa.

(6) It shall be determined by test that the lifeboat can hold course under adverse weather conditions in either the light or loaded condition.

(7) After the foregoing tests have been completed, the hand propelling gear shall be disassembled and checked for conformance with the approved drawings and for wear of the gears, etc., or other evidences of unfitness for prolonged service.

(b) *Factory testing after approval.* The inspector, when satisfied that the construction and materials are in accordance with the approved drawings and specifications, shall test the installation by operating the gear in the "ahead", "neutral", and "astern" positions while the lifeboat is in the manufacturer's plant.

(c) *Name plate.* A corrosion resistant name plate shall be affixed to the top of the gear case of each hand propelling gear on which is shown the name of the manufacturer, approval number, symbol, and serial number. An additional plate, or other suitable permanent marking, shall be installed bearing the designa-

tion of the manufacturer's recommended lubricant.

§ 160.034-5 *Procedure for approval of hand propelling gear.* (a) Before action is taken on any design of hand propelling gear, detailed plans covering fully the arrangement and construction of the gear shall be submitted to the Commandant, through the Commander of the Coast Guard District in which the hand propelling gear is built.

(b) If the drawings required in paragraph (a) of this section are satisfactory, the Commander of the Coast Guard District in which the hand propelling gear is to be built, shall be notified in writing when fabrication is to commence. An inspector will be assigned to supervise the construction in accordance with the plans and upon completion conduct the tests required by § 160.034-4.

(c) At the time that the tests are successfully completed, the manufacturer shall present to the inspector four corrected copies of the plans noted in paragraph (a) of this section, including any corrections, changes, or additions which may have been found necessary during construction or testing. If the manufacturer desires more than one set of approved plans, additional copies shall be submitted at that time.

(d) Upon receipt of corrected drawings and satisfactory test report, the Commandant will issue a certificate of approval. No change shall be made in the design or construction without first receiving permission of the Commandant via the Commander of the Coast Guard District in which the hand propelling gear is built.

SUBPART 160.035—LIFEBOATS FOR MERCHANT VESSELS

§ 160.035-1 *Applicable specifications*—(a) *Specifications.* The following specifications, of the issue in effect on the date lifeboats are manufactured, form a part of this subpart.

(1) A. S. T. M. Standard Specifications:

A93-46, Standard Specification for Zinc Coated Iron or Steel Sheets, Class D or E.

A7-46, Standard Specification for Steel for Bridges and Buildings.

(2) Joint Army-Navy specification:

Jan-P-66, Plywood, flat-panel.

(3) Federal Communications Commission:

Rules Governing Ship Service.

(4) United States Coast Guard:

160.033, Mechanical Disengaging Apparatus (For Lifeboats).

160.034, Hand Propelling Gear (For Lifeboats).

161.006, Searchlights, Motor Lifeboats.

162.015, Flame Arrestors, Back-Fire (For Carburetors) For Merchant Vessels and Motorboats.

§ 160.035-2 *General requirements for lifeboats.* (a) The requirements of this subpart apply to all new construction. Lifeboats approved and in use prior to the regulations in this subpart may be continued in service if in satisfactory condition.

(b) All lifeboats must be properly constructed and shall be of such form and

proportions that they shall be readily maneuverable, have ample stability in a seaway, and sufficient freeboard when fully loaded with their full complement of persons and equipment. All lifeboats must be open boats with rigid sides having internal buoyancy only.

(c) Lifeboats may be constructed of steel, aluminum, wood or other materials receiving specific approval.

(d) For the purpose of calculations and conducting tests, the weight of the persons shall be taken at 165 pounds each.

§ 160.035-3 *Construction of steel oar-propelled lifeboats*—(a) *Type.* Lifeboats shall have rigid sides and be fitted with internal buoyancy so arranged that the boats will float in the flooded condition when fully loaded with persons and equipment.

(b) *Specifications.* The following specifications and schedule of lifeboat material, including Table 160.035-3, shall be complied with unless other arrangements in matters of construction details, design, strength, equivalent in safety and efficiency are approved by the Commandant.

(c) *Materials.* (1) Plating for shell, floors, air tanks, etc., shall be made by the open-hearth or electric furnace process in accordance with ASTM Standard Specification A93-46 Grade D or E. The bend tests required by these specifications shall be made after the galvanizing or other anti-corrosive treatment has been applied.

(2) Rolled or extruded shapes such as keel, stem, sternpost, gunwales, etc., and rivets shall be made by the open-hearth or electric furnace process in accordance with ASTM Standard Specification A7-46. Consideration will be given to the use of other steels having equivalent strength where longitudinal cold forming is necessary.

(d) *Riveting.* (1) Where riveting is employed in the construction of the shell, double riveting shall be used. The center of the row of rivets nearest the edge of the sheet shall be not less than $\frac{3}{8}$ inch from the edge. Rivets shall be staggered with not less than 18 rivets to the foot and shall have countersunk heads. The diameter of the rivets shall be not less than that shown in the following table:

Plating thickness:	Rivet diameter (inch)
18 USSG.....	$\frac{1}{4}$
16 USSG.....	$\frac{1}{4}$
14 USSG.....	$\frac{5}{16}$
13 USSG.....	$\frac{3}{16}$
12 USSG.....	$\frac{3}{16}$

(2) Riveting of the shell plating to the keel, stem, and sternpost shall be button head rivets, staggered with not less than 12 rivets to the foot. The distance from the edge of the plate to the center of the nearest row of rivets shall be approximately $\frac{1}{2}$ ". Rivets connecting the shell to the gunwale shall be spaced not more than 3" on centers. The size of the rivets for connecting the shell plating to the keel, stem, sternpost, and gunwale shall be $\frac{1}{4}$ " diameter for boats 28 feet and under, and $\frac{5}{16}$ " diameter for boats over 28 feet.

(3) The connection of the floors to the shell shall be by a single row of rivets not less than $\frac{3}{16}$ " in diameter and spaced not more than 3" on centers.

(e) *Welding.* (1) Welding may be substituted for riveting in any location. It shall be performed by welders certified by the U. S. Coast Guard, American Bureau of Shipping, or U. S. Navy Department, and only approved electrodes shall be used. Details of the joints shall be indicated on the construction drawings submitted for approval.

(f) *Keel, stem, and sternpost.* (1) Dimensions shall be not less than those shown in Table 160.035-3.

(2) The keel, stem, and sternpost shall be in not more than two lengths except in the case of a lifeboat of stern frame construction where three lengths may be used. The scarp shall have a length of nine times the thickness of the keel and shall be strapped and riveted. A double Vee butt weld may be used without straps.

(g) *Shell plating.* (1) The gage of the shell plating shall be not less than that shown in Table 160.035-3.

(2) Where increased thickness of bottom plating is called for by table 160.035-3, the thicker plating shall be fitted to approximately the turn of the bilge.

(3) Doubling plates of suitable size shall be fitted on all lifeboats where the shell is liable to damage, wear, or corrosion from contact with chocks. Doublers shall be not less than the thickness of the bottom plating.

(4) All seam and butt laps shall be at least $1\frac{1}{4}$ ".

(5) The laps of joints on keel, stem, and sternpost shall be at least 2 inches.

(6) All seam and butt laps, laps of plating on keel, stem, and sternpost, shall be made over felt laid in wet red lead. Other methods will be given separate consideration.

(h) *Floors.* (1) Floors shall be fitted in lifeboats 24 feet in length and over.

(2) Floors shall be of a thickness not less than that of the bottom plating and shall be at least 6" deep at the centerline of the lifeboat, and shall be flanged $1\frac{1}{2}$ " top and bottom.

(3) The maximum floor spacing for boats 28 feet and under shall be 36 inches, and for boats over 28 feet but not exceeding 36 feet shall be 30 inches.

(4) Limber holes shall be cut in the floors and so located as to provide efficient drainage. The limber holes shall be so arranged that the load on the floors is taken by the keel as well as by the shell plating.

(i) *Gunwales.* (1) Dimensions of angular gunwales shall be not less than that shown in Table 160.035-3.

(2) The gunwales on each side of the lifeboat shall be in not more than two pieces. If the gunwales are fitted in two lengths, the joint shall be placed at approximately one-third of the length from the stem or stern of the boat and at opposite ends of the boat. The joint may be riveted or welded, and if riveted, the backing-up piece shall be angular in section of the thickness of the gunwale, and the length shall be not less than eight times the depth of the gunwale. A suitable butt weld may be used without backing-up bar.

(3) Flanged plates made from flat bars, dimensions of which shall be not less than that shown in Table 160.035-3, may be substituted for angle gunwales. The legs of the angles shall be approximately equal and the inside radius of the bend shall be at least $\frac{1}{2}$ ". The vertical leg shall be outside of the sheer strake.

(4) Wood gunwales when installed in metal lifeboats shall be of clear grained oak or teak. They shall be of a size as listed in the table below. When in two lengths the scarp shall be located as outlined in subparagraph (2) of this paragraph. Scarps shall be of a good long bevel type stiffened on the under side by a piece of the same size and material as the gunwale and at least 2 feet in length. The lap of the wooden gunwale to the sheer strake shall be made over felt laid in wet red lead and the gunwale shall be secured to the sheer strake with fastenings placed on 3" centers.

TABLE 160.035-3 (1) (4)

Length of lifeboat	Depth of gunwale		Width of gunwale	
	Inches		Inches	
12 feet and not over 18 feet.....	17	17	23	$\frac{3}{8}$
Over 18 and not over 20 feet.....	17	17	23	$\frac{3}{8}$
Over 20 and not over 22 feet.....	2	2	23	$\frac{3}{8}$
Over 22 and not over 24 feet.....	2	2	23	$\frac{3}{8}$
Over 24 and not over 26 feet.....	2	2	23	$\frac{3}{8}$
Over 26 and not over 28 feet.....	2	2	23	$\frac{3}{8}$

(j) *Nosings.* (1) The outside of the gunwale angle shall have a nosing fitted to the gunwale of hollow steel, half round, 2 inches by $\frac{1}{4}$ inch. If a flanged plate gunwale is used, a nosing will not be required.

(2) The outside of a wooden gunwale shall have a nosing of clear grain oak or teak, secured to the sheer strake and the gunwale by fastenings spaced on 6-inch centers which fastenings may be substituted for alternate fastenings between the gunwale and sheer strake. On boats not over 20 feet long, the flat side of the nosing shall be not less than $1\frac{1}{2}$ " wide and $\frac{5}{8}$ " thick, on boats not over 24 feet in length it shall be not less than $1\frac{7}{8}$ " wide by 1" thick, on all boats over 24 feet in length it shall be not less than $2\frac{1}{4}$ " wide by 1" thick.

(k) *Gunwale braces.* (1) The brace shall be bent outboard at the thwart so that the bolts and nuts do not obstruct the seating space. The gunwales shall be secured to the thwarts by steel braces, bolts and rivets as follows:

TABLE 160.035-3 (k) (1)

Length of lifeboat	Brace size	Bolts and rivets (diameter)	
		Inches	Inch
22 feet and under.....	3 x $\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{4}$
Over 22 feet and not over 28 feet.....	3 x $\frac{5}{16}$	$\frac{3}{4}$	$\frac{3}{4}$
Over 28 feet.....	3 x $\frac{3}{8}$	$\frac{7}{16}$	$\frac{7}{16}$

(2) The gunwale braces shall be bolted to the thwarts with at least two carriage bolts of a size not less than that noted in the table above and riveted or welded to the gunwales. Where riveted to the gunwale, at least two rivets of a size not less than that noted in the table above shall be used.

(3) Bracket type gunwale braces will be given special consideration.

(l) *Breast plates.* (1) Breast plates shall be fitted to the stem and sternpost. The thickness of the breast plates shall not be less than the thickness of the leg of the gunwale and the depth of the throat of the plate shall not be less than twice the depth of the gunwale.

(2) Breast hooks for wooden gunwales shall be of the strap type, not less than $1\frac{1}{2}$ " wide, nor less than $\frac{1}{4}$ " thick. The length of each leg of the breast hook shall be not less than 5 times the width of the gunwale. The inside strap shall be continuous and the outside strap may be in two pieces provided they are through riveted to the stem or sternpost. The inner and outer straps shall be through riveted or bolted to each other through the gunwale and sheer strake by not less than 3 rivets or bolts on each side.

(m) *Seats.* (1) The thwarts, side benches, and end benches shall be of fir, yellow pine, or approved equivalent.

(2) The dimensions of the thwarts shall be not less than that shown in Table 160.035-3. The mast thwart, if cut out in way of the mast, shall be suitably increased in width so that the width in way of the mast is not less than that required for other thwarts.

(3) The number of thwarts shall not be less than that set forth in Table 160.035-3.

(4) The distance from the top of the thwarts to the top of the gunwale shall be not less than that shown in Table 160.035-3.

(5) The thwart ends shall be fitted between flanges, or may be installed on top of both flanges, of a thickness not less than the bottom shell plating and secured to the thwart by two bolts in addition to the bolts through the gunwale braces. Each flange shall be riveted to the shell with rivets of the same size as used to connect the side and bottom plating and spaced not less than ten to the foot. The flanges shall extend inboard to take the brace bolts and shall be one inch in width less than the thwart. The ends of the thwart shall be not less than $\frac{3}{8}$ inch and not more than $\frac{3}{4}$ inch from the shell.

(6) The edges of all thwarts, side and end benches shall be well rounded.

(7) Suitable foot rests shall be furnished at a distance of between 17" to 20" below the thwarts and side benches. This may be accomplished by raising the footings from the bottom of the boat.

(8) Side and end benches shall be solid or close planked, not less than the following thicknesses:

TABLE 160.035-3 (m) (8)

Length of lifeboat	Thickness	
	Fir or pine	Plywood ¹
Up to 24 feet.....	$\frac{3}{4}$ inch	$\frac{1}{2}$ inch
24 feet to and including 36 feet.....	1	$\frac{3}{4}$

¹ Plywood, if used, shall be at least equal to Joint Army-Navy Specification JAN-P-66, type B-1c, grade A.

(n) *Stretchers.* (1) Stretchers of sufficient size and strength shall be fitted in suitable positions for rowing.

(o) *Stanchions.* (1) Fir or yellow pine stanchions of a size not less than that shown in Table 160.035-3 shall be fitted in all lifeboats where the unsupported length of the thwarts exceeds 4 feet.

(p) *Footings.* (1) Fir, pine, or plywood footings, of a thickness not less than that shown in paragraph (m) (8) of this section, shall cover the bottom of the lifeboat between the side tanks. If fir or pine footings are used, they shall be not less than 7½" wide or more than 9½" wide and they shall be spaced not more than 2' apart.

(2) The footings shall be made readily detachable and so arranged that the plugs are at all times directly accessible without removing the footings.

(q) *Disengaging apparatus.* (1) Connections for the disengaging apparatus shall have a minimum factor of safety of six.

(2) For construction and capacity of disengaging apparatus, see subpart 160.033.

(r) *Plugs.* (1) Each lifeboat shall be fitted with an automatic plug of such design as to insure complete drainage when the boat is in the chocks. The drain opening shall be as close as possible to the keel of the lifeboat. Two caps shall be provided attached by chains. Consideration will be given to the use of one cap when the automatic plug is so designed that the cap cannot be removed from the body of the plug.

(s) *Protection against corrosion.* (1) All steel or iron entering into the construction of lifeboats shall be galvanized by the hot dipped process. Other methods of corrosion prevention will be given special consideration.

(2) Where welded construction is employed, the material shall be galvanized after welding unless impractical to do so in which case consideration will be given to equivalent protection.

(3) Provisions shall be made to obtain a satisfactory bond between the metal and the paint.

(t) *Rudders.* (1) Each lifeboat shall be fitted with a rudder and tiller. The rudder shall be constructed of clear straight grained oak, properly strengthened with drifts or straps, of a thickness not less than that shown in Table 160.035-3. The thickness may be reduced ⅛ inch if check pieces are fitted extending beyond the lower pintle connection. The rudder shall be stiffened across the bottom edge by a piece of wood of the same character or by a metal shoe. Consideration will be given to the use of hollow metal rudders provided they are designed to float. Plywood rudders will be given special consideration. The rudder shall be fitted with a suitable lanyard.

(2) The lower attachment of the rudder to the sternpost shall be by a gudgeon and pintle. The upper attachment shall be of the triple or double gudgeon drop pin type. Where the double gudgeon type is used, the pin shall be attached to the rudder by a chain.

(3) A suitable hinged or pivoted tiller shall be provided.

(4) Rudder stops shall be provided to limit the rudder angle to approximately 45 degrees each side of the centerline.

(u) *Air tanks.* (1) There shall be supplied at least one cubic foot of air tankage for each person permitted in the boat in addition to sufficient air tankage to float the boat when filled with water and open to the sea.

(2) At least 50% of the air tankage shall be located along the sides of the boat and it shall be so located that the boat will be on even keel when flooded.

(3) The tops of the air tanks shall be protected by the side benches or other suitable means. The construction shall be such that water will not collect on the tops of the tanks.

(4) The cubical contents shall be stamped on the air tanks in such a location as to be visible from within the boat. The cubic capacity of the air tanks shall be determined by the formula contained in § 160.035-8 (c) except that the areas at the ends of the tanks cannot be neglected.

(5) Each air tank shall be fitted with a standard one-quarter inch pipe-size testing nipple with hexagonal cap. Cap to be of corrosion resistant material.

(6) Air tanks shall be double riveted and caulked, hook jointed and soldered, or welded so as to withstand a test pressure of one pound per square inch.

(7) *Independent air tanks.* (i) Independent air tanks shall be securely fastened in such a manner that they may be temporarily removed for inspection purposes. Fastenings shall not pierce the air tanks.

(ii) The material for the air tanks shall be of a thickness not less than that noted below:

Capacity (cubic feet):	USSG
Not over 6.....	22
Over 6, not over 15.....	20
Over 15.....	18

(8) *Built-in air tanks.* (i) A bolted inspection plate shall be provided in such a location that all portions of the tank will be accessible for inspection and repair.

(ii) The tops and sides of all built-in air tanks shall be not less than 14 USSG, except that 16 USSG may be used at the ends if severe forming is necessary. All

bulkheads of built-in air tanks shall be not less than 16 USSG.

(iii) Each compartment shall be fitted with a standard ¼" pipe size test nipple and hexagonal cap so located as to be convenient for inspection purposes. In addition, a similar fitting shall be installed as near the bottom as possible for the purpose of draining water that may enter the tank.

(v) *Equipment stowage.* (1) Provision lockers, water tanks, and special equipment lockers shall be watertight and so designed and located as to fit under the side benches, end benches, or footings without projecting into the accommodation spaces of the lifeboat. In special cases, stowage under the thwarts will be permitted. Standard ¼" pipe size testing nipples shall be fitted to all such lockers or tanks.

(2) Water tanks shall be constructed of at least 18 USSG material. An opening with a dogged type cover shall be provided for removal of water cans. This opening shall be at least 7" in diameter, but in any case shall be of sufficient size that all water cans can be removed. In addition, built-in water tanks shall have an opening at least 13" in diameter with a bolted cover for the purpose of inspection and maintenance. A 2" diameter fill cap shall be installed for the purpose of storing rain water. A standard ¼" pipe size drainage nipple with hexagonal cap shall be fitted in the bottom of the tank in an accessible location and may be used for air testing the water tank.

(w) *Grab rails.* (1) Grab rails shall be substantially attached to each lifeboat below the turn of the bilge and extend approximately two-thirds of the length of the lifeboat on each side. The ends of the grab rails shall be faired to prevent fouling and all connections of the rails to the lifeboat shall be made by riveting the palms of the brackets to a small plate and riveting the plate to the shell. To prevent rupture of the shell if the grab rail is carried away, more rivets shall be used in attaching the plate to the shell than in fastening the bracket to the plate.

TABLE 160.035-3

Length of boat, not over (feet)	Bar keel, stem, and sternpost (inches)	Gunwales		Shell plating		Thwarts		Stanchions (inches)	Painter shackles (nominal size)	Rudder thickness (inches)	
		Angle bar (inches)	Flanged flat bar (inches)	Side (USSG)	Bottom (USSG)	Number required	Distance from top of thwart to top of gunwale (inches)				Size (inches)
12.0	2½ x ½	2 x 1½ x ¼	3½ x ¼	18	18	4	9	1½ x 7½	1½ x 3½	5/8	1
14.0	2½ x ½	2 x 1½ x ¼	3½ x ¼	18	18	4	9	1½ x 7½	1½ x 3½	5/8	1
16.0	2½ x ½	2 x 1½ x ¼	3½ x ¼	18	18	4	9	1½ x 7½	1½ x 3½	5/8	1
18.0	2½ x ¾	2 x 2 x ¼	4 x ¼	18	18	4	9	1½ x 7½	1½ x 3½	5/8	1
20.0	2½ x ¾	2 x 2 x ¼	4 x ¼	16	16	5	9	1½ x 7½	1½ x 3½	5/8	1
22.0	2½ x ¾	2 x 2 x ¼	4 x ¼	16	14	5	9	1½ x 7½	1½ x 3½	5/8	1 1/4
24.0	3 x ¾	2½ x 2 x ¼	4½ x ¼	16	14	5	10	1½ x 9½	1½ x 5½	5/8	1 1/4
26.0	3 x ¾	2½ x 2 x ¼	4½ x ¼	14	13	6	10	1½ x 9½	1½ x 5½	5/8	1 1/4
28.0	3½ x ¾	2½ x 2½ x ¼	5 x ¼	13	12	6	10	1½ x 9½	1½ x 5½	5/8	1 1/4
30.0	3½ x ¾	2½ x 2½ x ¼	5 x ¼	13	12	7	11	1½ x 9½	1½ x 5½	5/8	1 1/4
32.0	4 x ¾	2½ x 2½ x ¼	5 x ¼	13	12	7	11	1½ x 11½	1½ x 5½	5/8	1 1/4
34.0	4 x ¾	2½ x 2½ x ¼	5 x ¼	12	12	8	11	1½ x 11½	1½ x 5½	5/8	1 1/4
36.0	4 x 1	2½ x 2½ x ¼	5 x ¼	12	12	8	11	1½ x 11½	1½ x 5½	5/8	1 1/4

NOTE: Hoisting shackles, if provided, shall have a factor of safety of six based on the lowering weight of the fully loaded lifeboat.

§ 160.035-4 *Construction of steel hand-propelled lifeboats.* (a) A hand-propelled lifeboat shall comply with all the requirements for an oar-propelled lifeboat, and in addition, shall have sufficient additional buoyancy to compensate for the weight of the hand-propelling gear.

(b) The hand-propelling gear shall be of an approved type and shall be substantially constructed and securely fitted in the lifeboat. The design shall be such that the lifeboat may be readily maneuvered from the ship's side after being launched and steering way maintained under adverse weather conditions. Provisions shall be made for going astern. The hand-propelling gear shall propel the lifeboat with only a normal amount of effort while maintaining an average speed of not less than 3 knots over a measured course of not less than 1,000 feet.

(c) The hand-propelling gear shall be so designed that it may be operated by persons untrained in its use, and shall be operable when the boat is flooded.

(d) For construction of hand-propelling gear, see subpart 160.034.

§ 160.035-5 *Construction of steel motor-propelled lifeboats, with and without radio cabin.* (a) A motor-propelled lifeboat, carried as part of the lifesaving equipment of the vessel, whether required or not, shall comply with all the requirements for an oar-propelled lifeboat, and in addition, shall have sufficient additional buoyancy to compensate for the weight of the motor and other equipment.

(b) The engine shall be of a reliable, marine, heavy duty type, permanently installed in the lifeboat, and shall be capable of propelling the lifeboat at a sustained speed of not less than 6 knots through smooth water over a measured course. Provision shall be made for going astern. All carburetors, except the down draft type, shall be fitted with an adequate drip collector covered with a flame screen. A back-fire flame arrester of an approved type shall be fitted and the air intakes shall be so directed that back-fire cannot blow down into the bilge. Sufficient tools to perform emergency repairs and ordinary servicing shall be provided.

(c) The engine shall be inclosed in a suitable engine box which shall be watertight with the exception of the top which may be weathertight. The top of the engine box shall be fitted with a screw down mushroom vent. The engine box shall be fitted with a suitable drain. Propeller shafting shall be of bronze or equally corrosion resistant material. Fittings, pipes, connections, etc., shall be of high standard and good workmanship, and installed in accordance with good marine practice. The exhaust manifold shall be suitably insulated. The engine shall have an efficient hand starter. There shall be a strainer between the carburetor and the fuel tank.

(d) Fuel tanks shall be constructed of galvanized steel securely fastened inside the lifeboat and suitably located. The thickness shall be not less than 16 USSG for tanks of less than 50 gallons capacity, and not less than 14 USSG for

tanks of 50 or more gallon capacity. A suitable swash plate shall be fitted in tanks over 30 inches in length. Fuel tanks shall be fitted with a shut off valve at the tank. The tank shall be properly vented and the fill pipe connection shall be through the top of the tank and extend to within ½ inch of the bottom. Tanks shall be designed with a factor of safety of not less than 4, and shall be tested by a static head above the tank top of ten feet of water without showing leakage or permanent deformation.

(e) The radio and source of power for the searchlight shall be suitably housed and protected from the elements, and the entire installation shall comply with the requirements of the Federal Communications Commission rules governing ship service. The radio cabin shall be of a size to contain the radio and source of power, and the operator of the equipment. The top and sides of the radio cabin shall be watertight with the exception of the door which may be weathertight. The installation of the radio cabin shall take into consideration the concentration of weight in this area.

(f) For construction of searchlight, see subpart 161.006 of this subchapter.

(g) Starting batteries, where fitted, shall be installed in a lead lined box of sufficient strength to retain the battery in position when the lifeboat is in a seaway. The box shall be one inch longer and one inch wider than the battery and shall be lined with 4 pound lead flashed up 3 inches on the sides and ends.

§ 160.035-6 *Construction of aluminum oar-, hand-, and motor-propelled lifeboats.* (a) Lifeboats may be constructed of aluminum alloy. Special consideration of the materials, scantlings, and design will be given. In general, the strength of aluminum alloy lifeboats shall be equivalent to that of steel lifeboats, the construction of which is noted in §§ 160.035-3, 160.035-4 and 160.035-5.

§ 160.035-7 *Construction of wood oar-, hand-, and motor-propelled lifeboats.* (a) Lifeboats may be constructed of wood or plywood. In either case, special consideration of the materials, scantlings, and design will be given. In general, the strength of wooden lifeboats shall be equivalent to that of steel lifeboats, the construction of which is noted in §§ 160.035-3, 160.035-4 and 160.035-5.

§ 160.035-8 *Cubic capacity of lifeboats—(a) Definitions.* The following definitions apply to the measurement of a lifeboat to determine its cubic capacity:

(1) *Length (L).* The length is the distance in feet from the inside of the plating or planking at the stem to the corresponding position at the stern. In the case of a boat with a square stern, the after terminus is the inside of the transom.

(2) *Breadth (B).* The breadth is the distance in feet over the plating or planking at the point where the breadth of the boat is greatest.

(3) *Depth (D).* The depth is the distance in feet amidships inside the plating from the top of the keel to the level of the gunwale. The depth used for calculating purposes shall not exceed 45% of the breadth.

(4) *Sheer.* Lifeboats shall have a sheer at each end at least equal to 4% of the length, and a sheer at the quarter points of at least 1% of the length. If less sheer is provided, the depth used to determine the cubic capacity shall be assumed to be reduced so as to achieve this minimum sheer.

(b) *Formula.* The cubic capacity shall be determined by the following formula:

$$L \times B \times D \times 0.6$$

(c) *Owner's option.* (1) In all cases the owner or manufacturer has the right to require that the cubic capacity of the lifeboat be determined by exact measurement as outlined in subparagraph (2) of this paragraph.

(2) To determine the cubic capacity of a lifeboat by exact measurement, the use of Stirling's (Simpson's) rule shall be employed. The capacity in cubic feet of a lifeboat, calculated by Stirling's rule, may be considered as given by the following formula:

$$\text{Capacity} = \frac{L}{12} (4A + 2B + 4C)$$

where *A*, *B*, and *C* denote, respectively, the areas of the cross sections at the quarter length forward, amidships, and the quarter length aft, which correspond to the three points obtained by dividing *L* into four equal parts. (The areas corresponding to the two ends of the boat are considered negligible.) The areas *A*, *B*, and *C* shall be deemed to be given in square feet by the successive application of the following formula to each of the three cross sections:

$$\text{Area} = \frac{h}{12} (a + 4b + 2c + 4d + e)$$

h being the depth in feet as determined by paragraph (a) (3) of this section, *a*, *b*, *c*, *d*, and *e* denote the horizontal breadths of the lifeboat measured in feet at the upper and lower points obtained by dividing *h* into four equal parts. (*a* and *e* being the breadths at the extreme points, and *c* the breadth at the middle point of *h*). If the sheer of the gunwale measured at the two points situated at a quarter of the length of the boat from the ends exceeds 1% of the length of the lifeboat, the depth used in calculating the area of the cross sections *A* and/or *C* shall be deemed to be the depth amidships plus 1% of the length of the boat.

(d) *Hand-propelled lifeboat.* The cubic capacity of a hand-propelled lifeboat shall be determined in the same manner as an oar-propelled lifeboat.

(e) *Motor-propelled lifeboat.* The cubic capacity of a motor-propelled lifeboat shall be determined in the same manner as an oar-propelled lifeboat and then deducting from the gross volume, a volume equal to the engine box and accessories, and when carried, the radio cabin, searchlight, and their accessories. The volume of such equipment extending above the sheer line need not be deducted.

§ 160.035-9 *Number of persons allowed in lifeboats.* (a) The maximum number of persons for which the lifeboat may be rated is determined as noted in subparagraphs (1), (2), and (3) of this paragraph. The smallest number obtained is the number to be used.

(1) The number of persons permitted in the lifeboat shall not exceed $\frac{1}{10}$ the net cubic capacity as determined by § 160.035-8 (b) or at the owner's or manufacturer's option by § 160.035-8 (c).

(2) The number of persons permitted in the lifeboat shall not exceed the number for which seating space is provided as determined by drawing figures to scale of a size as noted below on an arrangement plan of the lifeboat:

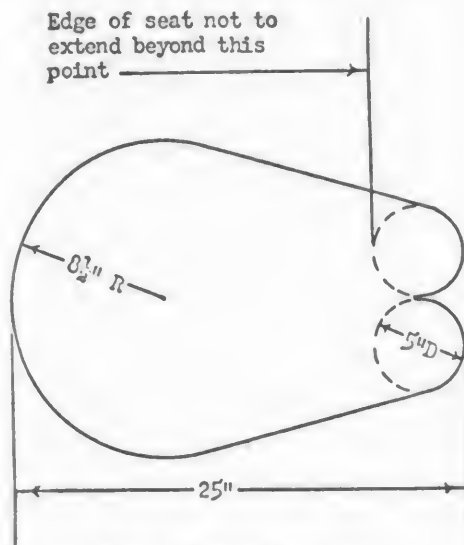


FIGURE 160.035-9 (a) (2).

(3) The number of persons permitted in the lifeboat shall not exceed the number of persons wearing life preservers which can be seated in the lifeboat without interfering with the use of the oars.

§ 160.035-10 *Inspection and testing of lifeboats.* (a) Lifeboats shall be inspected during the course of construction to determine that the arrangements and materials entering into the construction are in accordance with approved plans, and to insure that the workmanship is of good quality. All air tanks shall be tested to an air pressure of one pound per square inch and shall show no evidence of weakness.

(b) Before approval is granted to any design of lifeboat, the following tests shall be made by an inspector:

(1) *Strength test.* The lifeboat shall be suspended by shackles at the bow and stern, or by means of the releasing gear, and the length, beam, and depth shall be measured. Weights shall then be added to equal the weight of the equipment, food, water, etc., and persons for which the boat is to be approved, and the length, beam, and depth measured. The foregoing shall be repeated with a 25% overload. The weight shall then be removed and the measurements rechecked. There shall be no appreciable set as a result of this test.

(2) *Flooding test.* Lifeboats shall be flooded to determine the amount of air tankage necessary to float the complete boat including releasing gear but with no equipment, provision lockers, water tanks, or fuel tanks aboard. If provision lockers, water tanks, and fuel tanks cannot be removed, they should be flooded or filled to the final waterline. Lifeboats fitted with watertight stowage compart-

ments to accommodate individual drinking water containers shall have these individual containers aboard and placed in the stowage compartments which shall be sealed watertight during the flooding test. Ballast of equivalent weight and density should be substituted for the motor, shaft, propeller, radio, battery, searchlight, etc., if they are to be installed.

(i) *Boats with independent air tanks.* The estimated amount of air tankage to just float the boat in this condition should be fitted symmetrically aboard the lifeboat, and then the boat flooded. If the tops of the gunwales at their lowest point do not clear the surface of the water, the air tankage shall be increased as necessary. One cubic foot of air tankage for each person the lifeboat is permitted to carry shall be added to the amount thus determined to constitute the required air tankage for the lifeboat.

(ii) *Boats with built-in air tanks.* When flood testing lifeboats with built-in air tanks, weights shall be placed in the bottom of the lifeboat to counteract the buoyancy of air tankage provided for the persons to be carried. The amount of weight required per person carried shall be as follows:

Material:	Weight per person (pounds)
Iron or steel.....	72
Lead.....	69
Concrete.....	110

Other impervious material may be used if more convenient. The weight per person required is determined from the

$$\text{formula } W = \frac{63d}{d - 63} \text{ where } d \text{ is the density}$$

of material in pounds per cubic foot. (Sandbags should not be used for this purpose inasmuch as their weight under water is not readily predictable.) If the lifeboat weighted as above does not float with the gunwale at the lowest point just clear of the surface of the water, unit air tanks should be slipped beneath the thwarts until the gunwales do clear the surface of the water. The additional air tankage required shall be incorporated in the design of the lifeboat.

(3) *Seating capacity test.* The lifeboat shall be fully loaded with equipment, and in this condition the number of persons for which the lifeboat is to be approved shall be seated, in accordance with the seating plan required in § 160.035-11 (a). All persons shall wear an approved life preserver and it shall be demonstrated by actual test that there is sufficient room to row the boat without interference.

(4) *Freeboard test.* Freeboards shall be measured to the low point of the sheer with the lifeboat in light condition with neither equipment nor persons aboard, and in the loaded condition with full equipment and persons aboard.

(5) *Stability test.* Upon the conclusion of the seating test, all persons on one side of the centerline shall disembark. The remaining people on board should sit upright and not move from their original positions (not less than one-half the total number of persons should remain in the lifeboat). Free-

board to the low point of sheer shall then be measured. This freeboard should, in general, be not less than 10% of the depth of the lifeboat.

(c) Motor-propelled lifeboats shall be subjected to the same tests as required for an oar-propelled lifeboat. In addition, speed tests over a measured course and fuel consumption tests on a time basis shall be made to determine that the fully loaded lifeboat can maintain a speed of six knots and carry sufficient fuel for at least 24 hours.

(d) Hand-propelled lifeboats shall be subjected to the same tests as required for an oar-propelled lifeboat. In addition, a test shall be made to assure that the lifeboat can be satisfactorily maneuvered with the hand-propelling gear. A speed of at least three knots shall be achieved in both light and load condition over a measured course of not less than 1000 feet.

(e) *Testing and Inspection After Approval:* After the design of a lifeboat has been approved, subsequent lifeboats of the same design shall be individually inspected and tested as noted in paragraph (a) of this section. In addition, motors and hand-propelling gear when installed shall be operated in the "ahead", "neutral", and "astern" positions. If mechanical disengaging apparatus is fitted, it shall be tested by suspending the lifeboat in light condition and operating the mechanism to insure that the gear is properly installed, provided that, if in the opinion of the inspector, the installation is not entirely satisfactory, he may require the same test be conducted with the lifeboat fully loaded.

(f) A corrosion resistant name plate shall be affixed at the bow of each lifeboat on which is stamped the name of the manufacturer, symbol and serial number, approval number, dimensions of the lifeboat, cubic capacity, air tank capacity, the number of persons for which the lifeboat is approved, together with the inspector's initials, the date, and the letters U. S. C. G.

§ 160.035-11 *Procedure for approval of lifeboats.* (a) Before action is taken on any design of lifeboat, detailed plans covering fully the arrangement and construction of the lifeboat, material specifications, together with a lines drawing, stowage arrangement, seating arrangement, and sail plan shall be submitted to the Commandant through the Commander of the Coast Guard District in which the lifeboat is built.

(b) If the drawings required in paragraph (a) of this section are satisfactory, the Commander of the Coast Guard District in which the lifeboat is to be built, shall be notified in writing when fabrication is to commence. An inspector will be assigned to supervise the construction in accordance with the plans and upon completion, conduct the tests required by § 160.035-10.

(c) At the time that the tests are successfully completed, the manufacturer shall present to the inspector four corrected copies of the plans noted in paragraph (a) of this section, including any corrections, changes, or additions which may have been found necessary during construction or testing. If the manu-

facturer desires more than one set of approved plans, additional copies shall be submitted at that time.

(d) Upon receipt of corrected drawings and satisfactory test reports, the Commandant will issue a certificate of approval. No change shall be made in the design or construction without first receiving permission of the Commandant via the Commander of the Coast Guard District in which the lifeboat is built.

PART 164—MATERIALS

Part 164 is amended by adding the new subparts 164.008 and 164.009, which read as follows:

SUBPART 164.008—BULKHEAD PANELS FOR MERCHANT VESSELS

- Sec.
164.008-1 Applicable specifications.
164.008-2 Material.
164.008-3 Inspection and testing.
164.008-4 Procedure for approval.

SUBPART 164.009—INCOMBUSTIBLE MATERIALS FOR MERCHANT VESSELS

- 164.009-1 Applicable specifications.
164.009-2 Material.
164.009-3 Inspection and testing.
164.009-4 Procedure for approval.

AUTHORITY: §§ 164.008-1 to 164.009-4 issued under R. S. 4405, 4417a, 4426, 49 Stat. 1384, 1544, 54 Stat. 346, 1028, and section 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 1, 367, 369, 375, 391a, 404, 463a, 1333, 50 U. S. C. 1275.

SUBPART 164.008—BULKHEAD PANELS FOR MERCHANT VESSELS

§ 164.008-1 *Applicable specifications.*

(a) The following specifications, of the issue in effect on the date of manufacture of the bulkhead panel, shall form a part of this subpart where applicable.

(1) U. S. Coast Guard Specification for Incombustible Materials for Merchant Vessels, subpart 164.009.

(2) American Standards Association Specification A-2.1-1942, Standard Methods of Fire Tests of Building Construction and Materials.

§ 164.008-2 *Material.* (a) Bulkhead panel material shall be of such quality as to successfully meet the requirements for an Incombustible Material as set forth in subpart 164.009.

(b) Bulkhead panels for use as a component in Class B-15, Class A-30, or Class A-15 construction shall meet the fire resistance requirements of § 164.008-3 (b) (2) for at least 15 minutes, and the integrity requirements of § 164.008-3 (b) (3) for at least 30 minutes.

(c) Bulkhead panels for use as a component in Class A-60 construction shall meet the fire resistance requirements of § 164.008-3 (b) (2) for at least 15 minutes and the integrity requirements of § 164.008-3 (b) (3) for at least 60 minutes.

§ 164.008-3 *Inspection and testing—*

(a) *Tests.* All tests shall be conducted at the National Bureau of Standards or other laboratory designated by the Coast Guard.

(b) *Fire resistance and integrity test.*

(1) A representative bulkhead panel, of a size as indicated in § 164.008-4 (c) (1), shall be installed in a furnace to form

part of one wall. The furnace shall be heated and the temperature controlled according to the standard fire exposure curve reaching 1,550° F. at the end of 30 minutes and 1,700° F. at the end of one hour. The temperature of the non-fire exposed side, as indicated by not less than 9 thermocouples under 0.40-inch asbestos pads, shall be observed at intervals not greater than 3 minutes during the test. The test shall be continued for at least 30 minutes to meet the requirements of § 164.008-2 (b) or at least 60 minutes to meet the requirements of § 164.008-2 (c). In either case, the test shall not be stopped before the maximum surface temperature rise values noted in subparagraph (2) of this paragraph have been reached. Temperature recordings shall be taken in way of the joints for information purposes, but these temperatures will not be used to determine the average or maximum temperature rises of the panel.

(2) Data from this test shall be analyzed to determine the thickness necessary to limit the average temperature rise on the nonfire exposed surface to 250° F. above the original temperature or the maximum rise at any thermocouple location to 325° F. above the original temperature at the end of 15 minutes.

(3) This test shall determine the length of time, up to one hour, that the bulkhead panel, including the joint, can withstand the passage of flame.

(c) *Spot-check tests.* After approval has been granted to a bulkhead panel, the Coast Guard reserves the right to spotcheck the material at any time by having any or all of the above tests conducted on any samples taken from stock or from the field. The manufacturer will incur no expense for such tests, but the results shall be binding upon the approval of his product. The manufacturer will be advised in advance of the time of testing of the samples selected and may witness the tests if he so desires.

§ 164.008-4 *Procedure for approval.*

(a) If a manufacturer desires to have a bulkhead panel approved, a request shall be presented to the Commandant of the Coast Guard together with the following:

(1) If the material has already been approved as an incombustible material under subpart 164.009, the approval number of the material shall be indicated. If the material has not been approved as an incombustible material, the procedure set forth in subpart 164.009 shall be followed; and such approval shall be obtained.

(2) The trade name of the bulkhead panel.

(3) The range of thicknesses and/or densities in which it is proposed to manufacture or use the material, together with any information or recommendations the manufacturer may have as to maximum or minimum thicknesses or densities.

(b) The above information will be submitted by the Coast Guard to the National Bureau of Standards for consideration. After the material has been approved as an Incombustible Material, and if it is indicated that the material is in all other respects suitable, the manufacturer will be so advised. The recom-

mended thickness of the panel for the fire resistance and integrity test will be specified at this time.

(c) If the material is indicated as being suitable, the manufacturer shall submit the following to the Fire Protection Section of the National Bureau of Standards, Washington 25, D. C., and shall advise the Coast Guard of the shipment:

(1) One representative panel of the material 7.5 feet high and 4 feet wide containing at least one vertical joint. A sketch of the furnace is shown in figure 164.008-4 (c) (1). If the manufacturer desires to submit the panel in a thickness or size other than that recommended, prior approval shall be obtained from the Commandant. The manufacturer shall supply any labor required for fabrication of the panel and for attaching the panel to the frame for testing, as necessary.

(2) A check for \$400.00 made payable to the National Bureau of Standards.

(3) If the manufacturer desires to witness the test, he should so indicate at this time.

(d) The test noted in § 164.008-3 (b) will then be conducted by the National Bureau of Standards, and a report will be submitted to the Coast Guard.

(e) A copy of the report will be forwarded to the manufacturer, and he will be advised if his material is approved under this subpart. If approved, any stipulations of the approval will be specified. This information will be published in the FEDERAL REGISTER, and an approval certificate will be given to the manufacturer.

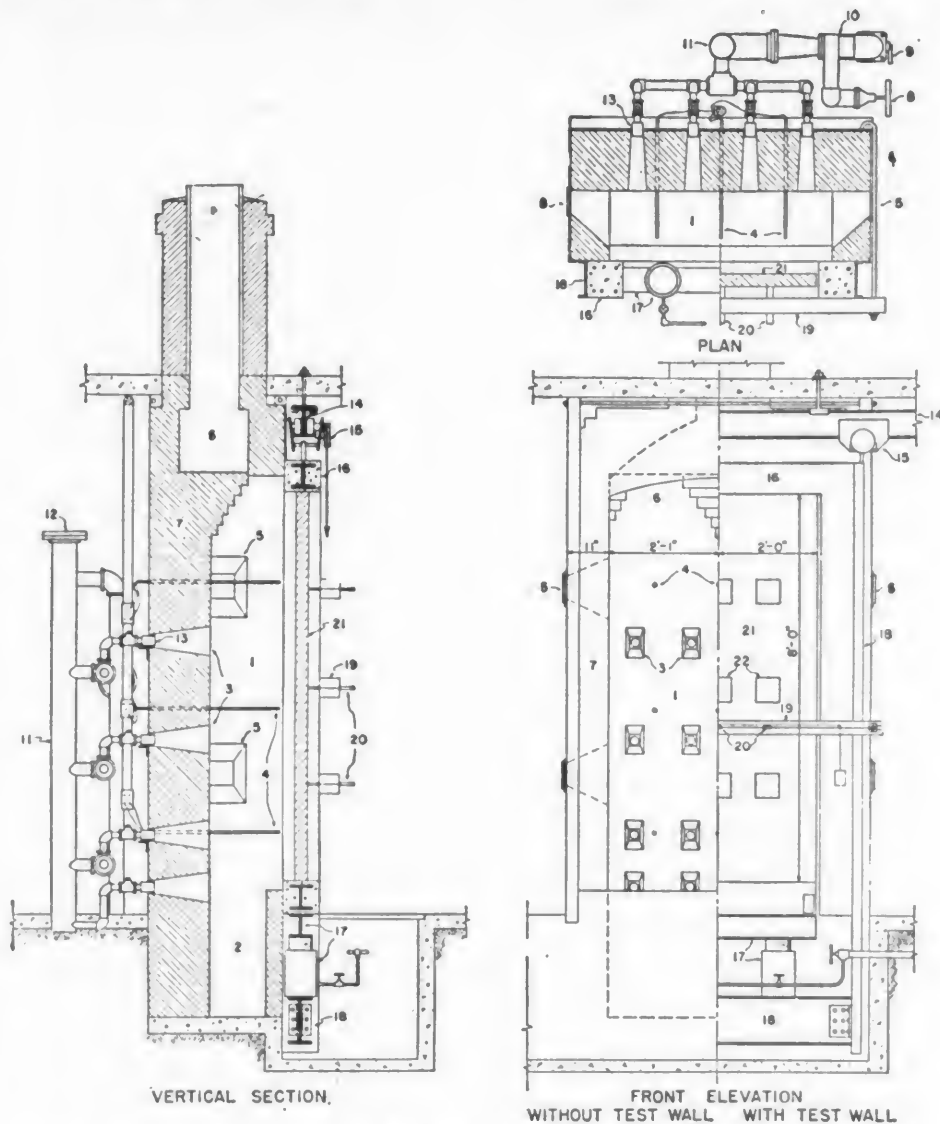
(f) If the manufacturer desires to have the tests conducted at some laboratory other than the National Bureau of Standards, this information shall be supplied at the time of initial contact with the Coast Guard. If the proposed laboratory is acceptable to the Coast Guard, the manufacturer will be so advised and any special testing requirements will be made at this time. The Coast Guard shall be notified in advance of the date of the test so that a representative may be present. The laboratory shall submit a detailed test report to the Coast Guard in triplicate together with representative samples of the material taken before and after testing. The test report and samples will be examined by the National Bureau of Standards for compliance with this subpart. The test report shall include the following information together with any other pertinent data:

(1) Description of the panel tested giving size, thickness, density, detail of joint and method of assembling in furnace.

(2) Complete time-temperature data, including the initial temperature, for each furnace and panel thermocouple together with curves of average furnace temperature, average panel temperature, and maximum panel temperature.

(3) A log setting forth the observer's notes relative to deflections, cracking, smoke and gas emission, glow, flame emission, and any other important data. The time of each observation should be noted.

(4) Photographs of both sides of the panel before and after testing.



Small wall-testing furnace. 1, Furnace chamber; 2, pit for debris; 3, burner ports; 4, thermocouple protection tubes; 5, observation windows; 6, flue outlets; 7, fire brick furnace wall; 8, gas control valve; 9, air control valve; 10, air-gas mixer; 11, mixed fuel distributing manifold; 12, explosion valve; 13, self-piloting burner tips; 14, track

for moving test frames; 15, hand trolley for carrying test frames; 16, movable refractory concrete test frame; 17, loading jacks and beam; 18, loading frame; 19, bar for holding deflection scales and tying frame to furnace; 20, deflection scales; 21, test specimen; 22, asbestos pads covering thermocouples on unexposed surface of test specimen.

FIGURE No. 164.008-4 (c) (1).

SUBPART 164.009—INCOMBUSTIBLE MATERIALS FOR MERCHANT VESSELS

§ 164.009-1 Applicable specifications.

(a) There are no other specifications applicable to this subpart.

§ 164.009-2 Material. (a) Incombustible materials may be of any type such as board, sheet, loose material, etc.

(b) The following materials will be considered as automatically meeting the requirements of this subpart. No tests will be required, and no specific approvals will be granted.

- (1) Sheet or block glass.
- (2) All metals except magnesium or magnesium alloys.
- (3) Portland cement, gypsum, or magnesite concretes with aggregates of only sand, gravel, asbestos fibers, expanded vermiculite, expanded or vesicular slags, or diatomaceous silica.

(c) All materials not listed in paragraph (b) of this section shall pass the

Heated Tube Test for incombustibility noted in § 164.009-3(b).

(d) Fibrous insulation type materials shall pass the Reheating Test noted in § 164.009-3(c) in addition to the Heated Tube Test.

§ 164.009-3 Inspection and testing—

(a) Tests. All tests shall be conducted at the National Bureau of Standards or other laboratories designated by the Coast Guard.

(b) Heated tube test. (1) Three specimens, each 2" x 1½" and the thickness of the material as manufactured, but not to exceed 1½", shall be cut from the sample submitted and shall be dried at a temperature of 100° C. for a period of 6 hours before the test. A small hole shall be drilled in the specimen near the bottom, and a thermocouple shall be inserted to register the internal temperature. An additional thermocouple shall

be affixed to the surface of the lower portion of the specimen.

(2) The test shall be conducted in an apparatus similar to that described in figure 164.009-3(b)(2). This apparatus shall be capable of developing and maintaining a temperature of 750° C. in the heating tube.

(3) The heating tube shall be brought up to a temperature of 750° C., and while maintaining that temperature the specimen shall be suspended in the heating tube for a period of 15 minutes unless failure occurs before that time. Temperature readings shall be taken from the surface and internal thermocouples of the specimen as well as the heating tube thermocouple at intervals not greater than one minute.

(4) In order to pass this test, each of the three specimens shall meet the conditions noted below for the duration of the 15-minute interval. For fibrous insulation type materials these conditions will only be applicable to the last 13 minutes of the 15-minute interval.

(i) The specimen shall not flame, except that flame from painted or paper coated surfaces may be permitted for not longer than 30 seconds during the first two minutes.

(ii) The specimen shall not glow brighter than the walls of the heating tube. If glowing at all, the glow shall diminish immediately when the specimen is removed from the heating tube.

(iii) The internal temperature of the specimen shall not exceed the heating tube temperature by more than 10° C.

(c) Reheating test. (1) Two specimens of the material, each 12" x 12" x 6", shall be prepared so that when placed one on top of the other they form a cube one foot on a side. A piece of steel weighing approximately ½ pound consisting of a 1 1/16" length of 1 1/4" shafting with a thermocouple attached to its side shall be heated uniformly throughout its mass to more than 900° C. The temperature of the steel shall be observed as it cools in room air, free of drafts and it shall be inserted between the two specimens in the center of the faying surfaces when the surface temperature reaches 900° C. In the case of rigid or semi-rigid type materials, hollows shall be cut in the two faying surfaces in the shape of the shaft so that contact of the two surfaces will be made. Three thermocouples shall be installed between the two faying surfaces at 1", 2", and 3" from the shafting, and a 1/8" steel plate one foot square shall be placed on top of the cube to insure a uniform pressure between the two specimens. Readings of the three thermocouples between the specimens and the thermocouple attached to the shafting shall be made at intervals not greater than 5 minutes for the first two hours and 10 minutes thereafter. The test shall continue until such time as the temperatures indicated by all four thermocouples are less than 200° C., or until it is indicated that the material has failed to pass the test.

(2) In order to pass this test, all of the following conditions shall be met:

(i) There shall be no indication of flame or glow on the exterior of the cube during the test.

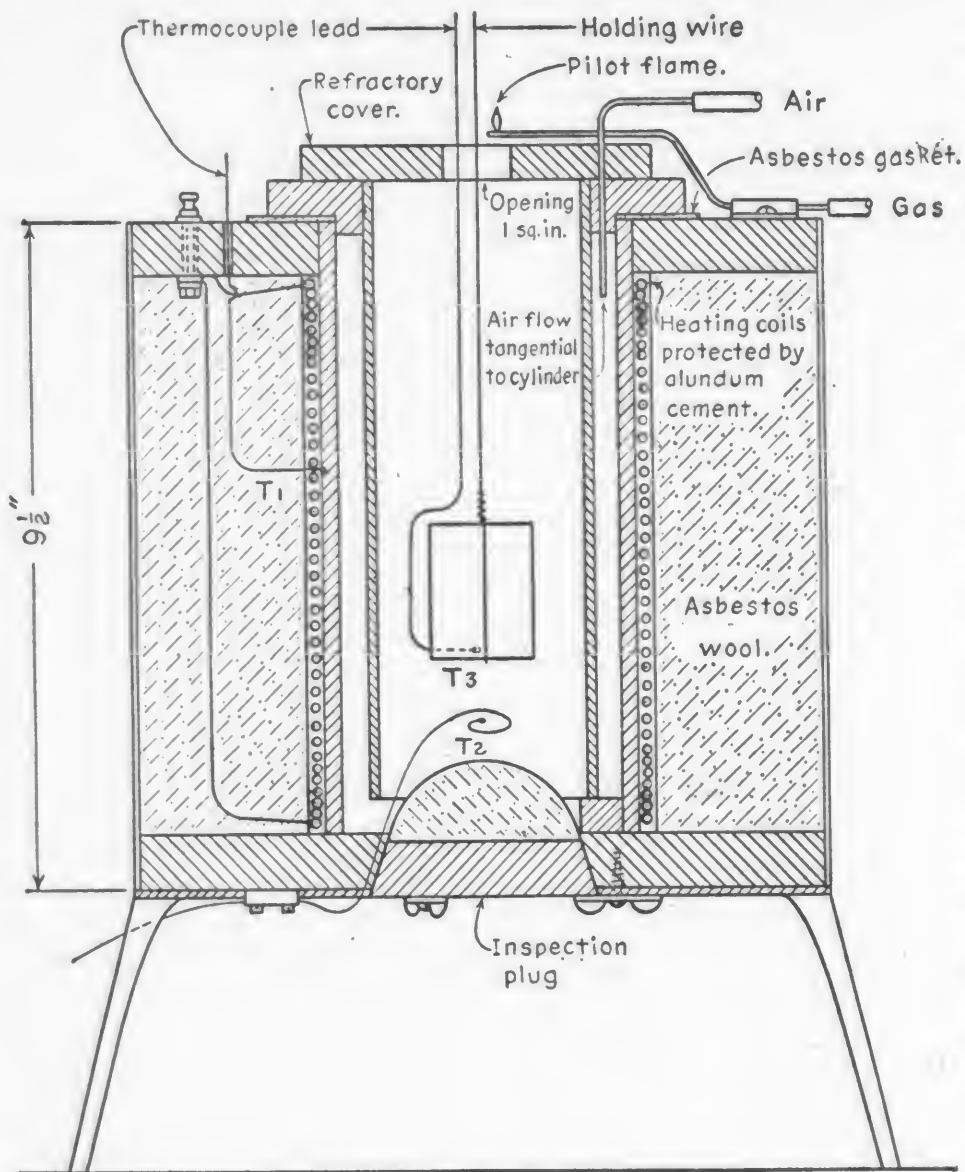


FIGURE 164.009-3 (b) (2).

(ii) The shafting temperature at any reading shall not be greater than at any previous reading.

(iii) None of the three thermocouples between the faying surfaces shall at any instant indicate a temperature of more than 10° C. above the temperature of the shafting at that time.

(d) *Spot-check tests.* After approval has been granted to an Incombustible Material, the Coast Guard reserves the right to spot-check the material at any time by having any or all of the above tests conducted on any samples taken from stock or from the field. The manufacturer will incur no expense for such tests, but the results will be binding on the approval of his product. The manufacturer will be advised in advance of the time of testing of the samples selected and may witness the tests if he so desires.

§ 164.009-4 *Procedure for approval.*

(a) If a manufacturer desires to have an incombustible material approved, a request shall be presented to the Commandant of the Coast Guard together with the following:

- (1) The trade name of the material.
- (2) A sample of the material at least 1 foot square.
- (3) The range of thicknesses and/or densities in which it is proposed to manufacture or use the material together with any information or recommendation the manufacturer may have as to maximum or minimum thicknesses or densities.

(b) The above information will be submitted by the Coast Guard to the National Bureau of Standards for consideration. If the material appears to be suitable, the manufacturer will be so advised. The size of the samples to be submitted for testing will be specified at this time.

(c) If the material is indicated as being suitable, the manufacturer shall submit the following to the Coast Guard:

- (1) Samples of the material as specified.
- (2) A check for \$40.00 (\$40.00 additional if the Reheating Test is required) made payable to the National Bureau of Standards.

(3) If the manufacturer desires to witness the tests, he should so indicate at this time.

(d) The tests noted in § 164.009-3 will then be conducted by the National Bureau of Standards, and a report will be submitted to the Coast Guard.

(e) A copy of the test report will be forwarded to the manufacturer, and he will be advised if his material is approved under this subpart. If approved, any stipulations of the approval will be specified. This information will be published in the FEDERAL REGISTER, and an Approval Certificate will be given to the manufacturer.

(f) If the manufacturer desires to have the tests conducted at some laboratory other than the National Bureau of Standards, this information shall be supplied at the time of the initial contact with the Coast Guard. If the proposed laboratory is acceptable to the Coast Guard, the manufacturer will be so advised and any special testing requirements will be made at this time. The Coast Guard shall be notified in advance of the date of the test so that a representative may be present. The laboratory shall submit a test report to the Coast Guard in triplicate together with representative samples of the material taken before and after testing. The test report and samples will be examined by the National Bureau of Standards for compliance with this subpart. The test report shall include the following information together with any other pertinent data:

(1) Complete time-temperature data for each thermocouple for both the heated tube and reheating tests.

(2) A log setting forth the observer's notes relative to smoke or gas emission, glow, flame emission, and any other important data. The time of each observation should be noted.

Dated: August 11, 1949.

[SEAL] J. F. FARLEY,
Admiral, U. S. Coast Guard,
Commandant.

[F. R. Doc. 49-6694; Filed, Aug. 16, 1949;
8:49 a. m.]

TITLE 14—CIVIL AVIATION

Chapter I—Civil Aeronautics Board

Subchapter A—Civil Air Regulations

[Supp. 7, Amtd. 8]

PART 60—AIR TRAFFIC RULES

DANGER AREAS; BARSTOW, CALIF.

Under Sections 205 and 601 of the Civil Aeronautics Act of 1938, as amended, and § 60.13 of the Civil Air Regulations, the Administrator of Civil Aeronautics is authorized to designate as a danger area any area within which he has determined that an invisible hazard to aircraft in flight exists, and no person may operate an aircraft within a danger area unless permission for such operation has been issued by appropriate authority. Such areas have been designated and published.

The following danger area alterations have been coordinated with the civil op-

erators involved, the Army, the Navy, and the Air Force, through the Air Coordinating Committee, Airspace Subcommittee, and should be adopted without delay, in order to promote safety of the flying public. Compliance with the notice, procedures, and effective date

provisions of section 4 of the Administrative Procedure Act would be impracticable and contrary to the public interest, and therefore is not required.

Acting pursuant to sections 205 and 601 of the Civil Aeronautics Act of 1938, as amended, and § 60.13 of the Civil Air

Regulations, and in accordance with sections 3 and 4 of the Administrative Procedure Act, I hereby amend the Code of Federal Regulations, Title 14, Chapter I, Part 60, § 60.13-1, as follows:

1. A Barstow, California, area is added to read:

Name and location (chart)	Description by geographical coordinates	Designated altitudes	Time of designation	Using agency
Barstow (Los Angeles Chart)...	Beginning at lat. 35°37'45" N, long. 116°29'40" W; W to long. 116°55'20" W; S to lat. 35°19'00" N; E to long. 116°49'00" W; S to lat. 35°10'00" N; E to long. 116°48'00" W; S to lat. 35°08'00" N; E to long. 116°47'00" W; N to lat. 35°09'00" N; E to long. 116°45'00" W; S to lat. 35°08'00" N; E to long. 116°43'00" W; S to lat. 35°07'20" N; E to lat. 35°07'00" N; long. 116°34'00" W; NE along amber airway #2 to lat. 35°18'45" N, long. 116°18'45" W; N to lat. 35°31'00" N; W to long. 116°20'00" W; N to lat. 35°33'30" N; W to long. 116°23'30" W; N to lat. 35°34'30" N; W to long. 116°29'40" W; N to lat. 35°37'45" N, long. 116°29'40" W, point of beginning.	Surface to 30,000 feet.....	Daily 0800 to 1800.....	Fourth Air Force, Hamilton Field, Calif.

(Secs. 205 (a), 601, 52 Stat. 984, 1007; Pub. Law 872, 80th Cong.; 49 U. S. C. 425, 551; Reorg. Plans Nos. III and IV of 1940, 3 CFR, Cum. Supp., 5 F. R. 2107, 2421)

This amendment shall become effective on August 15, 1949.

[SEAL]

DONALD W. NYROP,
Acting Administrator of Civil Aeronautics.

[F. R. Doc. 49-6683; Filed, Aug. 16, 1949; 8:45 a. m.]

PROPOSED RULE MAKING

DEPARTMENT OF AGRICULTURE

Production and Marketing Administration

[7 CFR, Part 978]

HANDLING OF MILK IN NASHVILLE, TENN., MARKETING AREA

DECISION WITH RESPECT TO PROPOSED MARKETING AGREEMENT AND TO PROPOSED AMENDMENT TO ORDER, AS AMENDED

Pursuant to Public Act No. 10, 73d Congress (May 12, 1933), as amended and as reenacted and amended by the Agricultural Marketing Agreement Act of 1937, as amended (hereinafter referred to as the "act"), and the rules of practice and procedure, as amended, governing proceedings to formulate marketing agreements and orders (7 CFR 900.1 et seq.), a public hearing was held at Nashville, Tennessee, on April 13 to 16, 1949, both dates inclusive, pursuant to a notice issued on April 8, 1949 (14 F. R. 1685).

Upon the basis of the evidence introduced at such hearing and the record thereof, the Assistant Administrator, Production and Marketing Administration, on June 10, 1949, filed with the Hearing Clerk, United States Department of Agriculture, his recommended decision in this proceeding. The notice of the filing of such recommended decision and opportunity to file written exception thereto was published in the FEDERAL REGISTER June 15, 1949 (14 F. R. 3236).

The material issues presented on the record of the hearing were whether:

(1) The establishment of floor prices for Class I and Class II milk is needed to give producers the necessary assurance to prevent heavy culling and liqui-

dation of dairy herds at this time and, if so, at what level and for what period.

(2) The classification provisions of the order should be revised to provide for the classification of skim milk and butterfat disposed of as buttermilk and skim milk drinks as Class II.

(3) The classification and pricing provisions of the order should be revised with respect to transfers to nonfluid milk plants, and with respect to milk made into butter and other Class III products.

(4) Milk distributed by handlers on routes outside of the marketing area should be priced on the basis of prices paid to dairy farms by nonregulated distributors selling milk in such areas.

(5) The administrative assessment provision should be revised with respect to the application of the assessment on other source milk.

(6) A limitation should be placed on the time that handlers are required to retain books and records required to be made available to the market administrator and on continuing obligations under the terms of the order.

(7) Other changes should be made for the purpose of clarification and to make the entire marketing agreement and the order, as amended, conform with any amendment thereto resulting from the hearing.

Rulings on exceptions. Exceptions to the recommended decision were filed on behalf of Nashville Milk Producers, Inc. and the several handlers who would be subject to the proposed marketing agreement and to the proposed order amending the order, as amended. In arriving at the findings, conclusions, and actions decided upon in this decision each of the exceptions was carefully and fully considered in conjunction with the record

evidence pertaining thereto. To the extent that the findings, conclusions, and actions decided upon herein with respect to the several issues are at variance with the exceptions pertaining thereto such exceptions are overruled.

Findings and conclusions. The findings and conclusions with respect to the aforementioned material issues, all of which are based on the evidence introduced at the hearing and the record thereof, are as follows:

(1) The present pricing provisions of the order should be revised to provide minimum prices below which the price of Class I milk and Class II milk cannot fall of \$5.20 and \$4.70, respectively, for the delivery periods of September through December 1949. Prices for Class I and Class II milk are determined by adding specified differentials to the basic formula price which is the higher of: (1) The basic or field price paid by 18 midwestern condenseries for milk of 3.5 percent butterfat content adjusted to a 4.0 percent basis, (2) a butter-cheese formula, (3) a butter-powder formula, or (4) the basic or field price paid by 10 local manufacturing plants.

During the period from November 1948 through February 1949 producers were paid on the basis of a negotiated price of \$5.665 per hundredweight for Class I milk and \$5.165 per hundredweight for Class II milk. Effective March 1 handlers discontinued payment of the negotiated price which resulted in a reduction of \$1.109 per hundredweight in the price producers received for Class I milk and Class II milk during March as compared to February. This sharp decrease in handler paying prices for milk for fluid uses coupled with a slight seasonal decline in the Class III price and greater producer receipts during March resulted

in a blend price for March 20 percent under that paid during February.

Producers proposed that the present pricing provision be revised to provide minimum prices below which the price for Class I milk and Class II milk could not fall off \$5.00 and \$4.50 per hundredweight, respectively, through August. They recognize that some reduction in milk prices is warranted at this time but argue that a 20 percent reduction is unreasonable in view of the continuing high production costs. They contend that unless some immediate relief is granted general liquidation and heavy culling of herds is inevitable and the supply of milk during the fall and winter of 1949-50 will be seriously impaired. In this connection the announced milk and butterfat support programs of the Department of Agriculture make it extremely unlikely that any further decline will occur in the minimum prices handlers will be required to pay for milk during the summer of 1949. Cows in the milkshed are now on pasture and lower production costs during the pasture season make it unlikely that any substantial liquidation of herds will take place at this time.

The number of producers shipping to Nashville handlers has increased substantially since November 1947 when the order was issued and producer receipts in each of the months of November and December 1948 and January, February, and March 1949 have shown a substantial increase over such receipts in the same month of the previous year. Producer receipts during March 1949 were 10.6 percent greater than in February and 25.7 percent greater than in March 1948. Class I and Class II sales during March were 3.4 percent greater than in February and 8.7 percent greater than in March 1948. Total producer receipts during March were 10.7 percent in excess of total Class I and Class II sales. Available information on number of producers, production, and fluid sales gives no indication of any adverse change in this relationship of producer receipts and fluid sales through the remaining summer months.

While there has been a rather sharp decline in the price of concentrates over the past year there has been little or no decrease in the price of hay in Nashville. At the same time the costs of labor, equipment, repairs, and other items of production utilized by Nashville producers have continued to rise.

The market has been short of milk during the fall and winter months. In the 4 months of shortest production during the past fall and winter seasons producer receipts averaged almost a million pounds less than Class I and Class II sales, necessitating substantial imports of other source milk.

Last year basic prices decreased drastically during the period of seasonal shortage and high production costs. Producers in the Nashville market, however, were successful in avoiding the impact of these price decreases by negotiating a specified price with milk handlers which was above the minimum price provided by the order. This negotiated price was discontinued on March

1. If producers are to provide an adequate supply of milk during the coming season of short production they must have assurance of minimum prices which are commensurate with present production costs. Because of the somewhat lower cost of feed and increased supplies of milk which have become available in the market, the specified minimum prices provided this year should be somewhat lower than the negotiated price of \$5.655 per hundredweight for Class I milk and \$5.165 for Class II milk. A price of 45 cents per hundredweight (i. e., about 1 cent per quart) less than the negotiated price effective last fall and winter is a reasonable specified minimum price in terms of prospective supplies and sales of milk in the marketing area and in relation to the somewhat lower costs of winter feeding which will prevail this year.

The price support program for dairy products undertaken by the Department removes the possibility of declines in basic prices below present levels. In fact, the prospect is for slightly increased basic prices after September 1 as the result of increases in support levels for milk and butterfat after that date. Increases in basic prices which are no greater than the increases contained in the announced support levels for milk and butterfat would not, however, be great enough to give assurance of appropriate levels of Class I and Class II prices in the Nashville market during the period from September 1 to December 31, 1949. It is concluded that specified minimum prices of \$5.20 and \$4.70 per hundredweight for Class I milk and Class II milk, respectively, for the delivery periods of September through December 1949 are needed to prevent liquidation or heavy culling of herds and assure an adequate milk supply for Nashville.

(2) The proposal to classify as Class II all skim milk and butterfat utilized in buttermilk and flavored milk drinks should not be adopted. Under the present order provisions skim milk and butterfat so utilized are classified as Class I. Handlers in support of their proposal argue that the retail sales of nonfat dry milk solids by grocery stores demand a lower pricing of skim milk and butterfat in buttermilk and flavored milk drinks. Buttermilk and flavored milk drinks are required by the local health authority to be made from Grade A milk, whereas, there are no local health requirements regarding the production and sale of such nonfat dry milk solids. Furthermore, there was no showing that these sales adversely affect the sales of buttermilk and flavored milk drinks by Nashville handlers.

(3) The proposal to amend the present classification provisions by establishing an additional class as Class IV to include skim milk and butterfat in inventory variations and allowable plant shrinkage and used to produce livestock feed and butter, all presently classified as Class III, should not be adopted. All milk other than that used for fluid purposes (Class I milk and Class II milk) should be priced at the paying price of

local condenseries for milk for manufacturing purposes with which Class III milk is in direct competition. The record fails to contain any justification for pricing of Grade A producer milk at a price lower than that paid for milk by milk manufacturing plants.

The proposal to classify as Class III all cream moving to nonhandlers located 85 miles or more beyond Nashville, Tennessee, should not be adopted. Under the present order provisions such cream receives an automatic Class II classification. Handlers in presenting their proposal contend that no producer cream is now moving to ice cream plants in and adjacent to the marketing area and that the manufacture of butter from producer butterfat is not an attractive outlet under present Class III pricing. If butter and ice cream do not represent attractive outlets for surplus producer cream locally, it must be presumed that such surplus fat would not ordinarily be transported substantial distances from Nashville for such uses. Any producer cream moving beyond the 85-mile zone would therefore logically be primarily for fluid purposes. The record fails to indicate the competitive price of cream for ice cream uses. There was also no showing why local producer cream used for fluid purposes in areas beyond the 85-mile zone should be priced cheaper than cream for fluid uses in Nashville.

The proposal that handlers be given an allowance of 25 cents per hundredweight in the pricing of all milk transferred or diverted to a nonhandler should not be adopted. The Class III price under the Nashville order is the average of the prices paid at 10 local condenseries and manufacturing plants dispersed throughout the milkshed. The record is manifestly lacking as to why the price for Nashville Grade A milk should be less than the price paid by local manufacturing plants for ungraded milk. There also was no showing that surplus producer milk could not be diverted directly from the farm to the manufacturing plant without additional costs to the handler.

(4) The proposal for a special pricing for producer milk disposed of on wholesale and retail routes outside of the marketing area should not be adopted. Under the present order provisions handlers pay the same price for milk disposed of in Class I and Class II products outside of the market area as they pay for milk disposed of in such products within the marketing area. Handlers proposed that the order provisions be amended to provide a price for producer milk disposed of on wholesale and retail routes outside of the marketing area equivalent to the average price paid by 6 nonhandlers who are distributing milk in communities adjacent to the marketing area. Milk so disposed of by Nashville handlers is the same quality milk as disposed of within the marketing area and is subject to the same transportation costs in moving from the farm to the handler's plant. Furthermore, the Nashville market in the past has had an insufficient local supply of milk during the short season of production. These out-of-area sales represent a continuing and regular demand

throughout the year and have no aspects of an outlet for a seasonal surplus of producer milk.

(5) The provisions relating to the expense of administration should be revised to provide that handlers pay the assessment on all producer milk received and on all other source milk utilized in Class I and Class II. The present order provides that the assessment shall apply to all producer receipts and all other source milk received at a fluid milk plant. The assessment against handlers is made to provide the funds necessary for the maintenance and functions of the market administrator in the administration of the order. In the proration of this expense among the several handlers in the market, consideration should be given to the matter of equity among handlers. Certain handlers operating in the market now have facilities, apart from their fluid milk plants, in which they manufacture cottage cheese and butter which are not required by the health department to be made from Grade A milk. Other handlers manufacture cottage cheese in their fluid milk plant from other source milk paying the administrative assessment on all other source milk so utilized. It is concluded that the assessment should be limited to all receipts of producer milk and to receipts of other source milk utilized in Class I and Class II.

(6) The proposal that the order be amended to provide limitations on the period of time handlers shall retain books and records which are required to be made available to the market administrator, and on the period of time which obligations under the order shall be valid should be adopted. This proposal was made by handlers and was not opposed by producers. The proposed amendment is identical in principle with the general amendment made to all orders in operation on July 30, 1947, effective February 22, 1949, and the Secretary's decision of January 26, 1949 (14 F. R. 444), covering the retention of records and limitation of claims is equally applicable in this situation and is hereby adopted as a part of this decision as if set forth in full herein.

(7) The present language of the order setting forth the procedure for computing the value of milk received from producers by each handler should be revised to more clearly state the procedure intended to be followed. The present provisions specify that, in the event a handler, after subtracting receipts of other source milk and receipts from other handlers, has disposed of more skim milk or butterfat than has been credited to his producers as having been delivered by them, there shall be added to the value of producer milk an amount computed by multiplying such excess by the applicable class price adjusted by the handler butterfat differential. Adjusting the Class III price by the use of a handler butterfat differential in accordance with the average butterfat test of Class III products may and in some cases has resulted in a negative value for skim milk in Class III. Under a literal interpretation in such cases a handler might be given a credit for skim milk accounted

for in excess of such receipts. Obviously this was never intended and the order has never been so interpreted. However, it is concluded that in order to remove the possibility of misinterpretation at some future date the present language of the order should be revised to state specifically that the amount to be added in the case of over accounted for skim milk or butterfat shall be any plus amount resulting from the multiplication of the excess pounds in each class by the applicable price adjusted by the appropriate butterfat differential. Both handlers and producers acquiesced to this proposal.

(8) *General findings.* (a) The proposed marketing agreement and the order, as amended and as hereby proposed to be further amended, and all of the terms and conditions thereof will tend to effectuate the declared policy of the act;

(b) The prices calculated to give milk produced for sale in the said marketing area a purchasing power equivalent to the purchasing power of such milk as determined pursuant to sections 2 and 8 (e) of the act are not reasonable in view of the price of feeds, available supplies of feeds, and other economic conditions which affect market supply of and demand for milk, and the minimum prices specified in the proposed marketing agreement and the order, as amended, and as hereby proposed to be further amended, are such prices as will reflect the aforesaid factors, insure a sufficient quantity of pure and wholesome milk, and be in the public interest; and

(c) The proposed marketing agreement and the order, as amended and as hereby proposed to be further amended, regulates the handling of milk in the same manner as, and is applicable only to persons in the respective classes of industrial and commercial activity specified in a marketing agreement upon which hearings have been held.

Marketing agreement and Order. Annexed hereto and made a part hereof are two documents entitled, respectively, "Marketing Agreement Regulating the Handling of Milk in the Nashville, Tennessee, Marketing Area," and "Order Amending the Order, as Amended, Regulating the Handling of Milk in the Nashville, Tennessee, Marketing Area," which have been decided upon as the appropriate and detailed means of effecting the foregoing conclusions. These documents shall not become effective unless and until the requirements of § 900.14 of the rules of practice and procedure governing proceedings to formulate marketing agreements and marketing orders have been met.

It is hereby ordered, That all of this decision, except the attached marketing agreement, be published in the FEDERAL REGISTER. The regulatory provisions of said marketing agreement are identical with those contained in the order, as amended, and as hereby further amended by the attached order which will be published with this decision.

This decision filed at Washington, D. C., this 12th day of August 1949.

[SEAL] CHARLES F. BRANNAN,
Secretary of Agriculture.

Order,¹ Amending the Order, as Amended, Regulating the Handling of Milk in the Nashville, Tennessee, Marketing Area

§ 978.0 *Findings and determinations.* The findings and determinations herein-after set forth are supplementary to and in addition to the findings and determinations made in connection with the issuance of this order and each of the previously issued amendments thereto; and all of said previous findings and determinations are hereby ratified and affirmed, except insofar as such findings and determinations may be in conflict with the findings and determinations set forth herein.

(a) *Findings upon the basis of the hearing record.* Pursuant to Public Act No. 10, 73d Congress (May 12, 1933), as amended and as reenacted and amended by the Agricultural Marketing Agreement Act of 1937, as amended (hereinafter referred to as the "act"), and the rules of practice and procedure, as amended, governing the formulation of marketing agreements and orders (7 CFR 900.1 et seq.), a public hearing was held April 13-16, 1949, upon a proposed amendment to the tentative marketing agreement and to the order, as amended, regulating the handling of milk in the Nashville, Tennessee, milk marketing area. The recommended decision (14 F. R. 3236) was made by the Assistant Administrator of the Production and Marketing Administration on June 10, 1949. Upon the basis of the evidence introduced at such hearing and the record thereof, it is found that:

(1) The said order, as amended and as hereby further amended, and all of the terms and conditions thereof, will tend to effectuate the declared policy of the act;

(2) The prices calculated to give milk produced for sale in said marketing area a purchasing power equivalent to the purchasing power of such milk as determined pursuant to sections 2 and 8e of the act are not reasonable in view of the price of feeds, available supplies of feeds, and other economic conditions which affect market supplies of and demand for such milk, and the minimum prices specified in the order, as amended and as hereby further amended are such prices as will reflect the aforesaid factors, insure a sufficient quantity of pure and wholesome milk, and be in the public interest; and

(3) The said order, as amended and as hereby further amended, regulates the handling of milk in the same manner as, and is applicable only to persons in the respective classes of industrial and commercial activity, specified in a marketing agreement upon which a hearing has been held.

(b) *Additional findings.* It is hereby found that a pro rata assessment on handlers at a rate of 4 cents per hundredweight, or such lesser amount as the

¹ This order shall not become effective unless and until the requirements of § 900.14 of the rules of practice and procedure, as amended, governing proceedings to formulate marketing agreements and marketing orders have been met.

Secretary may prescribe, with respect to all receipts by the handler, during the delivery period, of (1) milk from producers (including such handler's own production), and (2) other source milk allocated to Class I and Class II milk pursuant to § 978.4 (f), upon which payment is required pursuant to § 978.9 of this order, will provide the funds necessary for the maintenance and functioning of the market administrator in the administration of this order.

Order relative to handling. It is hereby ordered, that on and after the effective date hereof, the handling of milk in the Nashville, Tennessee, marketing area shall be in conformity to and in compliance with the terms and conditions of the aforesaid order, as amended and as hereby further amended; and the aforesaid order, as amended, is hereby further amended as follows:

1. Delete the proviso following the colon in § 978.5 (b) (1) and substitute therefor the following: "Provided, That for the delivery periods of September, October, November and December, 1949, the price for Class I milk shall not be less than \$5.20 per hundredweight."

2. Delete the proviso following the colon in § 978.5 (b) (2) and substitute therefor the following: "Provided, That for the delivery periods of September, October, November, and December, 1949, the price for Class II milk shall not be less than \$4.70 per hundredweight."

3. Amend § 978.3 by adding a new paragraph to read as follows:

(d) *Retention of records.* All books and records required under this order to be made available to the market administrator shall be retained by the handler for a period of 3 years to begin at the end of the calendar month to which such books and records pertain: *Provided*, That if, within such 3-year period the market administrator notifies the handler in writing that the retention of such books and records, or of specified books and records, is necessary in connection with a proceeding under section 8c (15) (A) of the act or a court action specified in such notice, the handler shall retain such books and records, or specified books and records, until further written notification from the market administrator. In either case

the market administrator shall give further written notification to the handler promptly upon the termination of the litigation or when the records are no longer necessary in connection therewith.

4. Delete the proviso following the colon in § 978.7 (a) and substitute therefor the following: "Provided, That if a handler, after subtracting receipts of other source milk and receipts from other handlers, has disposed of skim milk or butterfat in excess of the skim milk or butterfat which, on the basis of his report for the delivery period pursuant to § 978.3 (a), has been credited to producers as having been received from them, there shall be added any plus amount computed by multiplying the pounds in each class as subtracted pursuant to subparagraphs (1) (iv) and (2) of § 978.4 (f) by the applicable class price adjusted by the butterfat differential to handlers specified in § 978.5 (c)."

5. Delete in § 978.9 the words "other source milk received at a fluid milk plant" and substitute therefor the following: "other source milk allocated to Class I milk and Class II milk pursuant to § 978.4 (f)."

6. Amend the order, as amended, by adding a new section to read as follows:

§ 978.14 *Termination of obligations.* The provisions of this section shall apply to any obligation under this order for the payment of money irrespective of when such obligation arose, except an obligation involved in an action instituted before March 1, 1950, under section 8c (15) (A) of the act or before a court.

(a) The obligation of any handler to pay money required to be paid under the terms of this order, shall, except as provided in paragraphs (b) and (c) of this section, terminate 2 years after the last day of the calendar month during which the market administrator receives the handler's utilization report on the milk involved in such obligations, unless within such 2-year period the market administrator notifies the handler in writing that such money is due and payable. Service of such notice shall be complete upon mailing to the handler's last known address, and it shall contain but need not be limited to, the following information:

(1) The amount of the obligation;
(2) The month(s) during which the milk, with respect to which the obligation exists, was received or handled; and

(3) If the obligation is payable to one or more producers or to an association of producers, the name of such producer(s) or association of producers, or if the obligation is payable to the market administrator, the account for which it is to be paid.

(b) If a handler fails or refuses, with respect to any obligation under this order, to make available to the market administrator or his representatives all books and records required by this order to be made available, the market administrator may, within the 2-year period provided for in paragraph (a) of this section, notify the handler in writing of such failure or refusal. If the market administrator so notifies a handler, the said 2-year period with respect to such obligation shall not begin to run until the first day of the calendar month following the month during which all such books and records pertaining to such obligation are made available to the market administrator or his representative.

(c) Notwithstanding the provisions of paragraphs (a) and (b) of this section, a handler's obligation under this order to pay money shall not be terminated with respect to any transaction involving fraud or willful concealment of a fact, material to the obligation, on the part of the handler against whom the obligation is sought to be imposed.

(d) Any obligation on the part of the market administrator to pay a handler any money which such handler claims to be due him under the terms of this order shall terminate 2 years after the end of the calendar month during which the milk involved in the claim was received if an underpayment is claimed, or 2 years after the end of the calendar month during which the payment (including deduction or set-off by the market administrator) was made by the handler if a refund on such payment is claimed, unless such handler, within the applicable period of time, files, pursuant to section 8c (15) (A) of the act, a petition claiming such money.

[F. R. Doc. 49-6691; Filed, Aug. 16, 1949; 8:47 a. m.]

NOTICES

SECURITIES AND EXCHANGE COMMISSION

W. H. BELL & CO., INC., AND JOHN D. BABBAGE

ORDER REVOKING REGISTRATION AND DENYING REQUEST FOR WITHDRAWAL OF REGISTRATION OF BROKER-DEALER AND DISMISSING PROCEEDINGS AGAINST CO-RESPONDENT

At a regular session of the Securities and Exchange Commission, held at its office in the city of Washington, D. C., on the 4th day of August A. D. 1949.

In the matter of W. H. Bell & Co., Inc., 1500 Walnut Street, Philadelphia, Penn-

sylvania, and John D. Babbage, 435 Woodward Building, Washington, D. C.

Proceedings having been instituted on October 21, 1947, to determine whether the registration of W. H. Bell & Co., Inc. ("Bell & Co.") as a broker-dealer should be revoked pursuant to section 15 (b) of the Securities Exchange Act of 1934 ("the Exchange Act") and whether, for purposes of future proceedings under the act, John D. Babbage willfully violated the Securities Act of 1933 and the Exchange Act and was a cause of any order of revocation that may be entered against Bell & Co.;

Hearings having been held after appropriate notice, and Bell & Co. having filed a notice of withdrawal from registration on May 28, 1948;

The Commission having been advised of Babbage's death on March 10, 1949, after the close of the record herein;

The Commission having this day issued its findings and opinion; on the basis of said findings and opinion

It is ordered, That the registration of Bell & Co. as a broker and dealer be and it hereby is revoked and that the notice of withdrawal filed by Bell & Co. be and it hereby is not permitted to become effective.

It is further ordered, That the proceedings against Babbage be and they hereby are dismissed.

By the Commission.

[SEAL] NELLYE A. THORSEN,
Assistant Secretary.

[F. R. Doc. 49-6689; Filed, Aug. 16, 1949;
8:46 a. m.]

[File Nos. 70-2150; 70-2152]

LOUISVILLE GAS AND ELECTRIC CO. ET AL.
ORDER GRANTING AND PERMITTING APPLICATION-DECLARATION TO BECOME EFFECTIVE

At a regular session of the Securities and Exchange Commission, held at its office in the city of Washington, D. C., on the 10th day of August 1949.

In the matter of Louisville Gas and Electric Company, File No. 70-2150; Philadelphia Company, Equitable Gas Company, File No. 70-2152.

Louisville Gas and Electric Company ("Louisville"), a Kentucky corporation and Philadelphia Company ("Philadelphia"), a registered holding company, both subsidiaries of Standard Gas and Electric Company ("Standard") and Standard Power and Light Corporation, both registered holding companies, having filed a declaration and an application with this Commission, pursuant to the Public Utility Holding Company Act of 1935 ("act"), and the applicable rules and regulations promulgated thereunder, regarding the sale by Louisville, for a cash consideration of \$2,500,000, and the acquisition by Philadelphia of Louisville's holdings of 40,000 shares of Common Stock, no par value, of Kentucky West Virginia Gas Company ("Kentucky"), a non-utility subsidiary of Louisville and Philadelphia; and

The Commission having on June 1, 1948 entered an order under section 11 (b) (1) of the act directing Philadelphia to dispose of its holdings of securities of Kentucky; and

Louisville having requested that the Commission determine that such sale is necessary or appropriate to the integration or simplification of the holding company system of which Louisville is a member and that its order approving such sale conform to the requirements of Supplement R and section 1808 (f) of the Internal Revenue Code and that the Commission reserve jurisdiction to make further appropriate findings with respect to the use of the proceeds of such sale pursuant to the requirements of Supplement R and section 371 (b) of the Internal Revenue Code; and

Applicant and declarant having requested that the Commission's order herein become effective upon the issuance thereof; and

A public hearing having been held after appropriate notice and the Commission having considered the record and having made and filed its findings and opinion herein:

It is hereby ordered, Pursuant to the applicable provisions of the act, that the aforesaid application and declaration be, and hereby are granted and permitted to become effective forthwith, subject to the terms and conditions prescribed in Rule U-24.

It is further ordered, That the proposed acquisition by Philadelphia Company of 40,000 shares of Common Stock of Kentucky West Virginia Gas Company is authorized and permitted subject to the condition that such securities shall be held by Philadelphia Company subject to the provisions of the Commission's order of June 1, 1948 (Holding Company Act Release No. 8242), requiring the divestment of such securities, among others, by Philadelphia Company, as fully set forth in said order of June 1, 1948.

It is further ordered and recited and the Commission finds, That the sale and delivery by Louisville Gas and Electric Company, a Kentucky corporation, of its holdings of said 40,000 shares of Common Stock, no par value, of Kentucky West Virginia Gas Company to Philadelphia Company for the sum of \$2,500,000 in cash, as authorized or permitted by the Commission herein, are necessary or appropriate to the integration or simplification of the holding company system of which Louisville Gas and Electric Company is a member and are necessary or appropriate to effectuate the provisions of section 11 (b) of the Public Utility Holding Company Act of 1935.

It is further ordered, That jurisdiction be, and it hereby is, reserved to enter such further order or orders as may be appropriate, upon supplemental application herein by Louisville Gas and Electric Company, containing such recitals or granting such other relief as may be warranted under Supplement R and section 371 (b) of the Internal Revenue Code.

It is further ordered, That jurisdiction be, and it hereby is, reserved to consider and determine the reasonableness of the fees and expenses paid or to be paid to J. Samuel Hartt and H. Zinder in connection with the proposed sale and acquisition of the said 40,000 shares of Common Stock of Kentucky West Virginia Gas Company.

It is further ordered, That jurisdiction be, and it hereby is, reserved to require other and different treatment from that proposed with respect to the carrying value on the books of Philadelphia Company of the said 40,000 shares of Common Stock of Kentucky West Virginia Gas Company.

By the Commission.

[SEAL] NELLYE A. THORSEN,
Assistant Secretary.

[F. R. Doc. 49-6688; Filed, Aug. 16, 1949;
8:46 a. m.]

[File No. 70-2183]

UNITED GAS CORP. AND UNITED GAS PIPE LINE CO.

ORDER GRANTING APPLICATION AND PERMITTING DECLARATION TO BECOME EFFECTIVE

At a regular session of the Securities and Exchange Commission held at its office in the city of Washington, D. C., on the 9th day of August A. D. 1949.

United Gas Corporation ("United"), a gas utility subsidiary of Electric Bond and Share Company, a registered holding company, and United's wholly owned subsidiary, United Gas Pipe Line Com-

pany ("Pipe Line"), having filed an application-declaration pursuant to the Public Utility Holding Company Act of 1935, particularly sections 6 (a), 7, 9 (a), 10 and 12 thereof and Rule U-43 (a) of the rules and regulations promulgated thereunder with respect to the following proposed transactions:

United proposes to lend to Pipe Line an amount aggregating not in excess of \$8,000,000 during a period of one year from the date of the Commission's order herein in such installments and at such times as funds may be required by Pipe Line and requested from United, such funds to be used in connection with Pipe Line's construction and development program. Such loans will be evidenced by promissory notes issued by Pipe Line to United or order payable on or before six years from the date of issue of such notes and bearing interest at the rate of 3% per annum, payable semi-annually. United proposes to retain such notes as are issued by Pipe Line in its investment portfolio, subject to the provisions of United's Mortgage and Deed of Trust dated as of October 1, 1944, as supplemented.

The application-declaration indicates that construction expenditures of Pipe Line for the year 1949 will aggregate \$18,246,000 and that its total cash requirements for the year will be \$24,624,000, while the estimated cash available for the year 1949 is \$16,617,000. United, as of May 1, 1949, had cash and short-term government securities in the amount of \$23,466,000, and the application-declaration indicates that after making the proposed loans to Pipe Line, United's cash position at the end of the year will be approximately \$10,190,000.

The application-declaration having been filed on July 18, 1949, and notice of said filing having been given in the form and manner prescribed by Rule U-23 promulgated pursuant to said act, and the Commission not having received a request for a hearing with respect to the application-declaration within the period specified in said notice, or otherwise, and not having ordered a hearing thereon; and

The Commission finding that said application-declaration satisfies the requirements of the applicable provisions of the act and the rules thereunder, that no adverse findings are necessary in connection with the proposed transactions, and that the application-declaration should be granted and permitted to become effective without the imposition of terms and conditions, and the Commission further deeming it appropriate to grant applicant-declarant's request that the order herein become effective upon the issuance thereof:

It is ordered, Pursuant to said Rule U-23 and the applicable provisions of said act that the said application-declaration be, and the same hereby is, granted and permitted to become effective forthwith, subject to the terms and conditions contained in Rule U-24.

By the Commission.

[SEAL] NELLYE A. THORSEN,
Assistant Secretary.

[F. R. Doc. 49-6685; Filed, Aug. 16, 1949;
8:46 a. m.]

[File No. 70-2189]

STANDARD GAS AND ELECTRIC CO.

NOTICE OF FILING AND NOTICE OF AND ORDER FOR HEARING

At a regular session of the Securities and Exchange Commission held at its office in the city of Washington, D. C., on the 10th day of August 1949.

Notice is hereby given that an application-declaration and an amendment thereto have been filed with this Commission pursuant to the Public Utility Holding Company Act of 1935 ("act") by Standard Gas and Electric Company ("Standard"), a registered holding company and a subsidiary of Standard Power and Light Corporation, also a registered holding company.

All interested persons are referred to said amended application-declaration, which is on file in the office of the Commission, for a statement of the transactions therein proposed, which may be summarized as follows:

Among other assets, Standard owns 385,308 shares of the 1,068,703 issued and outstanding shares of Common Stock, without par value, of Louisville Gas and Electric Company ("Louisville") and 550,041 shares of the 979,000 issued and outstanding shares of Common Stock, par value \$20 per share, of Oklahoma Gas and Electric Company ("Oklahoma").

Standard proposes to sell, pursuant to the competitive bidding requirements of Rule U-50, either 250,000 shares of Louisville Common Stock or 200,000 shares of Oklahoma Common Stock. The net proceeds of said sale are proposed to be applied towards the retirement of Standard's outstanding promissory notes due December 3, 1948, and aggregating \$9,800,000 in principal amount.

Standard states that the proposed sale will be a step in compliance with the Commission's order of August 8, 1941, issued under section 11 (b) of the act, requiring, among other things, the divestment by Standard of its interest in Louisville and Oklahoma.

Standard states that the public invitations for bids for the purchase of Louisville or Oklahoma Common Stock may be published either separately or in combination, but that in any event such invitations will indicate that bids will not be accepted for both blocks of stock. Not less than four days prior to the date fixed for the opening of bids, Standard will determine which of the two blocks of stock is to be sold and will so notify all persons who have evinced an intention to submit bids.

With the stated purpose of facilitating the proposed sale, Standard proposes to make such purchases of the stock upon which bids are to be received, as may be deemed necessary or advisable to stabilize the market price of such stock, but in no event will Standard make purchases for stabilization purposes of more than one of said two issues of stock. It is proposed that stabilization will begin at the time of giving notice, as aforesaid, of which block of stock is to be sold, but not before the fifth full business day prior to the date fixed for the opening of bids, and will end at the time of the opening

of bids. Purchases by Standard for stabilization purposes will be made on the following markets: If of Louisville Common Stock, on the New York Stock Exchange; if of Oklahoma Common Stock, on the over-the-counter market. Standard further proposes that any shares so purchased will be retained by it, subject, however, to the provisions of the aforementioned order of the Commission dated August 8, 1941.

Standard has designated sections 9 (a), 10, 11 (b) and 12 (d) of the act and Rules U-44 and U-50 promulgated thereunder as applicable to the proposed transactions. Standard requests that the Commission's order herein be entered at the earliest possible date and that the ten-day notice period required by Rule U-50 (b) be reduced for the proposed transactions, to not to exceed six days. Standard further requests that the Commission's order contain the appropriate findings and tax recitals required by sections 371 (b), 371 (f) and 1808 (f) of the Internal Revenue Code.

It appearing to the Commission that it is appropriate in the public interest and in the interest of investors and consumers that a hearing be held with respect to the matters set forth in said application-declaration, as amended, and that said application-declaration, as amended, should not be granted or permitted to become effective except pursuant to further order of the Commission:

It is ordered, That a hearing on said amended application-declaration under the applicable provisions of the act and the rules and regulations promulgated thereunder be held at 10:00 a. m., e. d. s. t., on the 24th day of August, 1949, at the office of the Securities and Exchange Commission, 425 Second Street NW., Washington 25, D. C. On such date, the hearing room clerk in Room 101 will advise as to the room in which such hearing will be held. Any person desiring to be heard or otherwise wishing to participate in this proceeding shall file with the Secretary of the Commission on or before the 23d day of August 1949, his request or application therefor, as provided by Rule XVII of the Commission's rules of practice.

It is further ordered, That Richard Townsend, or any other officer or officers of this Commission designated by it for that purpose, shall preside at the hearing in such matter. The officer so designated to preside at said hearing is hereby authorized to exercise all powers granted to the Commission under section 18 (c) of the act and to a hearing officer under the Commission's rules of practice.

The Division of Public Utilities of the Commission having advised the Commission that it has made a preliminary examination of the application-declaration, as amended, and that, upon the basis thereof, the following matters and questions are presented for consideration, without prejudice, however, to the presentation of additional matters and questions upon further consideration:

1. Whether the transactions proposed will be detrimental to the carrying out of the provisions of Rule U-50 under the

act or detrimental to compliance with the provisions of section 12 (d) of the act;

2. Whether the sale in the amount proposed of Standard's present holdings of Oklahoma or Louisville stock adequately provides for the payment of Standard's outstanding promissory notes and complies with the Commission's aforementioned order of August 8, 1941;

3. Whether the terms of the proposed stabilization, including the length of the period of stabilization, satisfy applicable statutory standards;

4. Whether the proposed acquisition by Standard of shares of the stock to be sold, for the purpose of stabilizing the market price of said stock, satisfies the standards of section 10 of the act;

5. Whether the fees, commissions or other remuneration proposed to be paid in connection with the proposed transactions are for necessary services and are reasonable in amount;

6. Whether the proposed transactions are in all respects in the public interest and in the interest of investors and consumers and consistent with all applicable requirements of the act and the rules and regulations promulgated thereunder, and, if not, whether and what modifications or terms and conditions should be required to be imposed to satisfy the standards of the act;

It is further ordered, That at said hearing evidence shall be adduced with respect to the foregoing matters and questions.

It is further ordered, That the Secretary of the Commission shall serve a copy of this order by registered mail upon Standard Gas and Electric Company, and that notice of said hearing shall be given to all other persons by general release of this Commission which shall be distributed to the press and mailed to the mailing list for releases issued under the Public Utility Holding Company Act of 1935 and that further notice be given to all other persons by publication of this order in the FEDERAL REGISTER.

By the Commission.

[SEAL] NELLYE A. THORSEN,
Assistant Secretary.

[F. R. Doc. 49-6686; Filed, Aug. 16, 1949;
8:46 a. m.]

[File No. 70-2196]

WEST PENN ELECTRIC CO.

NOTICE OF FILING AND NOTICE OF AND ORDER FOR HEARING

At a regular session of the Securities and Exchange Commission held at its office in the city of Washington, D. C., on the 9th day of August A. D. 1949.

Notice is hereby given that a declaration has been filed with this Commission, pursuant to the Public Utility Holding Company Act of 1935, by The West Penn Electric Company ("West Penn Electric"), a registered holding company. All interested persons are referred to said document which is on file in the office of this Commission for a statement of the transactions therein proposed, which are summarized as follows:

West Penn Electric proposes to issue and sell \$31,000,000 principal amount of ----% Sinking Fund Collateral Trust Bonds due November 1, 1974, and 856,895 shares of common stock, without par value. Of the 856,895 shares of common stock proposed to be issued and sold, the company proposes to offer its presently outstanding common stock rights to purchase 468,621 shares, and further proposes to offer a minimum of 388,274 shares of such new common stock in exchange for outstanding 6% and 7% Cumulative Preferred Stocks and Class A Stock, all as more fully described hereinafter. The company proposes to sell the bonds pursuant to the competitive bidding requirements of Rule U-50, promulgated under the act, but seeks an exemption from the rule with respect to the sale of the new common stock. The reasons for requesting the exemption from competitive bidding on the sale of the new common stock are to be supplied by amendment.

The sinking fund bonds are to be completely amortized by maturity and are to be secured by a pledge of all of the common stocks of The Potomac Edison Company ("Potomac"), Monongahela Power Company ("Monongahela"), and all of the system's holdings of the common stock of West Penn Power Company ("Power"). West Penn Electric owns approximately 94.6% of Power's common stock, of which approximately 26.6% is subject to a prior pledge as security for \$4,372,500 principal amount of non-callable West Penn Traction Company First Mortgage 6% Gold Bonds, due June 1, 1960.

In connection with the issuance and sale of the new common stock, West Penn Electric proposes to issue transferable subscriptions warrants to the holders of its presently outstanding common stock, at the rate of one warrant for each five shares of common stock now held. The total number of shares to be offered the presently outstanding common stock will be 468,621 shares. No fractional shares of new common stock are to be issued pursuant to subscription warrants. The subscription offer will be open for a period of approximately 14 days. Other details of the subscription offer, including the price at which subscription may be made, are to be supplied to the Commission by amendment.

Concurrently with the subscription offer to owners of the presently outstanding common stock, West Penn Electric proposes to make a voluntary exchange offer to the holders of its 6% and 7% Cumulative Preferred Stocks and its Class A Stock permitting such holders, at their option, to exchange present holdings for shares of the new common stock. It is proposed under the exchange offer to issue and exchange a minimum of 388,274 shares of new common stock. The number of shares to be offered under this exchange offer will be inadequate to permit the exchange for common stock of all of the presently outstanding Preferred and Class A Stock and the exchanges, therefore, are to be accepted in the order of receipt. In lieu of issuing any fractional shares of additional common stock pursuant to the exchange offer the company will pay in

cash the amount of any resulting fractions. Further details with respect to the exchange offer are to be supplied by amendment. As more fully described hereinafter, all Preferred and Class A stocks, which are not exchanged for new Common Stock, are proposed to be retired at their respective redemption prices by cash payments.

The subscription and exchange offers are to be underwritten and it is proposed that a contract embodying the terms of such underwriting will be signed prior to the commencement of such offers. The company reserves the right, but in no event will be obligated, to increase the number of shares of additional common stock and the amount thereof to be offered under the exchange offer dependent upon the net price to be received by the company per share of new common stock, and to grant to stockholders subscription or exchange privileges with respect to shares offered but not issued under the subscription and exchange offers. The company has appointed banks in the cities of New York, Chicago, and San Francisco as its agents to receive subscriptions and acceptances of the exchange offers.

The net proceeds from the proposed sale of the bonds and new common stock, together with other funds of West Penn Electric then available, are to be used for the following purposes: (1) The purchase by the company from Power of 583,999²³/₃₂ shares of common stock of Monongahela pursuant to the terms of a Plan under section 11 of the act approved by this Commission on July 28, 1949; (2) the redemption of the presently outstanding \$5,000,000 principal amount of the company's Gold Debentures 5% Series, due 2030, at 105% of the principal amount thereof, plus accrued interest to the date of redemption; and (3) the redemption of all unexchanged shares of Preferred and Class A Stock of West Penn Electric at \$110 per share in the case of 6% Cumulative Preferred Stock and \$115 per share in the case of the 7% Cumulative Preferred Stock and Class A Stock, plus in each case accrued dividends to the redemption dates. Any resulting balance of proceeds are to be applied to the general corporate purposes of the company.

West Penn Electric reserves the right to request, by amendment to this declaration, the right to incur short term bank financing if necessary or desirable in connection with effecting the above-described recapitalization. Such bank financing, if undertaken, would be discharged by use of the proceeds from the sale of the bonds and new common stock.

The declaration states that in connection with the issue and sale of the above-described securities, West Penn Electric will restate its accounts so that, among other things, its investments in securities of its subsidiary companies will be stated at their respective underlying book values, as of January 1, 1949.

The filing designates sections 6, 7, 9, 10, and 12 (c) of the act and Rules U-42 and U-50 as being applicable to the proposed transactions.

It appearing to the Commission that it is appropriate in the public interest,

and in the interest of investors and consumers, that a public hearing be held with respect to said matters and that the declaration should not be permitted to become effective except pursuant to further order of this Commission;

It is ordered, That a hearing on said declaration under the applicable sections of the act and rules and regulations promulgated thereunder be held at 10 a. m., e. d. s. t., on the 25 day of August 1949 in the office of the Securities and Exchange Commission, 425 Second Street NW., Washington 25, D. C. On such date the hearing room clerk, in Room 101, will advise as to the room in which such hearings will be held. Any person desiring to be heard or otherwise wishing to participate in these proceedings should file with the Secretary of the Commission on or before August 13, 1949, his request or application therefor, as provided by Rule XVII of the Commission's rules of practice.

It is further ordered, That Willis E. Monty, or any other officer or officers of the Commission designated by it for that purpose, shall preside at the hearing in such matter. The officer so designated to preside at the hearing is hereby authorized to exercise all powers granted to the Commission under section 18 (c) of the act and to Hearing Officers under the Commission's rules of practice.

The Division of Public Utilities of the Commission having advised the Commission that it has made a preliminary examination of the declaration and that upon the basis thereof, the following matters and questions are presented for consideration by the Commission, without prejudice to the presentation of additional matters and questions upon further examination:

(1) Whether the issue and sale of the types and amounts of securities proposed is necessary or appropriate to the economical and efficient operation of the business in which declarant is engaged;

(2) Whether the types and amounts of securities proposed in the recapitalization are reasonably adapted to the earning power of West Penn Electric and to the security structure of West Penn Electric and of the holding company system of which it is a member;

(3) Whether the securities proposed to be issued satisfy the requirements and standards of section 7 (c);

(4) Whether the terms and provisions of the proposed new securities, including the terms of the indenture applicable to the bonds, satisfy applicable standards of the act or are in any respects detrimental to the public interest and the interest of investors and consumers;

(5) Whether the facts and circumstances of this case justify the granting by the Commission of an exception from the competitive bidding requirements of Rule U-50 with respect to the sale of the new common stock of West Penn Electric not taken pursuant to the subscription or exchange offers;

(6) Whether the restatement of the accounts of West Penn Electric, in the manner proposed, is in all respects in the public interest and in the interest of investors and consumers;

(7) Generally, whether the proposed transactions are in all respects in the

public interest and in the interest of investors and consumers and consistent with all the applicable requirements of the act and the rules and regulations thereunder and, if not, what modifications should be required to meet such requirements.

By the Commission.

[SEAL] NELLYE A. THORSEN,
Assistant Secretary.

[F. R. Doc. 49-6684; Filed, Aug. 16, 1949;
8:46 a. m.]

DEPARTMENT OF JUSTICE

Office of Alien Property

AUTHORITY: 40 Stat. 411, 55 Stat. 839, Pub. Laws 322, 671, 79th Cong., 60 Stat. 50, 925; 50 U. S. C. and Supp. App. 1, 616; E. O. 9193, July 6, 1942, 3 CFR, Cum. Supp., E. O. 9567, June 8, 1945, 3 CFR, 1945 Supp., E. O. 9788, Oct. 14, 1946, 11 F. R. 11981.

[Vesting Order 13606]

AUGUST SCHNEIDER

In re: Estate of August Schneider, a/k/a August None Schneider, deceased, File No. D-28-12654; E. T. sec. 16831.

Under the authority of the Trading With the Enemy Act, as amended, Executive Order 9193, as amended, and Executive Order 9788, and pursuant to law, after investigation, it is hereby found:

1. That Heinrich Beinlich, Elfriede Beck nee Beinlich, Irmgard Freye nee Beinlich, Klara Andratschke nee Bartsch, Rudolph Bartsch, Regina Bartsch, Edeltraud Bartsch, Ursula Bartsch and Richard Bartsch, whose last known address is Germany, are residents of Germany and nationals of a designated enemy country (Germany);

2. That the domiciliary personal representatives, heirs-at-law, next-of-kin, legatees and distributees, names unknown, of Agnes Beinlich, deceased, and of Alfred Bartsch, deceased, who, there is reasonable cause to believe are residents of Germany, are nationals of a designated enemy country (Germany);

3. That all right, title, interest and claim of any kind or character whatsoever of the persons identified in subparagraphs 1 and 2 hereof, and each of them in and to the estate of August Schneider, also known as August None Schneider, deceased, is property payable or deliverable to, or claimed by the aforesaid nationals of a designated enemy country (Germany);

4. That such property is in the process of administration by Albert E. Hill, as Administrator, acting under the judicial supervision of the Superior Court of the State of California in and for the County of Alameda;

and it is hereby determined:

5. That to the extent that the persons named in subparagraph 1 hereof and the domiciliary personal representatives, heirs-at-law, next-of-kin, legatees and distributees, names unknown, of Agnes Beinlich, deceased, and of Alfred Bartsch, deceased, are not within a designated enemy country, the national interest of the United States requires that such persons be treated as nationals of a designated enemy country (Germany).

All determinations and all action required by law, including appropriate consultation and certification, having been made and taken, and, it being deemed necessary in the national interest,

There is hereby vested in the Attorney General of the United States the property described above, to be held, used, administered, liquidated, sold or otherwise dealt with in the interest of and for the benefit of the United States.

The terms "national" and "designated enemy country" as used herein shall have the meanings prescribed in section 10 of Executive Order 9193, as amended.

Executed at Washington, D. C., on August 3, 1949.

For the Attorney General.

[SEAL] DAVID L. BAZELON,
Assistant Attorney General,
Director, Office of Alien Property.

[F. R. Doc. 49-6695; Filed, Aug. 16, 1949;
8:49 a. m.]

[Vesting Order 13609]

KARL SIGMUND

In re: Estate of Karl Sigmund, also known as Carl Sigmund, deceased. File No. D-28-10120; E. T. sec. 14395.

Under the authority of the Trading With the Enemy Act, as amended, Executive Order 9193, as amended, and Executive Order 9788, and pursuant to law, after investigation, it is hereby found:

1. That Gertrude Sigmund and Clara Sigmund, whose last known address is Germany, are residents of Germany and nationals of a designated enemy country (Germany);

2. That the heirs, names unknown, of Karl Sigmund, also known as Carl Sigmund, deceased, who there is reasonable cause to believe are residents of Germany, are nationals of a designated enemy country (Germany);

3. That all right, title, interest and claim of any kind or character whatsoever of the persons identified in subparagraphs 1 and 2 hereof, and each of them, in and to the estate of Karl Sigmund also known as Carl Sigmund, deceased, is property payable or deliverable to, or claimed by, the aforesaid nationals of a designated enemy country (Germany);

4. That such property is in the process of administration by the Treasurer of the City of New York as Depositary acting under the judicial supervision of the Surrogate's Court of Queens County, State of New York;

and it is hereby determined:

5. That to the extent that the persons identified in subparagraph 1 hereof, and the heirs, names unknown, of Karl Sigmund, also known as Carl Sigmund, deceased, are not within a designated enemy country, the national interest of the United States requires that such persons be treated as nationals of a designated enemy country (Germany).

All determinations and all action required by law, including appropriate consultation and certification, having been made and taken, and, it being

deemed necessary in the national interest,

There is hereby vested in the Attorney General of the United States the property described above, to be held, used, administered, liquidated, sold or otherwise dealt with in the interest of and for the benefit of the United States.

The terms "national" and "designated enemy country" as used herein shall have the meanings prescribed in section 10 of Executive Order 9193, as amended.

Executed at Washington, D. C., on August 3, 1949.

For the Attorney General.

[SEAL] DAVID L. BAZELON,
Assistant Attorney General,
Director, Office of Alien Property.

[F. R. Doc. 49-6696; Filed, Aug. 16, 1949;
8:49 a. m.]

[Vesting Order 13614]

EXPORTKREDITBANK A. G.

In re: Checks owned by Exportkreditbank, A. G. F-28-180-A-6.

Under the authority of the Trading With the Enemy Act, as amended, Executive Order 9193, as amended, and Executive Order 9788, and pursuant to law, after investigation, it is hereby found:

1. That Exportkreditbank, A. G., the last known address of which is Berlin, Germany, is a corporation, organized under the laws of Germany, and which has or, since the effective date of Executive Order 8389, as amended, has had its principal place of business in Berlin, Germany, and is a national of a designated enemy country (Germany);

2. That the property described as follows:

Those certain checks described as follows:

Check No.	Amount	Record date	Date payable	Drawn on
2973	£4-7-2	12-1-42..	12-31-42	Westminster Bank, Ltd., London
2727	£4-10-4	12-1-43..	12-31-43	Do.
2486	£2-11-0	12-1-44..	12-30-44	Do.
6974	£4-4-7	12-15-45..	12-31-45	Do.
2118	£6-14-4	12-1-46..	12-31-46	Do.

presently in the custody of the National City Bank of New York, 55 Wall Street, New York 15, New York in an account entitled "Exportkreditbank Aktiengesellschaft, Berlin, Germany, Sub Account Customers Account for Custody", and any and all rights in, to and under including the right to possession and presentation for payment of the aforesaid checks,

is property within the United States owned or controlled by, payable or deliverable to, held on behalf of or on account of, or owing to, or which is evidence of ownership or control by, Exportkreditbank, A. G., the aforesaid national of a designated enemy country (Germany);

and it is hereby determined:

3. That to the extent that the person named in subparagraph 1 hereof is not within a designated enemy country, the national interest of the United States requires that such person be treated as a national of a designated enemy country (Germany).

All determinations and all action required by law, including appropriate consultation and certification, having been made and taken, and, it being deemed necessary in the national interest,

There is hereby vested in the Attorney General of the United States the property described above, to be held, used, administered, liquidated, sold or otherwise dealt with in the interest of and for the benefit of the United States.

The terms "national" and "designated enemy country" as used herein shall have the meanings prescribed in section 10 of Executive Order 9193, as amended.

Executed at Washington, D. C., on August 3, 1949.

For the Attorney General.

[SEAL] DAVID L. BAZELON,
Assistant Attorney General,
Director, Office of Alien Property.

[F. R. Doc. 49-6697; Filed, Aug. 16, 1949; 8:49 a. m.]

[Vesting Order 13624]

MARIE JOHANNA LUBECK

In re: Bonds owned by Marie Johanna Lubeck. F-28-25844-D-1, F-28-25844-D-2.

Under the authority of the Trading With the Enemy Act, as amended, Executive Order 9193, as amended, and Executive Order 9788, and pursuant to law, after investigation, it is hereby found:

1. That Marie Johanna Lubeck, whose last known address is Germany, is a resident of Germany and a national of a designated enemy country (Germany);

2. That the property described as follows:

a. One (1) Atlantic City Ambassador Hotel Corporation Twenty Year 4% Income Bond, of \$1,000 face value, bearing the number M-473, registered in the name of Marie Johanna Lubeck, together with any and all rights thereunder and thereto, and

b. One (1) New York Ambassador, Inc. Twenty Year 4% Income Bond, of \$1,000 face value, bearing the number M-472, registered in the name of Marie Johanna Lubeck, together with any and all rights thereunder and thereto,

is property within the United States owned or controlled by, payable or deliverable to, held on behalf of, or on account of, or owing to, or which is evidence of ownership or control by, the aforesaid national of a designated enemy country (Germany);

and it is hereby determined:

3. That to the extent that the person named in subparagraph 1 hereof is not within a designated enemy country, the national interest of the United States requires that such person be treated as a

national of a designated enemy country (Germany).

All determinations and all action required by law, including appropriate consultation and certification, having been made and taken, and, it being deemed necessary in the national interest,

There is hereby vested in the Attorney General of the United States the property described above, to be held, used, administered, liquidated, sold or otherwise dealt with in the interest of and for the benefit of the United States.

The terms "national" and "designated enemy country" as used herein shall have the meanings prescribed in section 10 of Executive Order 9193, as amended.

Executed at Washington, D. C., on August 3, 1949.

For the Attorney General.

[SEAL] DAVID L. BAZELON,
Assistant Attorney General,
Director, Office of Alien Property.

[F. R. Doc. 49-6698; Filed, Aug. 16, 1949; 8:49 a. m.]

[Vesting Order 13633]

CLARA BUEGE ET AL.

In re: Real property owned by Clara Buege and others.

Under the authority of the Trading With the Enemy Act, as amended, Executive Order 9193, as amended, and Executive Order 9788, and pursuant to law, after investigation, it is hereby found:

1. That Clara Buege, Emma Buege and Fritz Buege, whose last known addresses are Germany, are residents of Germany and nationals of a designated enemy country (Germany);

2. That the property described as follows: Real property situated in the Borough of Landsdowne, County of Delaware, State of Pennsylvania, particularly described in Exhibit A, attached hereto and by reference made a part hereof, together with all hereditaments, fixtures, improvements and appurtenances thereto, and any and all claims for rents, refunds, benefits or other payments, arising from the ownership of such property,

is property within the United States owned or controlled by, payable or deliverable to, held on behalf of, or on account of, or owing to, or which is evidence of ownership or control by, the aforesaid nationals of a designated enemy country (Germany);

and it is hereby determined:

3. That to the extent that the persons named in subparagraph 1 hereof are not within a designated enemy country, the national interest of the United States requires that such persons be treated as nationals of a designated enemy country (Germany).

All determinations and all action required by law, including appropriate consultation and certification, having been made and taken, and, it being deemed necessary in the national interest,

There is hereby vested in the Attorney General of the United States the prop-

erty described in subparagraph 2 hereof, subject to recorded liens, encumbrances and other rights of record held by or for persons who are not nationals of designated enemy countries, to be held, used, administered, liquidated, sold or otherwise dealt with in the interest of and for the benefit of the United States.

The terms "national" and "designated enemy country" as used herein shall have the meanings prescribed in section 10 of Executive Order 9193, as amended.

Executed at Washington, D. C., on August 10, 1949.

For the Attorney General.

[SEAL] DAVID L. BAZELON,
Assistant Attorney General,
Director, Office of Alien Property.

EXHIBIT A

All those three certain Contiguous lots or pieces of ground situate in the Borough of Landsdowne (formerly Township of Upper Darby) and bounded and described as follows:

Beginning at a point in the line of the Northwesterly side of Lot Numbered 73 on a certain plan recorded in the Office of the Recorder of Deeds of Delaware County, Pennsylvania, in Deed Book K 7, Page 1, which line extends Northeastwardly from the Northeastwardly side of Second Avenue parallel with and at the distance of three hundred and seventy-five feet Northwestwardly from the Northwestwardly side of Plumstead Avenue, said point of beginning being at the distance of fifty feet Northeastwardly of the said Northeastwardly side of Second Avenue, thence extending Northeastwardly on said line parallel with said Plumstead Avenue seventy-five feet to the Southernmost corner of Lot Numbered 206 on said plan, thence by said Lot and on a line parallel with Second Avenue one hundred and thirty-five feet four and one half inches more or less to a point, in the bed of Marshall Road, thence along the bed of said road South fifty-nine degrees forty-five minutes West seventy-five feet to a point, the Northernmost corner of Lot Numbered 70 on said plan and thence by said Lot Southeastwardly on a line parallel with said Second Avenue one hundred and thirty-five feet nine inches more or less to the place of beginning, being Lots numbered 71-72 and 205 on the aforesaid plan.

[F. R. Doc. 49-6699; Filed, Aug. 16, 1949; 8:49 a. m.]

[Vesting Order CE 473]

COSTS AND EXPENSES INCURRED IN CERTAIN ACTIONS OR PROCEEDINGS IN CERTAIN NEW YORK COURTS

Under the authority of the Trading With the Enemy Act, as amended, Executive Order 9193, as amended, and Executive Order 9788, and pursuant to law, after investigation, it having been found:

1. That each of the persons named in Column 1 of Exhibit A, attached hereto and by reference made a part hereof, was a person within the designated enemy country or the enemy-occupied territory identified in Column 2 of said Exhibit A opposite such person's name;

2. That, it was in the interest of the United States to take measures in connection with representing each of said persons in the court or administrative

action or proceeding identified in Column 3 of said Exhibit A opposite such person's name, and such measures having been taken;

3. That, in taking such measures in each of such actions or proceedings, costs and expenses were incurred in the amount stated in Column 4 of said Exhibit A opposite the action or proceeding identified in Column 3 of said Exhibit A;

4. That each amount stated in Column 4 of said Exhibit A has been paid from the property which each of said persons obtained or was determined to have as

a result of the action or proceeding identified in Column 3 of said Exhibit A opposite such person's name and all of said amounts are presently in the possession of the Attorney General of the United States.

Now, therefore, there is hereby vested in the Attorney General of the United States, to be used or otherwise dealt with in the interest of and for the benefit of the United States, the amount stated in Column 4 of said Exhibit A.

The term "designated enemy country" as used herein shall have the meaning

prescribed in section 10 of Executive Order 9193, as amended. The term "enemy-occupied territory" as used herein shall have the meaning prescribed in rules of procedure, Office of Alien Property, § 501.6 (8 CFR, Cum. Supp., 503.6).

Executed at Washington, D. C., on August 10, 1949.

For the Attorney General.

[SEAL] DAVID L. BAZELON,
Assistant Attorney General,
Director, Office of Alien Property.

EXHIBIT A

Column 1 Name	Column 2 Country or territory	Column 3 Action or proceeding	Column 4 Sum vested
City of Leipnik.....	Czechoslovakia.....	<i>Item 1</i> Estate of August Jahn, deceased. Surrogate's Court, Richmond County, New Brighton, Staten Island, N. Y.	884.00
Charles Schroeder, Jr.....	France.....	<i>Item 2</i> Estate of Emil S. Tobie, deceased. Surrogate's Court, Erie County, N. Y.	100.00
Margaret Schroeder Jacquet.....	do.....	<i>Item 3</i> Same.....	15.00

[F. R. Doc 49-6700; Filed, Aug. 16, 1949; 8:50 a. m.]