



# Federal Register

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**Friday,  
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**Part IV**

## **Department of Homeland Security**

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**Coast Guard**

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**46 CFR Parts 32, 50, 52, et al.  
Review and Update of Standards for  
Marine Equipment; Final Rule**

## DEPARTMENT OF HOMELAND SECURITY

### Coast Guard

46 CFR Parts 32, 50, 52, 53, 54, 56, 58, 59, 61, 62, 63, 76, 92, 110, 111, 112, 113, 162, 170, 175, 176, 177, 179, 181, 182, 183, 185

[Docket No. USCG-2003-16630]

RIN 1625-AA83

### Review and Update of Standards for Marine Equipment

**AGENCY:** Coast Guard, DHS.

**ACTION:** Final rule.

**SUMMARY:** The Coast Guard amends its rules relating to standards for marine equipment and updates the incorporation in those rules of references to national and international safety standards. This rule is part of an ongoing effort for regulatory review and reform that increases the focus on results, decreases the focus on process, and expands compliance options for the regulated public.

**DATES:** This final rule is effective December 1, 2008. The incorporation by reference of certain publications listed in the rule is approved by the Director of the Federal Register on December 1, 2008.

**ADDRESSES:** Comments and material received from the public, as well as documents mentioned in this preamble as being available in the docket, are part of docket USCG-2003-16630 and are available for inspection or copying at the Docket Management Facility, (M-30), U.S. Department of Transportation, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. You may also find this docket on the Internet at <http://www.regulations.gov/>.

**FOR FURTHER INFORMATION CONTACT:** If you have questions on this rule, call Thane Gilman, Project Manager, Office of Design and Engineering Standards (CG-521), U.S. Coast Guard, 2100 Second Street, SW., Washington, DC 20593-0001, telephone 202-372-1383. If you have questions on viewing the docket, call Renee V. Wright, Program Manager, Docket Operations, telephone 202-366-9826.

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#### I. Acronyms

- ABS American Bureau of Shipping
- ABYC American Boat and Yacht Council
- AGA American Gas Association
- ANSI American National Standards Institute
- API American Petroleum Institute
- ASME American Society of Mechanical Engineers
- ASTM American Standards for Testing and Materials
- CGA Compressed Gas Association
- CNG Compressed Natural Gas
- EJMA Expansion Joint Manufacturers Association, Inc.
- FCI Fluid controls Institute, Inc.
- IEC International Electrotechnical Commission
- IEEE Institute of Electrical and Electronic Engineers
- IMO International Maritime Organization
- ISA Instrument Society of America
- ISO International Organization for Standardization
- LPG Liquid Petroleum Gas
- MAWP Maximum Allowable Working Pressure
- MSC Marine Safety Center
- MSS Manufacturers Standardization Society of the Valve and Fitting Industry, Inc.
- NARA National Archives and Records Administration
- NAVSEA Naval Sea Systems Command
- NEC National Electric Code
- NEMA National Electrical Manufacturers Association
- NEPA National Environmental Policy Act of 1969
- NFPA National Fire Protection Association
- NPFC Naval Publications and Forms Center
- NPRM Notice of Proposed Rulemaking
- NPS Nominal Pipe Size
- NTTAA National Technology Transfer and Advancement Act
- PCBs Polychloride biphenyls
- SAE Society of Automotive Engineers
- SNPRM Supplemental Notice of Proposed Rulemaking
- SOLAS Safety of Life At Sea
- UL Underwriters Laboratories, Inc.

#### II. Regulatory History

On June 30, 2004, we published a notice of proposed rulemaking (NPRM) entitled "Review and Update of Standards for Marine Equipment" in the **Federal Register** (69 FR 39742). We received 13 letters commenting on the proposed rule. Two commenters

suggested we hold a public meeting to discuss changes they recommended. However, as those recommendations are beyond the scope of this rulemaking, we did not adopt this suggestion and no public meeting was held.

In numerous cases, the exact designation of standards that we incorporate by reference has changed between the NPRM and this final rule. These changes have been made to bring our regulatory text into compliance with Office of the Federal Register technical requirements governing incorporations by reference, and are intended to help the public better identify exactly which standards we intend to enforce. They are not intended to be substantive changes and receive no further discussion.

Other changes are relatively few in number and may or may not be substantive. They are discussed in "IV. Discussion of Comments and Changes." Overall, the changes we have made since publishing the NPRM are either non-substantive or are the logical outgrowth of the NPRM. A supplemental notice of proposed rulemaking (SNPRM) is, therefore, unnecessary, and would delay completion of this rulemaking. Thus, we find good cause under 5 U.S.C. 552(b)(B) to proceed with publication of this final rule without an SNPRM.

#### III. Background and Purpose

The Coast Guard has actively participated in the development of industry standards of safety for marine equipment at the International Maritime Organization (IMO), the International Organization for Standardization (ISO), the ASTM International, and other standards-setting bodies that belong to the American National Standards Institute (ANSI).

This rule is part of an ongoing effort for regulatory review and reform, with the goals of: (1) Updating references to incorporated standards that have been modified; (2) removing obsolete rules; (3) making our regulations performance-based; and (4) expanding efforts to promote consensual rulemaking.

#### IV. Discussion of Comments and Changes

The NPRM discusses the changes made by this rule in detail. In general, our changes fall into eight categories:

- (1) Revisions to authority citations.
- (2) Correction of prior inadvertent errors or deletions.
- (3) Deletion of obsolete or superfluous material.
- (4) Adoption of The International System of Units (metric) measurements.

(5) Reduction of regulatory thresholds.

(6) Stylistic revisions.

(7) Updating cross references.

(8) Updating references to industry standards.

This rule affects only inspected commercial vessels. It imposes no new requirements and, therefore, requires no phase-in period.

The Coast Guard received 13 letters commenting on the NPRM. Many of the comments suggested changes that go beyond the scope of this rulemaking, including the adoption of newer industry standards. This rulemaking is designed to update references to industry standards, but is not intended to introduce new standards that would change the substance of our regulations. We have not adopted any of these suggestions and, in most cases, do not discuss their merits in this document. Nevertheless, we appreciate these comments and may consider them in the future, should we ever undertake a more substantive revision of our rules.

Four commenters stated that two major documents developed by the American Petroleum Institute (API), API RP-14F and API RP-14FZ, were not recognized when creating these rules and merit consideration. We did not consider this recommendation because it is beyond the scope of this rulemaking.

Two commenters strongly recommended that the Coast Guard hold a public meeting to identify cable designs, their functional attributes, and their ultimate recognition as acceptable designs for the marine industry. As previously discussed, these suggestions are beyond the scope of this rulemaking and we did not adopt this recommendation.

One commenter stated that, because this rulemaking is applicable to low voltage power control and medium voltage insulated conductor constructions, the optional insulation systems and armor designs available for these cables should be discussed during this revision cycle to serve the purpose of updating and including state-of-the-art technology. This is beyond the scope of this rulemaking, but we point out that new state-of-the-art technologies can be submitted for equivalency review.

One commenter stated that the name of ASTM (American Society for Testing and Materials) has changed to American Standards for Testing and Materials (ASTM) International. The actual name is now ASTM International, and we have changed the text accordingly.

One commenter suggested that we review the wording of § 56.10-1(b). We have reworded the paragraph to

incorporate what we believe to be the commenter's concern.

One commenter suggested that we incorporate a reference to "similar junction equipment" in § 56.10-5(c)(6). We have revised the paragraph accordingly.

One commenter suggested a minor rewording of § 56.25-5, which we have incorporated.

One commenter asked us to remove the reference to threaded studs in § 56.25-20(d), saying that a stud is an unthreaded pin used in guiding the application. We disagree and have retained the language used in the NPRM. Studs have threads similar to bolts, but have no heads.

One commenter asked us to make minor revisions to the wording of § 56.25-20(e). Because our intention is to reproduce ASME-B31.1, part 108.5.1, we decline this request and have retained the language of the NPRM.

One commenter asked us to replace, in § 56.30-20(d), the phrase "No pipe \* \* \*" with "No steel pipe \* \* \*." We do not think this change is necessary, but have revised the language in the NPRM to omit a reference to ANSI standard weight.

One commenter requested minor revisions to § 56.60-3(b). Because our intention is to reproduce ASME-B31.1 part 124.2.C, we decline this request and have retained the language of the NPRM.

One commenter asked us to revise the language of § 92.15-10(d). The commenter's proposed revision was identical to the text in the NPRM. However, we have revised the paragraph to include a reference to 46 CFR 97.80-1.

Three commenters requested that in § 110.10-1, we replace the reference to IEEE Std 45-1998 with a reference to a newer standard, IEEE Std 45-2002. A fourth commenter asked us to add several International Electrotechnical Commission (IEC) standards to this section. These changes are outside the scope of the rulemaking. Note that in some cases, the additional standards these commenters suggest need not be made explicit in the regulatory text; compliance with those standards is already required by the standards that we do list.

One commenter asked us to amend § 111.01-9 to make it clear that there is no exact correlation between NEMA types and IEC IP types. We have retained the NPRM version of this section, which does not correlate the NEMA and IEC types, but provides the minimum NEMA and IEC IP protection required. The rule provides two separate, independent schemes for

achieving protection. The user will follow either NEMA or IEC IP types.

Three commenters requested that we change the title of § 111.05-7 and substitute "All cables shall be installed in accordance with requirements of section 25 of IEEE 45-2002" for the NPRM text, because the section should apply not only to armored cable but to all cable, thus providing the total installation requirements. We did not accept this recommendation because it is outside the scope of this rulemaking.

Four commenters pointed out that the reference in § 111.30-19(a)(1) to "Section 7.10" is to IEEE 45-1998, not the newer IEEE 45-2002 revision. They asked us to incorporate the 2002 standards in order to provide a higher level of safety. This recommendation is outside the scope of this rulemaking.

One commenter asked us to change the minimum cable size in § 111.30-19(b)(3) from 14 AWG to 15 AWG, to be on par with IEC. This recommendation is outside the scope of this rulemaking.

Three commenters suggested that the inclusion of § 111.60-1(c) as it appeared in the NPRM is redundant, because T/N cable construction is covered in IEEE 1580, which is referred to in paragraph (a) of the section. We agree and have deleted the NPRM language of paragraph (c).

Three commenters pointed out that § 111.60-1(d), as it appeared in the NPRM, incorrectly referenced IEEE Std 45, which does not provide cable construction data. We agree that the correct reference is to IEEE 1580 and have revised this paragraph accordingly.

One commenter asked us to amend § 111.60-2 to require the use of continuous corrugated metal clad armor or installation within continuous metal piping. This recommendation is outside the scope of this rulemaking.

One commenter stated that, in § 111.60-2, the reference to IEC 60332-2 is incorrect and should be changed to IEC 60332-3-23. We agree that the reference in the NPRM is incorrect, but have corrected the reference to read IEC 60332-3-22. The same commenter also asked us to delete the reference in this section to ANSI/UL 1581 test VW-1, on the grounds that it is inferior to the other listed standards in evaluating flame propagation behavior of completed cable assemblies. This recommendation is outside the scope of this rulemaking.

Two commenters asked us to amend § 111.60-3 so that all cable to be installed as marine shipboard cable must meet the performance requirements in Table 24 of IEEE 45. We have retained the NPRM language. Table 24 of IEEE Std 45-2002 is meant for

cable application, not cable performance requirements. Table 24 of IEEE Std 45–2002 does not apply in whole to each cable construction standard recognized in § 111.60–1 of this subpart and is not applicable to this section.

Three commenters asked us to replace the NPRM's "must meet" in § 111.60–3(a)(3) with "must be applied in accordance with," for better clarity as to the correct ampacity. We agree and have changed the language accordingly.

Three commenters asked us to replace the NPRM's "be derated according to" in § 111.60–3(b)(1) with "be applied in accordance with." We agree and have changed that language accordingly. However, we disagree with their additional comment that the reference in paragraph (b)(1) to Note 6 should be deleted because it requires no additional derating. We have retained the reference as Note 6 provides for additional derating of cables when the cable is double banked.

One commenter suggested the use of "clause" instead of "paragraph" in § 111.60–3(b)(2) to conform to IEC usage. We have made the requested change here and throughout subpart 111.60.

Three commenters asked us to remove the exception in § 111.60–5(a)(1) for section 25.11 of IEEE Std 45, saying the exception is not justified technically and that its removal would be consistent with § 111.60–19. We have retained the exception. Section 111.60–19 explicitly states one area where cable splicing is allowed and is only applicable to hazardous locations; splicing is only allowed in intrinsically safe locations. These locations, by definition, are low voltage applications.

Three commenters asked us to broaden § 111.60–5(a)(2) so that it refers to all of IEC 60092–352, not just to clause 8 of that standard, because proper installation requires use of the entire standard. We agree and have changed the text accordingly.

Two commenters asked us to revise § 111.60–5(c)(3) to permit the use of certain types of metal sheath as a grounding conductor. We have retained the NPRM language. The Coast Guard has a longstanding policy of not allowing any cable armor to be used as a grounding conductor. The requested change is a significant modification to our rules and is, therefore, beyond the scope of this rulemaking.

One commenter asked us to revise § 111.60–11(c), but without apparent change. We have retained the NPRM language.

Two commenters suggested deleting § 111.60–23 because its subject is addressed by IEEE 1580. Alternatively,

they suggested revising the section "to correct the construction and installation." We have retained the section as it appears in the NPRM. The requested change is beyond the scope of this rulemaking. Also, the restrictions of 46 CFR 111.60–23(c) cover a broader range of potential motions than those addressed in IEEE–1580, clauses 5.17.13 and 5.17.14. A detailed review of this issue is discussed in the **Federal Register** publications of June 4, 1996, page 28265, and May 1, 1997, page 23901. Prior to the publication of the existing rule, the Coast Guard conducted a complete review and revision of the regulations, bolstered by onsite observations, in order to determine the safe application of type MC cable aboard a vessel.

One commenter asked us to revise § 111.60–23(b) to require continuous corrugation, and to make other wording changes. We have retained the NPRM language. Continuous corrugation is already required by paragraph (a) of this section.

One commenter implied that we should omit §§ 111.105–3, 111.105–31(e), and 111.105–41 because their content is covered by section 33 of IEEE Std 45–2002. We are retaining these provisions. Adoption of the 2002 standard would, in these cases, constitute substantive changes beyond the scope of this rulemaking.

Three commenters asked us to revise § 111.105–17(a) to permit the use of Type MC–HL cable. This recommendation is outside the scope of this rulemaking.

Three commenters asked us to revise § 111.105–41 so that it specifically references clauses 22.7.2 and 33.7.3 of IEEE 45. We are retaining the current general reference to IEEE 45 because several of its clauses are applicable.

One commenter called our attention to an incorrect reference in § 111.107–1. We have corrected the section so that it refers to IEEE–1202.

Finally, one commenter suggested adding references, in § 113.30–25(j)(2), to IEC 60331–23 and IEC 60331–25. We are retaining the NPRM language for paragraph (j)(2). The recommendation is outside the scope of this rulemaking.

## V. Incorporation by Reference

The Director of the Federal Register has approved the material in 46 CFR 52.01–1, 53.01–1, 54.01–1, 56.01–2, 58.03–1, 59.01–2, 62.05–1, 63.05–1, 76.01–2, 92.01–2, 110.10–1, 162.017–1, 170.015, and 175.600 for incorporation by reference under 5 U.S.C. 552 and 1 CFR part 51. Copies of the material are available from the sources listed in those sections.

## VI. Regulatory Analyses

We developed this rule after considering numerous statutes and executive orders related to rulemaking. Below we summarize our analyses based on 13 of these statutes or executive orders.

### A. Regulatory Planning and Review

This rule is not a significant regulatory action under section 3(f) of Executive Order 12866, Regulatory Planning and Review, and does not require an assessment of potential costs and benefits under section 6(a)(3) of that Order. The Office of Management and Budget has not reviewed it under that Order. We expect the economic impact of this rule to be so minimal that a full Regulatory Assessment is unnecessary.

We received 13 letters commenting on the NPRM. None of these letters suggested there would be additional costs to industry for compliance with these revised industry standards.

Operators, owners, and manufacturers of vessels affected by this rule currently practice and adhere to national and international standards developed by organizations composed of representatives from a cross-section of interest groups affected by these standards.

We estimate that this final rule will have no additional costs to industry. New vessels coming into service are equipped and built under the provisions and standards of this rule.

These provisions and standards are not retroactive for owners and operators of existing vessels. Additionally, these owners and operators are not required to upgrade to the new standards if their equipment breaks down. Owners and operators of existing vessels have the option of repairing existing equipment or possibly installing similar equipment. These owners and operators may incur expected repair and replacement costs related to their existing equipment, but they will not incur additional mandatory costs associated with the provisions and requirements of this rule. If any owner or operator of an existing vessel of the current fleet chooses to upgrade, it is a voluntary upgrade.

### B. Benefits

This rule will eliminate confusion caused by outdated and conflicting rules on the safety of marine engineering for owners, operators, and manufacturers of vessels. These changes will update outdated rules to meet current national and international standards. In addition, this rule will give the maritime industry clear instructions and descriptions of how to comply with various rules.

### C. Small Entities

Under the Regulatory Flexibility Act (5 U.S.C. 601–612), we considered whether this rule will have a significant economic impact on a substantial number of small entities. The term “small entities” comprises small businesses, not-for-profit organizations that are independently owned and operated and are not dominant in their fields, and governmental jurisdictions with populations of less than 50,000.

Therefore, the Coast Guard certifies under 5 U.S.C. 605(b) that this final rule will not have a significant economic impact on a substantial number of small entities because it is not retroactive and because it imposes no mandatory costs on owners or operators of vessels.

### D. Collection of Information

This rule calls for no new collection of information under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501–3520).

### E. Federalism

A rule has implications for federalism under Executive Order 13132, Federalism, if it has a substantial direct effect on State or local governments and would either preempt State law or impose a substantial direct cost of compliance on them. We have analyzed this rule under that Order and have determined that it does not have implications for federalism. This rule will revise outdated standards on safety of marine equipment with international and national standards created and approved in part by State and local governments that participate in organizations that develop national standards for marine operation and safety.

### F. Unfunded Mandates Reform Act

The Unfunded Mandates Reform Act of 1995 (2 U.S.C. 1531–1538) requires Federal agencies to assess the effects of their regulatory actions not specifically required by law. In particular, the Act addresses actions that may result in the expenditure by a State, local, or tribal government, in the aggregate, or by the private sector of \$100,000,000 or more in any one year. Though this rule will not result in such an expenditure, we do discuss the effects of this rule elsewhere in this preamble.

### G. Taking of Private Property

This rule will not effect a taking of private property or otherwise have taking implications under Executive Order 12630, Governmental Actions and Interference with Constitutionally Protected Property Rights.

### H. Civil Justice Reform

This rule meets applicable standards in sections 3(a) and 3(b)(2) of Executive Order 12988, Civil Justice Reform, to minimize litigation, eliminate ambiguity, and reduce burden.

### I. Protection of Children

We have analyzed this rule under Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks. This rule is not an economically significant rule and will not create an environmental risk to health or risk to safety that may disproportionately affect children.

### J. Indian Tribal Governments

This rule does not have tribal implications under Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, because it does not have a substantial direct effect on one or more Indian tribes, on the relationship between the Federal Government and Indian tribes, or on the distribution of power and responsibilities between the Federal Government and Indian tribes.

### K. Energy Effects

We have analyzed this rule under Executive Order 13211, Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use. We have determined that it is not a “significant energy action” under that order because it is not a “significant regulatory action” under Executive Order 12866 and is not likely to have a significant adverse effect on the supply, distribution, or use of energy. The Administrator of the Office of Information and Regulatory Affairs has not designated it as a significant energy action. Therefore, it does not require a Statement of Energy Effects under Executive Order 13211.

### L. Technical Standards

The National Technology Transfer and Advancement Act (NTTAA) (15 U.S.C. 272 note) directs agencies to use voluntary consensus standards in their regulatory activities unless the agency provides Congress, through the Office of Management and Budget, with an explanation of why using these standards would be inconsistent with applicable law or otherwise be impractical. Voluntary consensus standards are technical standards (e.g., specifications of materials, performance, design, or operation; test methods; sampling procedures; and related management systems practices) that are developed or adopted by voluntary consensus standards bodies.

This rule uses voluntary consensus standards from the following organizations: American Bureau of Shipping (ABS) International, American National Standards Institute (ANSI), American Petroleum Institute (API), American Society of Mechanical Engineers (ASME), American Gas Association, ASTM International, International Electrotechnical Commission (IEC), Institute of Electrical and Electronic Engineers (IEEE), International Maritime Organization (IMO), Instrument Society of America (ISA), International Organization for Standardization (ISO), Manufacturers Standardization Society of the Valve and Fitting Industry, Inc. (MSS), Naval Sea Systems Command (NAVSEA), National Electrical Manufacturers Association (NEMA), National Fire Protection Association (NFPA), Naval Publications and Forms Center (NPFCC), Society of Automotive Engineers (SAE), and Underwriters' Laboratories, Inc. (UL). The sections that reference these consensus standards and the locations where these standards are available are listed in 46 CFR 52.01–1, 53.01–1, 54.01–1, 56.01–2, 58.03–1, 59.01–2, 62.05–1, 63.05–1, 76.01–2, 92.01–2, 110.10–1, 162.017–1, 170.015, and 175.600.

### M. Environment

We have analyzed this rule under Department of Homeland Security Management Directive 5100.1 and Commandant Instruction M16475.ID, which guide the Coast Guard in complying with the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321–4370f), and have concluded under the Instruction that there are no factors in this case that would limit the use of a categorical exclusion under section 2.B.2 of the Instruction. Therefore, this rule is categorically excluded, under figure 2–1, paragraph (34)(d) of the Instruction, from further environmental documentation. This rule will replace outdated safety standards for marine equipment with current national and international standards, and therefore will not have any impact on the environment. An environmental analysis checklist and a categorical exclusion determination are available in the docket where indicated under **ADDRESSES**.

### List of Subjects

#### 46 CFR Part 32

Cargo vessels, Fire prevention, Marine safety, Navigation (water), Occupational safety and health, Reporting and recordkeeping requirements, Seamen.

**46 CFR Part 50**

Reporting and recordkeeping requirements, Vessels.

**46 CFR Parts 52, 53, 54, 56, 58, 59, 61, 62, 63, and 110**

Incorporation by reference, Reporting and recordkeeping requirements, Vessels.

**46 CFR Part 76**

Fire prevention, Incorporation by reference, Marine safety, Passenger vessels.

**46 CFR Part 92**

Cargo vessels, Fire prevention, Incorporation by reference, Marine safety, Occupational safety and health, Seamen.

**46 CFR Parts 111, 112**

Incorporation by reference, Vessels.

**46 CFR Part 113**

Communications equipment, Fire prevention, Incorporation by reference, Vessels.

**46 CFR Part 162**

Fire prevention, Incorporation by reference, Marine safety, Oil pollution, Reporting and recordkeeping requirements.

**46 CFR Part 170**

Marine safety, Incorporation by reference, Reporting and recordkeeping requirements, Vessels.

**46 CFR Parts 175, 177, and 185**

Marine safety, Incorporation by reference, Passenger vessels, Reporting and recordkeeping requirements.

**46 CFR Parts 176, 181**

Fire prevention, Marine safety, Incorporation by reference, Passenger vessels, Reporting and recordkeeping requirements.

**46 CFR Part 179, 182, 183**

Incorporation by reference, Marine safety, Passenger vessels.

■ For the reasons discussed in the preamble, the Coast Guard amends 46 CFR parts 32, 50, 52, 53, 54, 56, 58, 59, 61, 62, 63, 76, 92, 110, 111, 112, 113, 162, 170, 175, 176, 177, 179, 181, 182, 183, and 185 as follows:

**PART 32—SPECIAL EQUIPMENT, MACHINERY, AND HULL REQUIREMENTS**

■ 1. Revise the authority citation for part 32 to read as follows:

**Authority:** 46 U.S.C. 2103, 3306, 3703, 3719; E.O. 12234, 45 FR 58801, 3 CFR, 1980

Comp., p. 277; Department of Homeland Security Delegation No. 0170.1; Subpart 32.59 also issued under the authority of Sec. 4109, Pub. L. 101–380, 104 Stat. 515.

■ 2. Add new § 32.53–30 to read as follows:

**§ 32.53–30 Positive pressure—T/ALL.**

Each inert gas system must be designed to enable the operator to maintain a gas pressure of 100 millimeters (4 inches) of water on filled cargo tanks and during loading and unloading of cargo tanks.

**PART 50—GENERAL PROVISIONS**

■ 3. The authority citation for part 50 continues to read as follows:

**Authority:** 43 U.S.C. 1333; 46 U.S.C. 3306, 3703; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1; Section 50.01–20 also issued under the authority of 44 U.S.C. 3507.

**§ 50.20–33 [Removed and Reserved]**

■ 4. Remove and reserve § 50.20–33.

**§ 50.25–1 [Amended]**

■ 5. In § 50.25–1(e), remove the term “G–MSE” and add, in its place, the term “CG–521”.

**PART 52—POWER BOILERS**

■ 6. The authority citation for part 52 continues to read as follows:

**Authority:** 46 U.S.C. 3306, 3307, 3703; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

■ 7. Revise § 52.01–1 to read as follows:

**§ 52.01–1 Incorporation by reference.**

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Coast Guard must publish notice of change in the **Federal Register** and the material must be available to the public. All approved material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030 or go to [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html). The material is also available for inspection at the U.S. Coast Guard, Office of Design and Engineering Standards (CG–521), 2100 Second Street, SW., Washington, DC 20593–0001, and is available from the sources listed below.

(b) *American Society of Mechanical Engineers (ASME) International*, Three Park Avenue, New York, NY 10016–5990:

(1) 2001 ASME Boiler and Pressure Vessel Code, Section I, Rules for Construction of Power Boilers (July 1, 2001) (“Section I of the ASME Boiler and Pressure Vessel Code”), 52.01–2; 52.01–5; 52.01–50; 52.01–90; 52.01–95; 52.01–100; 52.01–105; 52.01–110; 52.01–115; 52.01–120; 52.01–135; 52.01–140; 52.01–145; 52.05–1; 52.05–15; 52.05–20; 52.05–30; 52.05–45; 52.15–1; 52.15–5; 52.20–1; 52.20–25; 52.25–3; 52.25–5; 52.25–7; and 52.25–10.

(2) 1998 ASME Boiler and Pressure Vessel Code, Section II, Part A—Ferrous Material Specifications and Part B—Nonferrous Material Specifications (1998) (“Section II of the ASME Boiler and Pressure Vessel Code”), 52.01–90.

(3) [Reserved]

■ 8. Revise § 52.01–2(a) to read as follows:

**§ 52.01–2 Adoption of section I of the ASME Boiler and Pressure Vessel Code.**

(a) Main power boilers and auxiliary boilers shall be designed, constructed, inspected, tested, and stamped in accordance with section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1), as limited, modified, or replaced by specific requirements in this part. The provisions in the appendix to section I of the ASME Boiler and Pressure Vessel Code are adopted and shall be followed when the requirements in section I make them mandatory. For general information, Table 52.01–1(a) lists the various paragraphs in section I of the ASME Boiler and Pressure Vessel Code that are limited, modified, or replaced by regulations in this part.

\* \* \* \* \*

■ 9. Revise § 52.01–5(a) to read as follows:

**§ 52.01–5 Plans.**

(a) Manufacturers intending to fabricate boilers to be installed on vessels shall submit detailed plans as required by subpart 50.20 of this subchapter. The plans, including design calculations, must be certified by a registered professional engineer as meeting the design requirements in this part and in section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1).

\* \* \* \* \*

■ 10. Revise § 52.01–50(a) to read as follows:

**§ 52.01–50 Fusible plugs (modifies A–19 through A–21).**

(a) All boilers, except watertube boilers, with a maximum allowable working pressure in excess of 206 kPa gauge (30 psig), if fired with solid fuel not in suspension, or if not equipped for unattended waterbed operation, must be fitted with fusible plugs. Fusible plugs must comply with only the requirements of A19 and A20 of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1) and be stamped on the casing with the name of the manufacturer, and on the water end of the fusible metal “ASME Std.” Fusible plugs are not permitted where the maximum steam temperature to which they are exposed exceeds 218 °C (425 °F).

\* \* \* \* \*

■ 11. Revise § 52.01–90 to read as follows:

**§ 52.01–90 Materials (modifies PG–5 through PG–13).**

(a) Material subject to stress due to pressure must conform to specifications as indicated in paragraphs PG–5 through PG–13 of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1) except as noted otherwise in this section.

(b) Material not fully identified with an ASME Boiler and Pressure Vessel Code-approved specification may be accepted as meeting Coast Guard requirements providing it satisfies the conditions indicated in paragraph PG–10 of section I of the ASME Boiler and Pressure Vessel Code.

(c) (*Modifies PG–5.*) When the maximum allowable working pressure (See PG–21) exceeds 15 pounds per square inch, cross pipes connecting the steam and water drums of water tube boilers, headers, cross boxes, and all pressure parts of the boiler proper, shall be made of a wrought or cast steel listed in Tables 1A and 1B of section II of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1).

(d) (*Modifies PG–8.2.*) The use of cast iron is prohibited for mountings, fittings, valves, or cocks attached directly to boilers operating at pressures exceeding 15 pounds per square inch.

■ 12. Revise § 52.01–95(a) and (f) to read as follows:

**§ 52.01–95 Design (modifies PG–16 through PG–31 and PG–100).**

(a) *Requirements.* Boilers required to be designed to this part shall meet the requirements of PG–16 through PG–31 of section I of the ASME Boiler and

Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1) except as noted otherwise in this section.

\* \* \* \* \*

(f) (*Cylindrical components under internal pressure. (Modifies PG–27.)*) The minimum required thickness and maximum allowable working pressure of boiler piping, tubes, drums and headers shall be as required by the formula in PG–27 of section I of the ASME Boiler and Pressure Vessel Code except that threaded boiler tubes are not permitted.

■ 13. Revise § 52.01–100(a) and (b) to read as follows:

**§ 52.01–100 Openings and compensation (modifies PG–32 through PG–39, PG–42 through PG–55).**

(a) The rules for openings and compensation shall be as indicated in PG–32 through PG–55 of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1) except as noted otherwise in this section.

(b) (*Modifies PG–39.*) Pipe and nozzle necks shall be attached to vessel walls as indicated in PG–39 of section I of the ASME Boiler and Pressure Vessel Code except that threaded connections shall not be used under any of the following conditions:

(1) Pressures greater than 4,137 kPa (600 psig);

(2) Nominal diameters greater than 51 mm (2 in.); or

(3) Nominal diameters greater than 19 mm (0.75 in.) and pressures above 1,034 kPa (150 psig).

\* \* \* \* \*

■ 14. Revise § 52.01–105(a) and (b) to read as follows:

**§ 52.01–105 Piping, valves and fittings (modifies PG–58 and PG–59).**

(a) Boiler external piping within the jurisdiction of the ASME Boiler and Pressure Vessel Code must be as indicated in PG–58 and PG–59 of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1) except as noted otherwise in this section. Piping outside the jurisdiction of the ASME Boiler and Pressure Vessel Code must meet the appropriate requirements of part 56 of this subchapter.

(b) In addition to the requirements in PG–58 and PG–59 of section I of the ASME Boiler and Pressure Vessel Code, boiler external piping must:

(1) Meet the design conditions and criteria in § 56.07–10 of this subchapter, except § 56.07–10(b);

(2) Be included in the pipe stress calculations required by § 56.35–1 of this subchapter;

(3) Meet the nondestructive examination requirements in § 56.95–10 of this subchapter;

(4) Have butt welding flanges and fittings when full radiography is required; and

(5) Meet the requirements for threaded joints in § 56.30–20 of this subchapter.

\* \* \* \* \*

■ 15. Revise § 52.01–110(a) and (c) to read as follows:

**§ 52.01–110 Water-level indicators, water columns, gauge-glass connections, gauge cocks, and pressure gauges (modifies PG–60).**

(a) *Boiler water level devices.* Boiler water level devices shall be as indicated in PG–60 of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1) except as noted otherwise in this section.

\* \* \* \* \*

(c) *Water columns. (Modifies PG–60.2.)* The use of water columns is generally limited to firetube boilers. Water column installations shall be close hauled to minimize the effect of ship motion on water level indication. When water columns are provided they shall be fitted directly to the heads or shells of boilers or drums by 1 inch minimum size pipes with shutoff valves attached directly to the boiler or drums, or if necessary, connected thereto by a distance piece both at the top and bottom of the water columns. Shutoff valves used in the pipe connections between the boiler and water column or between the boiler and the shutoff valves, required by PG–60.6 of section I of the ASME Boiler and Pressure Vessel Code for gauge glasses, shall be locked or sealed open. Water column piping shall not be fitted inside the uptake, the smoke box, or the casing. Water columns shall be fitted with suitable drains. Cast iron fittings are not permitted.

\* \* \* \* \*

■ 16. Revise § 52.01–115 to read as follows:

**§ 52.01–115 Feedwater supply (modifies PG–61).**

Boiler feedwater supply must meet the requirements of PG–61 of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1) and § 56.50–30 of this subchapter.

**§ 52.01–120 [Amended]**

■ 17. In § 52.01–120—

■ a. In paragraph (a)(1), remove the words “of the ASME Code” and add, in

their place, the words “of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1)”;

■ b. In paragraphs (a)(2)(i), (a)(4), (a)(6), (b)(1), (c)(1), (c)(3), (d)(1), and (d)(2), remove the words “of the ASME Code” wherever they appear and add, in their place, the words “of section I of the ASME Boiler and Pressure Vessel Code”.

#### § 52.01–135 [Amended]

■ 18. In § 52.01–135—

■ a. In paragraph (a), remove the words “of the ASME Code” and add, in their place, the words “of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1)”;

■ b. In paragraphs (b) and (c), remove the words “of the ASME Code” wherever they appear and add, in their place, the words “of section I of the ASME Boiler and Pressure Vessel Code”.

#### § 52.01–140 [Amended]

■ 19. In § 52.01–140—

■ a. In paragraph (a), remove the words “of the ASME Code” and add, in their place, the words “of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1)”;

■ b. In paragraph (b)(3), in the phrase “section I of the ASME Code,” add the words “Boiler and Pressure Vessel” between “ASME” and “Code”;

■ c. In paragraphs (c) and (d), remove the words “of the ASME Code” wherever they appear and add, in their place, the words “of section I of the ASME Boiler and Pressure Vessel Code”.

#### § 52.01–145 [Amended]

■ 20. In § 52.01–145 text, remove the words “of the ASME Code” and add, in their place, the words “of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1)”.

#### § 52.05–1 [Amended]

■ 21. In § 52.05–1(a), remove the words “of the ASME Code” and add, in their place, the words “of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1)”.

#### § 52.05–15 [Amended]

■ 22. In § 52.05–15(a), remove the words “of the ASME Code” and add, in their place, the words “of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1)”.

■ 23. Revise § 52.05–20 to read as follows:

#### § 52.05–20 Radiographic and ultrasonic examination (modifies PW–11 and PW–41.1).

Radiographic and ultrasonic examination of welded joints must be as described in PW–11 of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1), except that parts of boilers fabricated of pipe material such as drums, shells, downcomers, risers, cross pipes, headers, and tubes containing only circumferentially welded butt joints, must be nondestructively examined as required by § 56.95–10 of this subchapter even though they may be exempted by the limits on size specified in Table PW–11 and PW–41.1 of section I of the ASME Boiler and Pressure Vessel Code.

#### § 52.05–30 [Amended]

■ 24. In § 52.05–30—

■ a. In paragraph (a), remove the words “of the ASME Code” and add, in their place, the words “of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1)”;

■ b. In paragraphs (b) and (c), remove the words “of the ASME Code” wherever they appear and add, in their place, the words “of section I of the ASME Boiler and Pressure Vessel Code”.

#### § 52.05–45 [Amended]

■ 25. In § 52.05–45—

■ a. In paragraph (a), remove the words “of the ASME Code” and add, in their place, the words “of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1)”;

■ b. In paragraphs (b) and (c), remove the words “of the ASME Code” wherever they appear and add, in their place, the words “of section I of the ASME Boiler and Pressure Vessel Code”.

#### § 52.15–1 [Amended]

■ 26. In § 52.15–1 text, remove the words “of the ASME Code” and add, in their place, the words “of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1)”.

#### § 52.15–5 [Amended]

■ 27. In § 52.15–5—

■ a. In paragraph (a), remove the words “of the ASME Code” and add, in their place, the words “of section I of the ASME Boiler and Pressure Vessel Code

(incorporated by reference; see 46 CFR 52.01–1)”;

■ b. In paragraph (b), remove the words “of the ASME Code” and add, in their place, the words “of section I of the ASME Boiler and Pressure Vessel Code”.

■ 28. Revise § 52.20–1 to read as follows:

#### § 52.20–1 General (modifies PFT–1 through PFT–49).

Firetube boilers and parts thereof shall be as indicated in PFT–1 through PFT–49 of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1) except as noted otherwise in this subpart.

#### § 52.20–25 [Amended]

■ 29. In § 52.20–25(a), remove the words “of the ASME Code” and add, in their place, the words “of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1)”.

#### § 52.25–3 [Amended]

■ 30. In § 52.25–3, remove the words “of the ASME Code” and add, in their place, the words “of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1)”.

#### § 52.25–5 [Amended]

■ 31. In § 52.25–5, remove the words “of the ASME Code” and add, in their place, the words “of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1)”.

#### § 52.25–7 [Amended]

■ 32. In § 52.25–7, remove the words “of the ASME Code” and add, in their place, the words “of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1)”.

#### § 52.25–10 [Amended]

■ 33. In § 52.25–10(a), remove the words “of the ASME Code” and add, in their place, the words “of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1)”.

### PART 53—HEATING BOILERS

■ 34. The authority citation for part 53 continues to read as follows:

**Authority:** 46 U.S.C. 3306, 3703; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.



■ 35. Revise § 53.01–1 to read as follows:

**§ 53.01–1 Incorporation by reference.**

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Coast Guard must publish notice of change in the **Federal Register** and the material must be available to the public. All approved material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030 or go to [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html). The material is also available for inspection at the U.S. Coast Guard, Office of Design and Engineering Standards (CG–521), 2100 Second Street, SW., Washington, DC 20593–0001, and is available from the sources listed below.

(b) *American Society of Mechanical Engineers (ASME) International*, Three Park Avenue, New York, NY 10016–5990:

(1) 2001 ASME Boiler and Pressure Vessel Code, Section I, Rules for Construction of Power Boilers (July 1, 2001) (“Section I of the ASME Boiler and Pressure Vessel Code”), 53.01–10.

(2) 2004 ASME Boiler and Pressure Vessel Code, Section IV, Rules for Construction of Heating Boilers (July 1, 2004) (“Section IV of the ASME Boiler and Pressure Vessel Code”), 53.01–3; 53.01–5; 53.01–10; 53.05–1; 53.05–2; 53.05–3; 53.05–5; 53.10–1; 53.10–3; 53.10–10; 53.10–15; and 53.12–1.

(c) *Underwriters Laboratories Inc.*, 333 Pfingston Road, Northbrook, IL 60062–2096:

(1) UL 174, Standard for Household Electric Storage Tank Water Heaters, Tenth Edition, Feb. 28, 1996 (Revisions through and including Nov. 10, 1997) (“UL 174”), 53.01–10.

(2) UL 1453, Standard for Electric Booster and Commercial Storage Tank Water Heaters, Fourth Edition, Sep. 1, 1995 (“UL 1453”), 53.01–10.

■ 36. Revise § 53.01–3(a), (b), and paragraph (c) introductory text to read as follows:

**§ 53.01–3 Adoption of section IV of the ASME Boiler and Pressure Vessel Code.**

(a) Heating boilers shall be designed, constructed, inspected, tested, and stamped in accordance with section IV of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 53.01–1) as limited, modified, or

replaced by specific requirements in this part. The provisions in the appendices to section IV of the ASME Boiler and Pressure Vessel Code are adopted and shall be followed when the requirements in section IV make them mandatory. For general information, Table 53.01–3(a) lists the various paragraphs in section IV of the ASME Boiler and Pressure Vessel Code that are limited, modified, or replaced by regulations in this part.

**TABLE 53.01–3(a)—LIMITATIONS AND MODIFICATIONS IN THE ADOPTION OF SECTION IV OF THE ASME BOILER AND PRESSURE VESSEL CODE**

Paragraphs in Section IV of the ASME Boiler and Pressure Vessel Code <sup>1</sup> and disposition	Unit of this part
HG–100 modified by .....	53.01–5(b)
HG–101 replaced by .....	53.01–10
HG–400 modified by .....	53.05–1
HG–400.2 modified by .....	53.05–2
HG–401 modified by .....	53.05–1
HG–401.2 modified by .....	53.05–3
HG–500 through HG–540 modified by .....	53.10–3
HG–600 through HG–640 modified by .....	53.12–1

<sup>1</sup> The references to specific provisions in the ASME Boiler and Pressure Vessel Code are coded. The first letter, such as “H,” refers to section IV. The second letter, such as “G,” refers to a part or subpart in section IV. The number following the letters refers to the paragraph so numbered in the text of the part or subpart in section IV.

(b) References to the ASME Boiler and Pressure Vessel Code, such as paragraph HG–307, indicate:

H = Section IV of the ASME Boiler and Pressure Vessel Code.

G = Part containing general requirements.

3 = Article in part.

307 = Paragraph within Article 3.

(c) When a paragraph or a section of the regulations in this part relates to material in section IV of the ASME Boiler and Pressure Vessel Code, the relationship with the code will be shown immediately following the heading of the section or at the beginning of the paragraph, as follows:

\* \* \* \* \*

■ 37. Revise § 53.01–5 to read as follows:

**§ 53.01–5 Scope (modifies HG–100).**

(a) The regulations in this part apply to steam heating boilers, hot water boilers (which include hot water heating boilers and hot water supply boilers), and to appurtenances thereto. The requirements in this part shall be used in conjunction with section IV of the ASME Boiler and Pressure Vessel Code

(incorporated by reference; see 46 CFR 53.01–1). Table 54.01–5(a) of this subchapter gives a breakdown by parts in this subchapter of the regulations governing various types of pressure vessels and boilers.

(b) (*Modifies HG–100.*) The requirements of Part HG of section IV of the ASME Boiler and Pressure Vessel Code shall be used except as noted otherwise in this part.

■ 38. Amend § 53.01–10 by revising paragraphs (a), (c)(1), (e) introductory text, and (e)(1) to read as follows:

**§ 53.01–10 Service restrictions and exceptions (replaces HG–101).**

(a) *General.* The service restrictions and exceptions shall be as indicated in this section in lieu of the requirements in HG–101 of section IV of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 53.01–1).

\* \* \* \* \*

(c) *Hot water supply boilers.* (1) Electrically fired hot water supply boilers that have a capacity not greater than 454 liters (120 gallons), a heat input not greater than 58.6 kilowatts (200,000 BTU per hour), and are listed as approved under Underwriters’ Laboratories UL 174 or UL 1453 (both incorporated by reference; see 46 CFR 53.01–1) are exempted from the requirements of this part provided they are protected by a pressure relief device. This relief device need not comply with § 53.05–2.

\* \* \* \* \*

(e) Heating boilers whose operating conditions are within the service restrictions of § 53.01–10(b)(1) may be constructed in accordance with section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 53.01–1). In addition, these heating boilers must:

(1) Be stamped with the appropriate ASME Code symbol in accordance with PG–104 through PG–113 of section IV of the ASME Boiler and Pressure Vessel Code;

\* \* \* \* \*

■ 39. Revise § 53.05–1(a) to read as follows:

**§ 53.05–1 Safety valve requirements for steam boilers (modifies HG–400 and HG–401).**

(a) The pressure relief valve requirements and the safety valve requirements for steam boilers must be as indicated in HG–400 and HG–401 of section IV of the ASME Boiler and Pressure Vessel Code (incorporated by

reference; see 46 CFR 53.01–1) except as noted otherwise in this section.

\* \* \* \* \*

■ 40. Revise § 53.05–2(a) to read as follows:

**§ 53.05–2 Relief valve requirements for hot water boilers (modifies HG–400.2).**

(a) The relief valve requirements for hot water boilers must be as indicated in article 4 of section IV of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 53.01–1) except as noted otherwise in this section.

\* \* \* \* \*

■ 41. Revise § 53.05–3 to read as follows:

**§ 53.05–3 Materials (modifies HG–401.2).**

Materials for valves must be in accordance with HG–401.2 of section IV of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 53.01–1) except that nonmetallic materials may be used only for gaskets and packing.

■ 42. Revise § 53.05–5 to read as follows:

**§ 53.05–5 Discharge capacities and valve markings.**

The discharge capacities and valve markings must be as indicated in HG–402 of section IV of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 53.01–1). The discharge capacities must be certified by the National Board of Boiler and Pressure Vessel Inspectors.

■ 43. Revise § 53.10–1 to read as follows:

**§ 53.10–1 General.**

The tests, inspection, stamping, and reporting of heating boilers shall be as indicated in Article 5, Part HG of section IV of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 53.01–1) except as noted otherwise in this subpart.

■ 44. Revise § 53.10–3(a) to read as follows:

**§ 53.10–3 Inspection and tests (modifies HG–500 through HG–540).**

(a) The inspections required by HG–500 through HG–540 must be performed by the “Authorized Inspector” as defined in HG–515 of section IV of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 53.01–1). The Authorized Inspector shall hold a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors. After installation, heating boilers must be

inspected for compliance with this part by a marine inspector.

\* \* \* \* \*

■ 45. Revise § 53.10–10 to read as follows:

**§ 53.10–10 Certification by stamping.**

Stamping of heating boilers shall be as indicated in HG–530 of section IV of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 53.01–1).

■ 46. Revise § 53.10–15 to read as follows:

**§ 53.10–15 Manufacturers’ data report forms.**

The manufacturers’ data report forms required by HG–520 of section IV of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 53.01–1) must be made available to the marine inspector for review. The Authorized Inspector’s National Board commission number must be included on the manufacturers’ data report forms.

■ 47. Amend subpart 53.12 by revising the subpart heading and § 53.12–1(a) to read as follows:

**Subpart 53.12—Instruments, Fittings, and Controls (Article 6)**

**§ 53.12–1 General (modifies HG–600 through HG–640).**

(a) The instruments, fittings and controls for heating boilers shall be as indicated in HG–600 through HG–640 of section IV of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 53.01–1) except as noted otherwise in this section.

\* \* \* \* \*

**PART 54—PRESSURE VESSELS**

■ 48. The authority citation for part 54 continues to read as follows:

**Authority:** 33 U.S.C. 1509; 43 U.S.C. 1333; 46 U.S.C. 3306, 3703; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

■ 49. Revise § 54.01–1 to read as follows:

**§ 54.01–1 Incorporation by reference.**

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Coast Guard must publish notice of change in the **Federal Register** and the material must be available to the public. All approved material is available for inspection at the National Archives and Records Administration (NARA). For

information on the availability of this material at NARA, call 202–741–6030 or go to [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html). The material is also available for inspection at the U.S. Coast Guard, Office of Design and Engineering Standards (CG–521), 2100 Second Street, SW., Washington, DC 20593–0001, and is available from the sources listed below.

(b) *American Society of Mechanical Engineers (ASME) International*, Three Park Avenue, New York, NY 10016–5990:

(1) ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, Rules for Construction of Pressure Vessels (1998 with 1999 and 2000 addenda) (“Section VIII of the ASME Boiler and Pressure Vessel Code”), 54.01–2; 54.01–5; 54.01–15; 54.01–18; 54.01–25; 54.01–30; 54.01–35; 54.03–1; 54.05–1; 54.10–1; 54.10–3; 54.10–5; 54.10–10; 54.10–15; 54.15–1; 54.15–5; 54.15–10; 54.15–13; 54.20–1; 54.20–3; 54.25–1; 54.25–3; 54.25–8; 54.25–10; 54.25–15; 54.25–20; 54.30–3; 54.30–5; 54.30–10; and

(2) [Reserved]

(c) *ASTM International (formerly American Society for Testing and Materials) (ASTM)*, 100 Barr Harbor Drive, West Conshohocken, PA 19428–2959:

(1) ASTM A 20/A 20M–97a, Standard Specification for General Requirements for Steel Plates for Pressure Vessels (“ASTM A 20”), 54.05–10; 54.25–10;

(2) ASTM A 203/A 203M–97, Standard Specification for Pressure Vessel Plates, Alloy Steel, Nickel (“ASTM A 203”), 54.05–20;

(3) ASTM A 370–97a, Standard Test Methods and Definitions for Mechanical Testing of Steel Products (“ASTM A 370”), 54.25–20;

(4) ASTM E 23–96, Standard Test Methods for Notched Bar Impact Testing of Metallic Materials (“ASTM Specification E 23”), 54.05–5; and

(5) ASTM E 208–95a, Standard Test Method for Conducting Drop-Weight Test to Determine Nil-Ductility Transition Temperature of Ferritic Steels (“ASTM Specification E 208”), 54.05–5.

(d) *Compressed Gas Association (CGA)*, 500 Fifth Avenue, New York, NY 10036:

(1) S–1.2, Pressure Relief Device Standards—Part 2—Cargo and Portable Tanks for Compressed Gases, 1979 (“CGA S–1.2”), 54.15–10; and

(2) [Reserved]

(e) *Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS)*, 127 Park Street NE, Vienna, VA 22180:

(1) SP-25-1998 Standard Marking System for Valves, Fittings, Flanges and Unions (1998) ("MSS SP-25"), 54.01-25; and

(2) [Reserved]

■ 50. Amend § 54.01-2 by revising the section heading and paragraphs (a), (b), and (c) introductory text to read as follows:

**§ 54.01-2 Adoption of division 1 of section VIII of the ASME Boiler and Pressure Vessel Code.**

(a) Pressure vessels shall be designed, constructed, and inspected in accordance with section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference, see 46 CFR 54.01-1), as limited, modified, or replaced by specific requirements in this part. The provisions in the

appendices to section VIII of the ASME Boiler and Pressure Vessel Code are adopted and shall be followed when the requirements in section VIII make them mandatory. For general information, Table 54.01-2(a) lists the various paragraphs in section VIII of the ASME Boiler and Pressure Vessel Code that are limited, modified, or replaced by regulations in this part.

**TABLE 54.01-2(a)—LIMITATIONS AND MODIFICATIONS IN THE ADOPTION OF SECTION VIII OF THE ASME BOILER AND PRESSURE VESSEL CODE**

Paragraphs in section VIII of the ASME Boiler and Pressure Vessel Code <sup>1</sup> and disposition	Unit of this part
U-1 and U-2 modified by .....	54.01-5 through 54.01-15.
U-1(c) replaced by .....	54.01-5.
U-1(d) replaced by .....	54.01-5(a) and 54.01-15.
U-1(g) modified by .....	54.01-10.
U-1(c)(2) modified by .....	54.01-15.
UG-11 modified by .....	54.01-25.
UG-22 modified by .....	54.01-30.
UG-25 modified by .....	54.01-35.
UG-28 modified by .....	54.01-40.
UG-84 replaced by .....	54.05-1.
UG-90 and UG-91 replaced by .....	54.10-3.
UG-92 through UG-103 modified by .....	54.10-1 through 54.10-15.
UG-98 reproduced by .....	54.10-5.
UG-115 through UG-120 modified by .....	54.10-1.
UG-116, except (k), replaced by .....	54.10-20(a).
UG-116(k) replaced by .....	54.10-20(b).
UG-117 replaced by .....	54.10-20(c).
UG-118 replaced by .....	54.10-20(a).
UG-119 modified by .....	54.10-20(d).
UG-120 modified by .....	54.10-25.
UG-125 through UG-137 modified by .....	54.15-1 through 54.15-15.
UW-1 through UW-65 modified by .....	54.20-1.
UW-2(a) replaced by .....	54.01-5(b) and 54.20-2.
UW-2(b) replaced by .....	54.01-5(b) and 54.20-2.
UW-9, UW-11(a), UW-13, and UW-16 modified by .....	54.20-3.
UW-11(a) modified by .....	54.25-8.
UW-26, UW-27, UW-28, UW-29, UW-47, and UW-48 modified by .....	54.20-5.
UB-1 modified by .....	54.23-1.
UB-2 modified by .....	52.01-95(d) and 56.30-30(b)(1).
UCS-6 modified by .....	54.25-3.
UCS-56 modified by .....	54.25-7.
UCS-57, UNF-57, UHA-33, and UHT-57 modified by .....	54.25-8.
UCS-65 through UCS-67 replaced by .....	54.25-10.
UHA-23(b) and UHA-51 modified by .....	54.25-15.
UHT-5(c), UHT-6, and UHT-23 modified by .....	54.25-20.
UHT-82 modified by .....	54.25-20 and 54.25-25.
Appendix 3 modified by .....	54.15-3.

<sup>1</sup> The references to specific provisions in section VIII of the ASME Boiler and Pressure Vessel Code are coded. The first letter, such as "U," refers to division 1 of section VIII. The second letter, such as "G," refers to a subsection within section VIII. The number refers to the paragraph within the subsection.

(b) References to the ASME Boiler and Pressure Vessel Code, such as paragraph UG-125, indicate:

U = Division 1 of section VIII of the ASME Boiler and Pressure Vessel Code.

G = Part containing general requirements.

125 = Paragraph within part.

(c) When a paragraph or a section of the regulations in this part relates to material in section VIII of the ASME

Boiler and Pressure Vessel Code, the relationship with the code will be shown immediately following the heading of the section or at the beginning of the paragraph, as follows:

\* \* \* \* \*

■ 51. In § 54.01-5—

■ a. In paragraph (c)(3), remove the words "of the ASME Code" and add, in their place, the words "of the ASME Boiler and Pressure Vessel Code

(incorporated by reference; see 46 CFR 54.01-1)";

■ b. In paragraph (e), remove the words "of the ASME Code" and add, in their place, the words "of the ASME Boiler and Pressure Vessel Code"; and

■ c. Revise Table 54.01-5(b) to read as set out below;

**§ 54.01-5 Scope (modifies U-1 and U-2).**

\* \* \* \* \*

TABLE 54.01-5(b)—PRESSURE VESSEL CLASSIFICATION

[Note to Table 54.01-5(b): All classes of pressure vessels are subject to shop inspection and plan approval.<sup>4</sup>]

Class	Service contents	Class limits on pressure and temperature	Joint requirements <sup>1,6,7</sup>	Radiography requirements, section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference, see 46 CFR 54.01-1) <sup>3,7</sup>	Post-weld heat treatment requirements <sup>5,7</sup>
I .....	(a) Vapor or gas ..... (b) Liquid ..... (c) Hazardous Materials <sup>2</sup> .	Vapor or gas: Over 600 p.s.i. or 700 °F. Liquid: Over 600 p.s.i. or 400 °F.	(1) For category A; (1) or (2) for category B. All categories C and D must have full penetration welds extending through the entire thickness of the vessel wall or nozzle wall.	Full on all butt joints regardless of thickness. Exceptions listed in Table UCS-57 of section VIII of the ASME Boiler and Pressure Vessel Code do not apply.	For carbon- or low-alloy steel, in accordance with Table UCS-56 of section VIII of the ASME Boiler and Pressure Vessel Code, regardless of thickness. For other materials, in accordance with section VIII.
I-L Low Temperature	(a) Vapor or gas, or liquid. (b) Hazardous Materials <sup>2</sup> .	Over 250 p.s.i. and service temp. below 0 °F.	(1) For categories A and B. All categories C and D must have full penetration welds extending through the entire thickness of the vessel wall or nozzle wall. No backing rings or strips left in place.	Full on all butt joints regardless of thickness. Exceptions listed in Table UCS-57 of section VIII of the ASME Boiler and Pressure Vessel Code do not apply.	For carbon- or low-alloy steel, in accordance with Table UCS-56 of section VIII of the ASME Boiler and Pressure Vessel Code, regardless of thickness. For other materials, in accordance with section VIII.
II .....	(a) Vapor or gas ..... (b) Liquid ..... (c) Hazardous Materials <sup>2,3,6</sup> .	Vapor or gas: 30 through 600 p.s.i. or 275 through 700 °F. Liquid: 200 through 600 p.s.i. or 250 through 400 °F.	(1) Or (2) for category A. (1), (2), or (3) for category B. Categories C and D in accordance with UW-16 of section VIII of the ASME Boiler and Pressure Vessel Code.	Spot, unless exempted by UW-11(c) of section VIII of the ASME Boiler and Pressure Vessel Code.	In accordance with section VIII of the ASME Boiler and Pressure Vessel Code.
II-L Low Temperature.	(a) Vapor or gas, or liquid. (b) Hazardous Materials <sup>2</sup> .	0 through 250 p.s.i. and service temp. below 0 °F.	(1) For category A; (1) or (2) for category B. All categories C and D must have full-penetration welds extending through the entire thickness of the vessel wall or nozzle wall.	Spot. The exemption of UW-11(c) of section VIII of the ASME Boiler and Pressure Vessel Code does not apply.	Same as for I-L except that mechanical stress relief may be substituted if allowed under Subpart 54.30 of this chapter.
III .....	(a) Vapor or gas ..... (b) Liquid ..... (c) Hazardous Materials <sup>2,3,6</sup> .	Vapor or gas: Under 30 p.s.i. and 0 through 275 °F. Liquid: Under 200 p.s.i. and 0 through 250 °F.	In accordance with Section VIII of the ASME Boiler and Pressure Vessel Code.	Spot, unless exempted by UW-11(c) of section VIII of the ASME Boiler and Pressure Vessel Code.	In accordance with section VIII of the ASME Boiler and Pressure Vessel Code.

<sup>1</sup> Welded joint categories are defined under UW-3 of section VIII of the ASME Boiler and Pressure Vessel Code. Joint types are described in Table UW-12 of section VIII of the ASME Boiler and Pressure Vessel Code, and numbered (1), (2), etc.

<sup>2</sup> See 46 CFR 54.20-2.

<sup>3</sup> See 46 CFR 54.25-8(c) and 54.25-10(d).

<sup>4</sup> See 46 CFR 54.01-15 and 54.10-3 for exemptions.

<sup>5</sup> Specific requirements modifying Table UCS-56 of section VIII of the ASME Boiler and Pressure Vessel Code appear in 46 CFR 54.25-7.

<sup>6</sup> See 46 CFR 54.20-3(c) and (f).

<sup>7</sup> Applies only to welded pressure vessels.

■ 52. In § 54.01-10, revise the section heading to read as follows:

**§ 54.01-10 Steam-generating pressure vessels (modifies U-1(g)).**

\* \* \* \* \*

■ 53. Amend § 54.01-15 by revising the section heading and paragraphs (a)(1), (2)(i) through (iv), (3)(i), and (4) to read as follows:

**§ 54.01-15 Exemptions from shop inspection and plan approval (modifies U-1(c)(2)).**

(a) \* \* \*

(1) Vessels containing water at a pressure not greater than 689 kPa (100 pounds per square inch gauge or

“psig”), and at a temperature not above 93 °C (200 °F) including those containing air, the compression of which serves only as a cushion. Air-charging lines may be permanently attached if the air pressure does not exceed 103 kPa (15 psig).

(2) \* \* \*

(i) A heat input of 58 kW (200,000 B.t.u. per hour);

(ii) A water temperature of 93 °C (200 °F);

(iii) A nominal water-containing capacity of 454 liters (120 gallons); or

(iv) A pressure of 689 kPa (100 psig).

\* \* \* \* \*

(3)(i) Vessels having an internal operating pressure not exceeding 103 kPa (15 psig) with no limitation on size. (See UG–28(f) of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1.)

\* \* \* \* \*

(4) Condensers and heat exchangers, regardless of size, when the design is such that the liquid phase is not greater than 689 kPa (100 psig) and 200 °F (93 °C) and the vapor phase is not greater than 103 kPa (15 psig) provided that the OCM is satisfied that system over-pressure conditions are addressed by the owner or operator.

\* \* \* \* \*

#### § 54.01–18 [Amended]

■ 54. In § 54.01–18(b)(5), remove the words, “of section VIII of the ASME Code” and add, in their place, the words “of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1)”.

#### § 54.01–25 [Amended]

■ 55. In § 54.01–25—

■ a. In paragraph (a), remove the words “of the ASME Code” and add, in their place, the words “of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1)”;

■ b. In paragraph (b), remove the term “MSS (Manufacturers’ Standardization Society) Standard SP–25” and, in its place, insert the words “MSS SP–25 (incorporated by reference; see 46 CFR 54.01–1)”.

#### § 54.01–30 [Amended]

■ 56. In § 54.01–30—

■ a. In paragraph (a), remove the words “of the ASME Code” and add, in their place, the words “of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1)”;

■ b. In paragraph (b) introductory text, remove the words “of the ASME Code” and add, in their place, the words “of section VIII of the ASME Boiler and Pressure Vessel Code”.

#### § 54.01–35 [Amended]

■ 57. In § 54.01–35—

■ a. In paragraph (a), remove the words “of the ASME Code” and add, in their place, the words “of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1)”;

■ b. In paragraph (b)(4), remove the words “of the ASME Code” and add, in their place, the words “of the ASME Boiler and Pressure Vessel Code”;

■ c. In the note following paragraph (d)(2), remove the words “of the ASME Code” and add, in their place, the words “of section VIII of the ASME Boiler and Pressure Vessel Code”.

#### § 54.03–1 [Amended]

■ 58. In § 54.03–1, remove the paragraph designation; and in the text, remove the words “of the ASME Code” and add, in their place, the words “of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1)”.

#### § 54.05–1 [Amended]

■ 59. In § 54.05–1, remove the paragraph designation; and in the text, remove the words “of the ASME Code” and add, in their place, the words “of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1)”.

#### § 54.10–1 [Amended]

■ 60. In § 54.10–1, remove the paragraph designation; and in the text, remove the words “of the ASME Code” and add, in their place, the words “of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1)”.

#### § 54.10–3 [Amended]

■ 61. In § 54.10–3(b), remove the words “of the ASME Code” and add, in their

place, the words “of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1)”.

■ 62. Revise § 54.10–5 to read as follows:

#### § 54.10–5 Maximum allowable working pressure (reproduces UG–98).

(a) The maximum allowable working pressure for a vessel is the maximum pressure permissible at the top of the vessel in its normal operating position at the designated coincident temperature specified for that pressure. It is the least of the values found for maximum allowable working pressure for any of the essential parts of the vessel by the principles given in paragraph (b) of this section and adjusted for any difference in static head that may exist between the part considered and the top of the vessel. (See Appendix 3 of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1.)

(b) The maximum allowable working pressure for a vessel part is the maximum internal or external pressure, including the static head hereon, as determined by the rules and formulas in section VIII of the ASME Boiler and Pressure Vessel Code, together with the effect of any combination of loadings listed in UG–22 of section VIII of the ASME Boiler and Pressure Vessel Code (see 46 CFR 54.01–30) that are likely to occur, or the designated coincident operating temperature, excluding any metal thickness specified as corrosion allowance. (See UG–25 of section VIII of the ASME Boiler and Pressure Vessel Code.)

(c) Maximum allowable working pressure may be determined for more than one designated operating temperature, using for each temperature the applicable allowable stress value.

**Note:** Table 54.10–5 gives pictorially the interrelation among the various pressure levels pertinent to this part of the regulations. It includes reference to section VIII of the ASME Boiler and Pressure Vessel Code for definitions and explanations.

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Table 54.10-5--Pictorial Inter-Relation Among Various Pressure Levels with References to Specific Requirements<sup>1</sup>

Pressure differential <sup>2</sup>	Test pressures	Relief Device pressure settings	Pressures upon which flow capacity of relief devices is based
Increasing Pressure ↑	Burst-proof test (UG-101(m) of section VIII of the ASME Boiler and Pressure Vessel Code		
	Yield-proof test (UG-101(j) of section VIII of the ASME Boiler and Pressure Vessel Code)		
	Standard hydrostatic test (UG-99 of section VIII of the ASME Boiler and Pressure Vessel Code)		
			Fire exposure, 120% MAWP
	Pneumatic test (UG-100 of section VIII of the ASME Boiler and Pressure Vessel Code)		
		Rupture disk burst (§ 54.15-13)	
			Normal, 110% MAWP

	Maximum allowable working pressure (MAWP), UG-98 of section VIII of the ASME Boiler and Pressure Vessel Code	Maximum allowable working pressure (MAWP), UG-98 of section VIII of the ASME Boiler and Pressure Vessel Code	Maximum allowable working pressure (MAWP), UG-98 of section VIII of the ASME Boiler and Pressure Vessel Code
Increasing Pressure ↑	Design pressure, UG-21 and Appendix 3 of section VIII of the ASME Boiler and Pressure Vessel Code	Design pressure, UG-21 and Appendix 3 of section VIII of the ASME Boiler and Pressure Vessel Code	Design pressure, UG-21 and Appendix 3 of section VIII of the ASME Boiler and Pressure Vessel Code
		Safety or relief valve setting (UG-133 of section VIII of the ASME Boiler and Pressure Vessel Code)	
	Operating Pressure (Appendix 3 of section VIII of the ASME Boiler and Pressure Vessel Code)	Operating Pressure (Appendix 3 of section VIII of the ASME Boiler and Pressure Vessel Code)	Operating Pressure (Appendix 3 of section VIII of the ASME Boiler and Pressure Vessel Code)

<sup>1</sup> For basic pressure definitions see 46 CFR 52.01-3(g) of this subchapter. Section VIII of the ASME Boiler and Pressure Vessel Code; see 46 CFR 54.01-1.

<sup>2</sup> For pressure differentials above 3,000 pounds per square inch (p.s.i.), special requirements may apply. Arrow of increasing pressure in left column signifies that, for example, the standard hydrostatic-test pressure is higher than the MAWP, which in turn is higher than the design pressure and the operating pressure, and so forth.

- 63. In § 54.10–10—
- a. Amend paragraph (b) by revising the first and second sentences to read as set out below; and
- b. In paragraph (e), remove the words “of the ASME Code” and add, in their place, the words “of section VIII of the ASME Boiler and Pressure Vessel Code”.

**§ 54.10–10 Standard hydrostatic test (modifies UG–99).**

\* \* \* \* \*

(b) The hydrostatic-test pressure must be at least one and three-tenths (1.30) times the maximum allowable working pressure stamped on the pressure vessel, multiplied by the ratio of the stress value “S” at the test temperature to the stress value “S” at the design temperature for the materials of which the pressure vessel is constructed. The values for “S” shall be taken from Tables UCS 23, UNF 23, UHA 23, or UHT 23 of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference, see 46 CFR 54.01–1).

\* \* \* \* \*

- 64. Revise § 54.10–15(c) to read as follows:

**§ 54.10–15 Pneumatic test (modifies UG–100).**

\* \* \* \* \*

(c) Except for enameled vessels, for which the pneumatic test pressure shall be at least equal to, but need not exceed, the maximum allowable working pressure to be marked on the vessel, the pneumatic test pressure shall be at least equal to one and one-tenth (1.10) times the maximum allowable working pressure to be stamped on the vessel multiplied by the lowest ratio (for the materials of which the vessel is constructed) of the stress value “S” for the test temperature of the vessel to the stress value “S” for the design temperature (see UG–21 of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1)). In no case shall the pneumatic test pressure exceed one and one-tenth (1.10) times the basis for calculated test pressure as defined in UA–60(e) of section VIII of the ASME Boiler and Pressure Vessel Code.

\* \* \* \* \*

- 65. Revise § 54.10–20(a)(6) to read as follows:

**§ 54.10–20 Marking and stamping.**

(a) \* \* \*

(6) Minimum design metal temperature, if below –18 °C (0 °F).

\* \* \* \* \*

- 66. Revise § 54.15–1 section heading and paragraph (a) to read as follows:

**§ 54.15–1 General (modifies UG–125 through UG–137).**

(a) All pressure vessels built in accordance with applicable requirements in section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1) must be provided with protective devices as indicated in UG–125 through UG–137 of section VIII except as noted otherwise in this subpart.

\* \* \* \* \*

- 67. Revise § 54.15–3 section heading to read as follows:

**§ 54.15–3 Definitions (modifies Appendix 3).**

\* \* \* \* \*

**§ 54.15–5 [Amended]**

- 68. In § 54.15–5(a), remove the words “of the ASME Code” and add, in their place, the words “of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1)”.

**§ 54.15–10 [Amended]**

- 69. In § 54.15–10—

■ a. In paragraph (e), remove the words “of the ASME Code” and add, in their place, the words “of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1)”;

■ b. In paragraph (h)(1), remove the term “Compressed Gas Association Standard S–1.2.5.2” and add, in its place, the words “CGA S–1.2 (incorporated by reference; see 46 CFR 54.01–1)”;

■ c. In paragraph (h)(2), remove the words “of the ASME Code” and add, in their place, the words “of Section VIII of the ASME Boiler and Pressure Vessel Code”; and

■ d. In paragraph (h)(3), remove the words “of the ASME Code” and add, in their place, the words “of section VIII of the ASME Boiler and Pressure Vessel Code”.

**§ 54.15–13 [Amended]**

- 70. In § 54.15–13(a), remove the words “of the ASME Code” and add, in their place, the words “of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1)”.

**§ 54.20–1 [Amended]**

- 71. In § 54.20–1(a), remove the words “of the ASME Code” and add, in their place, the words “of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1)”.

**§ 54.20–3 [Amended]**

- 72. In § 54.20–3—

■ a. In paragraph (b), remove the words “of the ASME Code” and add, in their place, the words “of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1)”;

■ b. In paragraphs (c) and (d), remove the words “of the ASME Code” wherever they appear and add, in their place, the words “of section VIII of the ASME Boiler and Pressure Vessel Code”.

**§ 54.25–1 [Amended]**

- 73. In § 54.25–1, remove the paragraph designation; and in the text, remove the words “of the ASME Code” and add, in their place, the words “of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1)”.

- 74. Revise § 54.25–3 to read as follows:

**§ 54.25–3 Steel plates (modifies UCS–6).**

The steels listed in UCS–6(b) of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1) will be allowed only in Class III pressure vessels (see Table 54.01–5(b)).

- 75. Revise § 54.25–5 to read as follows:

**§ 54.25–5 Corrosion allowance.**

The corrosion allowance must be as required in 46 CFR 54.01–35.

**§ 54.25–8 [Amended]**

- 76. In § 54.25–8(b), remove the words “of the ASME Code” and add, in their place, the words “of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1)”.

**§ 54.25–10 [Amended]**

- 77. In 54.25–10—

■ a. In paragraph (b) introductory text, remove the words “in the ASME Code” and add, in their place, the words “in section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1)”;

■ b. In paragraph (c), remove the words “Table UCS–23 of the ASME Code” and add, in their place, the words “Table UCS–23 of section VIII of the ASME Boiler and Pressure Vessel Code”; and remove the words “Appendix P of section VIII of the ASME Code” and add, in their place, the words “Appendix P of Section VIII of the ASME Boiler and Pressure Vessel Code”.



**§ 54.25–15 [Amended]**

■ 78. In § 54.25–15—

■ a. In paragraph (a), remove the words “of the ASME Code” and add, in their place, the words “of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1)”;

■ b. In paragraphs (b) and (c), remove the words “of the ASME Code” wherever they appear and add, in their place, the words “of section VIII of the ASME Boiler and Pressure Vessel Code.”

■ 79. Amend § 54.25–20 by revising paragraphs (b) introductory text, (c), and (e) to read as follows:

**§ 54.25–20 Low temperature operation—ferritic steels with properties enhanced by heat treatment (modifies UHT–5(c), UHT–6, UHT–23, and UHT–82).**

\* \* \* \* \*

(b) The materials permitted under paragraph (a) of this section shall be tested for toughness in accordance with the requirements of UHT–6 of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1) except that tests shall be conducted at the temperature specified in § 54.05–6 in lieu of that in UHT–5(c) of section VIII of the ASME Boiler and Pressure Vessel Code.

\* \* \* \* \*

(c) The qualification of welding procedures, welders and weld-production testing for the steels of Table 54.25–20(a) must conform to the requirements of part 57 of this subchapter and to those of subpart 54.05 of this part except that the acceptance criteria for Charpy V-notch testing must be in accordance with UHT–6(a)(4) of section VIII of the ASME Boiler and Pressure Vessel Code.

\* \* \* \* \*

(e) Except as permitted by § 54.05–30, the allowable stress values may not exceed those given in Table UHT–23 of section VIII of the ASME Boiler Pressure and Vessel Code for temperatures of 150 °F and below.

■ 80. Revise § 54.25–25(a) to read as follows:

**§ 54.25–25 Welding of quenched and tempered steels (modifies UHT–82).**

(a) The qualification of welding procedures, welders, and weld-production testing must conform to the requirements of part 57 of this subchapter. The requirements of 46 CFR 57.03–1(d) apply to welded pressure vessels and non-pressure vessel type tanks of quenched and tempered steels other than 9-percent nickel.

\* \* \* \* \*

■ 81. Revise § 54.30–3(c) to read as follows:

**§ 54.30–3 Introduction.**

\* \* \* \* \*

(c) The weld joint efficiencies as listed in Table UW–12 of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1) shall apply except that a minimum of spot radiography will be required. UW–12(c) of section VIII of the ASME Boiler and Pressure Vessel Code that permits omitting all radiography does not apply. Spot examination shall follow UW–52 of section VIII of the ASME Boiler and Pressure Vessel Code and, in addition, these vessels will be required to have radiographic examination of intersecting circumferential and longitudinal joints for a distance of at least 20 times the plate thickness from the junction. See 46 CFR 54.25–8 on spot radiography.

\* \* \* \* \*

**§ 54.30–5 [Amended]**

■ 82. In § 54.30–5—

■ a. In paragraph (a)(1), remove the words “of the ASME Code” and add, in their place, the words “of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1)”;

■ b. In paragraphs (a)(4) and (6), remove the words “of the ASME Code” wherever they appear and add, in their place, the words “of section VIII of the ASME Boiler and Pressure Vessel Code”.

**§ 54.30–10 [Amended]**

■ 83. In § 54.30–10(a)(1), remove the words “of the ASME Code” and add, in their place, the words “of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1).”

**PART 56—PIPING SYSTEMS AND APPURTENANCES**

■ 84. The authority citation for part 56 continues to read as follows:

**Authority:** 33 U.S.C. 1321(j), 1509; 43 U.S.C. 1333; 46 U.S.C. 3306, 3703; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; E.O. 12777, 56 FR 54757, 3 CFR, 1991 Comp., p. 351; Department of Homeland Security Delegation No. 0170.1.

**Subpart 56.01—[Amended]**

■ 85. Remove the note following the heading to subpart 56.01.

■ 86. Revise § 56.01–2 to read as follows:

**§ 56.01–2 Incorporation by reference.**

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Coast Guard must publish notice of change in the **Federal Register** and the material must be available to the public. All approved material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030 or go to [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html). The material is also available for inspection at the U.S. Coast Guard, Office of Design and Engineering Standards (CG–521), 2100 Second Street, SW., Washington, DC 20593–0001, and is available from the sources listed below.

(b) *American National Standards Institute (ANSI)*, 25 West 43rd Street, New York, NY 10036:

(1) ANSI/ASME B1.1–1982 Unified Inch Screw Threads (UN and UNR Thread Form) (1982) (“ANSI/ASME B1.1”), 56.25–20; 56.60–1;

(2) ANSI/ASME B1.20.1–1983 Pipe Threads, General Purpose (Inch) (1983) (“ANSI/ASME B1.20.1”), 56.60–1;

(3) ANSI/ASME B1.20.3–1976 (Reaffirmed 1982) Dryseal Pipe Threads (Inch) (“ANSI/ASME B1.20.3”), 56.60–1;

(4) ANSI/ASME B16.15–1985 [Reaffirmed 1994] Cast Bronze Threaded Fittings, Classes 125 and 250 (1985) (“ANSI/ASME B16.15”), 56.60–1;

(c) *American Petroleum Institute (API)*, 1220 L Street, NW., Washington, DC 20005–4070:

(1) API Standard 607, Fire Test for Soft-Seated Quarter-Turn Valves, Manufacturing, Distribution and Marketing Department, Fourth Edition (1993) (“API 607”), 56.20–15; and

(2) [Reserved]

(d) *American Society of Mechanical Engineers (ASME) International*, Three Park Avenue, New York, NY 10016–5990:

(1) 2001 ASME Boiler and Pressure Vessel Code, Section I, Rules for Construction of Power Boilers (July 1, 2001) (“Section I of the ASME Boiler and Pressure Vessel Code”), 56.15–1; 56.15–5; 56.20–1; 56.60–1; 56.70–15; 56.95–10;

(2) ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, Rules for Construction of Pressure Vessels (1998 with 1999 and 2000 addenda) (“Section VIII of the ASME Boiler and Pressure Vessel Code”), 56.15–1; 56.15–5; 56.20–

1; 56.25–5; 56.30–10; 56.30–30; 56.60–1; 56.60–2; 56.60–15; 56.95–10;

(3) 1998 ASME Boiler & Pressure Vessel Code, Section IX, Welding and Brazing Qualifications (1998) (“Section IX of the ASME Boiler and Pressure Vessel Code”), 56.70–5; 56.70–20; 56.75–20;

(4) ASME B16.1–1998 Cast Iron Pipe Flanges and Flanged Fittings, Classes 25, 125, 250 (1998) (“ASME B16.1”), 56.60–1; 56.60–10;

(5) ASME B16.3–1998 Malleable Iron Threaded Fittings, Classes 150 and 300 (1998) (“ASME B16.3”), 56.60–1;

(6) ASME B16.4–1998 Gray Iron Threaded Fittings, Classes 125 and 250 (1998) (“ASME B16.4”), 56.60–1;

(7) ASME B16.5–2003 Pipe Flanges and Flanged Fittings NPS ½ Through NPS 24 Metric/Inch Standard (2003) (“ASME B16.5”), 56.25–20; 56.30–10; 56.60–1;

(8) ASME B16.9–2003 Factory-Made Wrought Steel Buttwelding Fittings (2003) (“ASME B16.9”), 56.60–1;

(9) ASME B16.10–2000 Face-to-Face and End-to-End Dimensions of Valves (2000) (“ASME B16.10”), 56.60–1;

(10) ASME B16.11–2001 Forged Fittings, Socket-Welding and Threaded (2001) (“ASME B16.11”), 56.30–5; 56.60–1;

(11) ASME B16.14–1991 Ferrous Pipe Plugs, Bushings, and Locknuts with Pipe Threads (1991) (“ASME B16.14”), 56.60–1;

(12) ASME B16.18–2001 Cast Copper Alloy Solder Joint Pressure Fittings (2001) (“ASME B16.18”), 56.60–1;

(13) ASME B16.20–1998 (Revision of ASME B16.20 1993), Metallic Gaskets for Pipe Flanges: Ring-Joint, Spiral-Wound, and Jacketed (1998) (“ASME B16.20”), 56.60–1;

(14) ASME B16.21–2005 (Revision of ASME B16.21–1992) Nonmetallic Flat Gaskets for Pipe Flanges (May 31, 2005) (“ASME B16.21”), 56.60–1;

(15) ASME B16.22–2001 (Revision of ASME B16.22–1995) Wrought Copper and Copper Alloy Solder Joint Pressure Fittings (Aug. 9, 2002) (“ASME B16.22”), 56.60–1;

(16) ASME B16.23–2002 (Revision of ASME B16.23–1992) Cast Copper Alloy Solder Joint Drainage Fittings: DWV (Nov. 8, 2002) (“ASME B16.23”), 56.60–1;

(17) ASME B16.24–2001 Cast Copper Alloy Pipe Flanges and Flanged Fittings, Class 150, 300, 400, 600, 900, 1500, and 2500 (2001) (“ASME B16.24”), 56.60–1;

(18) ASME B16.25–2003 Buttwelding Ends (2003) (“ASME B16.25”), 56.30–5; 56.60–1; 56.70–10;

(19) ASME B16.28–1994 Wrought Steel Buttwelding Short Radius Elbows and Returns (1994) (“ASME B16.28”), 56.60–1;

(20) ASME B16.29–2007 (Revision of ASME B16.29–2001) Wrought Copper and Wrought Copper Alloy Solder-Joint Drainage Fittings—DWV (Aug. 20, 2007) (“ASME B16.29”), 56.60–1;

(21) ASME B16.34–1996 Valves—Flanged, Threaded, and Welding End (1996) (“ASME B16.34”), 56.20–1; 56.60–1;

(22) ASME B16.42–1998 Ductile Iron Pipe Flanges and Flanged Fittings, Classes 150 and 300 (1998) (“ASME B16.42”), 56.60–1;

(23) ASME B18.2.1–1996 Square and Hex Bolts and Screws (Inch Series) (1996) (“ASME B18.2.1”), 56.25–20; 56.60–1;

(24) ASME/ANSI B18.2.2–1987 Square and Hex Nuts (Inch Series) (1987) (“ASME/ANSI B18.2.2”), 56.25–20; 56.60–1;

(25) ASME B31.1–2001 Power Piping ASME Code for Pressure Piping, B31 (2001) (“ASME B31.1”), 56.01–3; 56.01–5; 56.07–5; 56.07–10; 56.10–1; 56.10–5; 56.15–1; 56.15–5; 56.20–1; 56.25–7; 56.30–1; 56.30–5; 56.30–10; 56.30–20; 56.35–1; 56.50–1; 56.50–15; 56.50–40; 56.50–65; 56.50–70; 56.50–97; 56.60–1; 56.65–1; 56.70–10; 56.70–15; 56.80–5; 56.80–15; 56.95–1; 56.95–10; 56.97–1;

(26) ASME B36.10M–2004 Welded and Seamless Wrought Steel Pipe (2004) (“ASME B36.10M”), 56.07–5; 56.30–20; 56.60–1; and

(27) ASME B36.19M–2004 Stainless Steel Pipe (2004) (“ASME B36.19M”), 56.07–5; 56.60–1.

(28) ASME SA–675 (1998), Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality, Mechanical Properties (“ASME SA–675”), 56.60–2.

(e) *ASTM International (formerly American Society for Testing and Materials) (ASTM)*, 100 Barr Harbor Drive, West Conshohocken, PA 19428–2959:

(1) ASTM A 36/A 36M–97a, Standard Specification for Carbon Structural Steel (“ASTM A 36”), 56.30–10;

(2) ASTM A 47–90 (1995), Standard Specification for Ferritic Malleable Iron Castings (“ASTM A 47”), 56.60–1;

(3) ASTM A 53–98, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless (“ASTM Specification A 53” or “ASTM A 53”), 56.10–5; 56.60–1;

(4) ASTM A 106–95, Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service (“ASTM A 106”), 56.60–1;

(5) ASTM A 126–95, Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings (“ASTM A 126”), 56.60–1;

(6) ASTM A 134–96, Standard Specification for Pipe, Steel, Electric-

Fusion (Arc)-Welded (Sizes NPS 16 and Over) (“ASTM A 134”), 56.60–1;

(7) ASTM A 135–97c, Standard Specification for Electric-Resistance-Welded Steel Pipe (“ASTM A 135”), 56.60–1;

(8) ASTM A 139–96, Standard Specification for Electric-Fusion (Arc)-Welded Steel Pipe (NPS 4 and Over) (“ASTM A 139”), 56.60–1;

(8) ASTM A 178/A 178M–95, Standard Specification for Electric-Resistance-Welded Carbon Steel and Carbon-Manganese Steel Boiler and Superheater Tubes (“ASTM A 178”), 56.60–1;

(9) ASTM A 179/A 179M–90a (1996), Standard Specification for Seamless Cold-Drawn Low-Carbon Steel Heat-Exchanger and Condenser Tubes (“ASTM A 179”), 56.60–1;

(10) ASTM A 182/A 182M–97c, Standard Specification for Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service (“ASTM A–182”), 56.50–105;

(11) ASTM A 192/A 192M–91 (1996), Standard Specification for Seamless Carbon Steel Boiler Tubes for High-Pressure Service (“ASTM A 192”), 56.60–1;

(12) ASTM A 194/A 194M–98b, Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both (“ASTM A–194”), 56.50–105;

(13) ASTM A 197–87 (1992), Standard Specification for Cupola Malleable Iron (“ASTM A 197”), 56.60–1;

(14) ASTM A 210/A 210M–96, Standard Specification for Seamless Medium-Carbon Steel Boiler and Superheater Tubes (“ASTM A 210”), 56.60–1;

(15) ASTM A 213/A 213M–95a, Standard Specification for Seamless Ferritic and Austenitic Alloy-Steel Boiler, Superheater, and Heat-Exchanger Tubes (“ASTM A 213”), 56.60–1;

(16) ASTM A 214/A 214M–96, Standard Specification for Electric-Resistance-Welded Carbon Steel Heat-Exchanger and Condenser Tubes (“ASTM A 214”), 56.60–1;

(17) ASTM A 226/A 226M–95, Standard Specification for Electric-Resistance-Welded Carbon Steel Boiler and Superheater Tubes for High-Pressure Service (“ASTM A 226”), 56.60–1;

(18) ASTM A 234/A 234M–97, Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service (“ASTM A 234”), 56.60–1;

(19) ASTM A 249/A 249M–96a, Standard Specification for Welded

Austenitic Steel Boiler, Superheater, Heat-Exchanger, and Condenser Tubes ("ASTM A 249"), 56.60-1;

(20) ASTM A 268/A 268M-96, Standard Specification for Seamless and Welded Ferritic and Martensitic Stainless Steel Tubing for General Service ("ASTM A 268"), 56.60-1;

(21) ASTM A 276-98, Standard Specification for Stainless Steel Bars and Shapes ("ASTM A 276"), 56.60-2;

(22) ASTM A 307-97, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength ("ASTM A 307"), 56.25-20;

(23) ASTM A 312/A 312M-95a, Standard Specification for Seamless and Welded Austenitic Stainless Steel Pipes ("ASTM A-312" or "ASTM A 312"), 56.50-105; 56.60-1;

(24) ASTM A 320/A 320M-97, Standard Specification for Alloy/Steel Bolting Materials for Low-Temperature Service ("ASTM A-320"), 56.50-105;

(25) ASTM A 333/A 333M-94, Standard Specification for Seamless and Welded Steel Pipe for Low-Temperature Service ("ASTM A-333" or "ASTM A 333"), 56.50-105; 56.60-1;

(26) ASTM A 334/A 334M-96, Standard Specification for Seamless and Welded Carbon and Alloy-Steel Tubes for Low-Temperature Service ("ASTM A-334" or "ASTM A 334"), 56.50-105; 56.60-1;

(27) ASTM A 335/A 335M-95a, Standard Specification for Seamless Ferritic Alloy-Steel Pipe for High-Temperature Service ("ASTM A 335"), 56.60-1;

(28) ASTM A 350/A 350M-97, Standard Specification for Carbon and Low-Alloy Steel Forgings, Requiring Notch; Toughness Testing for Piping Components ("ASTM A-350"), 56.50-105;

(29) ASTM A 351/A 351M-94a, Standard Specification for Castings, Austenitic, Austenitic-Ferritic (Duplex), for Pressure-Containing Parts ("ASTM A-351"), 56.50-105;

(30) ASTM A 352/A 352M-93 (1998), Standard Specification for Steel Castings, Ferritic and Martensitic, for Pressure-Containing Parts, Suitable for Low-Temperature Service ("ASTM A-352"), 56.50-105;

(31) ASTM A 358/A 358M-95a, Standard Specification for Electric-Fusion-Welded Austenitic Chromium-Nickel Alloy Steel Pipe for High-Temperature Service ("ASTM A 358"), 56.60-1;

(32) ASTM A 369/A 369M-92, Standard Specification for Carbon and Ferritic Alloy Steel Forged and Bored Pipe for High-Temperature Service ("ASTM A 369"), 56.60-1;

(33) ASTM A 376/A 376M-96, Standard Specification for Seamless Austenitic Steel Pipe for High-Temperature Central-Station Service ("ASTM A 376"), 56.60-1; 56.60-2;

(34) ASTM A 395/A 395M-98, Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures ("ASTM A 395"), 56.50-60; 56.60-1; 56.60-15;

(35) ASTM A 403/A 403M-98, Standard Specification for Wrought Austenitic Stainless Steel Piping Fittings ("ASTM A 403"), 56.60-1;

(36) ASTM A 420/A 420M-96a, Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Low-Temperature Service ("ASTM A-420" or "ASTM A 420"), 56.50-105; 56.60-1;

(37) ASTM A 520-97, Standard Specification for Supplementary Requirements for Seamless and Electric-Resistance-Welded Carbon Steel Tubular Products for High-Temperature Service Conforming to ISO Recommendations for Boiler Construction ("ASTM A 520"), 56.60-1;

(38) ASTM A 522/A 522M-95b, Standard Specification for Forged or Rolled 8 and 9% Nickel Alloy Steel Flanges, Fittings, Valves, and Parts for Low-Temperature Service ("ASTM A-522"), 56.50-105;

(39) ASTM A 536-84 (1993), Standard Specification for Ductile Iron Castings ("ASTM A 536"), 56.60-1;

(40) ASTM A 575-96, Standard Specification for Steel Bars, Carbon, Merchant Quality, M-Grades ("ASTM A 575"), 56.60-2;

(41) ASTM A 576-90b (1995), Standard Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality ("ASTM A 576"), 56.60-2;

(42) ASTM B 16-92, Standard Specification for Free-Cutting Brass Rod, Bar, and Shapes for Use in Screw Machines ("ASTM B 16"), 56.60-2;

(43) ASTM B 21-96, Standard Specification for Naval Brass Rod, Bar, and Shapes ("ASTM B 21"), 56.60-2;

(44) ASTM B 26/B 26M-97, Standard Specification for Aluminum-Alloy Sand Castings ("ASTM B 26"), 56.60-2;

(45) ASTM B 42-96, Standard Specification for Seamless Copper Pipe, Standard Sizes ("ASTM B 42"), 56.60-1;

(46) ASTM B 43-96, Standard Specification for Seamless Red Brass Pipe, Standard Sizes ("ASTM B 43"), 56.60-1;

(47) ASTM B 68-95, Standard Specification for Seamless Copper Tube, Bright Annealed ("ASTM B 68"), 56.60-1;

(48) ASTM B 75-97, Standard Specification for Seamless Copper Tube ("ASTM B 75"), 56.60-1;

(49) ASTM B 85-96, Standard Specification for Aluminum-Alloy Die Castings ("ASTM B 85"), 56.60-2;

(50) ASTM B 88-96, Standard Specification for Seamless Copper Water Tube ("ASTM B 88"), 56.60-1;

(51) ASTM B 96-93, Standard Specification for Copper-Silicon Alloy Plate, Sheet, Strip, and Rolled Bar for General Purposes and Pressure Vessels ("ASTM B 96"), 56.60-2;

(52) ASTM B 111-95, Standard Specification for Copper and Copper-Alloy Seamless Condenser Tubes and Ferrule Stock ("ASTM B 111"), 56.60-1;

(53) ASTM B 124-96, Standard Specification for Copper and Copper Alloy Forging Rod, Bar, and Shapes ("ASTM B 124"), 56.60-2;

(54) ASTM B 134-96, Standard Specification for Pipe, Steel, Electric-Fusion (Arc)-Welded (Sizes NPS 16 and Over) ("ASTM B 134"), 56.60-1;

(55) ASTM B 161-93, Standard Specification for Nickel Seamless Pipe and Tube ("ASTM B 161"), 56.60-1;

(56) ASTM B 165-93, Standard Specification of Nickel-Copper Alloy (UNS NO4400) Seamless Pipe and Tube ("ASTM B 165"), 56.60-1;

(57) ASTM B 167-97a, Standard Specification for Nickel-Chromium-Iron Alloys (UNS NO6600, NO6601, NO6603, NO6690, NO6025, and NO6045) Seamless Pipe and Tube ("ASTM B 167"), 56.60-1;

(58) ASTM B 171-95, Standard Specification for Copper-Alloy Plate and Sheet for Pressure Vessels, Condensers, and Heat Exchangers ("ASTM B 171"), 56.60-2;

(59) ASTM B 210-95, Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes ("ASTM B 210"), 56.60-1;

(60) ASTM B 234-95, Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes for Condensers and Heat Exchangers ("ASTM B 234"), 56.60-1;

(61) ASTM B 241/B 241M-96, Standard Specification for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube ("ASTM B 241"), 56.60-1;

(62) ASTM B 280-97, Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service ("ASTM B 280"), 56.60-1;

(63) ASTM B 283-96, Standard Specification for Copper and Copper-Alloy Die Forgings (Hot-Pressed) ("ASTM B 283"), 56.60-2;

(64) ASTM B 315-93, Standard Specification for Seamless Copper Alloy

Pipe and Tube ("ASTM B 315"), 56.60-1;

(65) ASTM B 361-95, Standard Specification for Factory-Made Wrought Aluminum and Aluminum-Alloy Welding Fittings ("ASTM B 361"), 56.60-1;

(66) ASTM B 858M-95, Standard Test Method for Determination of Susceptibility to Stress Corrosion Cracking in Copper Alloys Using an Ammonia Vapor Test ("ASTM B 858M"), 56.60-2;

(67) ASTM E 23-96, Standard Test Methods for Notched Bar Impact Testing of Metallic Materials ("ASTM E 23"), 56.50-105;

(68) ASTM F 682-82a (1993), Standard Specification for Wrought Carbon Steel Sleeve-Type Pipe Couplings ("ASTM F 682"), 56.60-1;

(69) ASTM F 1006-86 (1992), Standard Specification for Entrainment Separators for Use in Marine Piping Applications ("ASTM F 1006"), 56.60-1;

(70) ASTM F 1007-86 (1996), Standard Specification for Pipe-Line Expansion Joints of the Packed Slip Type for Marine Application ("ASTM F 1007"), 56.60-1;

(71) ASTM F 1020-86 (1996), Standard Specification for Line-Blind Valves for Marine Applications ("ASTM F 1020"), 56.60-1;

(72) ASTM F 1120-87 (1993), Standard Specification for Circular Metallic Bellows Type Expansion Joints for Piping Applications ("ASTM F 1120"), 56.60-1;

(73) ASTM F 1123-87 (1993), Standard Specification for Non-Metallic Expansion Joints ("ASTM F 1123"), 56.60-1;

(74) ASTM F 1139-88 (1993), Standard Specification for Steam Traps and Drains ("ASTM F 1139"), 56.60-1;

(75) ASTM F 1172-88 (1993), Standard Specification for Fuel Oil Meters of the Volumetric Positive Displacement Type ("ASTM F 1172"), 56.60-1;

(76) ASTM F 1173-95, Standard Specification for Thermosetting Resin Fiberglass Pipe and Fittings to be Used for Marine Applications ("ASTM F 1173"), 56.60-1;

(77) ASTM F 1199-88 (1993), Standard Specification for Cast (All Temperature and Pressures) and Welded Pipe Line Strainers (150 psig and 150 Degrees F Maximum) ("ASTM F 1199"), 56.60-1;

(78) ASTM F 1200-88 (1993), Standard Specification for Fabricated (Welded) Pipe Line Strainers (Above 150 psig and 150 Degrees F) ("ASTM F 1200"), 56.60-1;

(79) ASTM F 1201-88 (1993), Standard Specification for Fluid Conditioner Fittings in Piping Applications above 0 Degrees F ("ASTM F 1201"), 56.60-1;

(80) ASTM F 1387-93, Standard Specification for Performance of Mechanically Attached Fittings ("ASTM F 1387"), 56.30-25;

(81) ASTM F 1476-95a, Standard Specification for Performance of Gasketed Mechanical Couplings for Use in Piping Applications ("ASTM F 1476"), 56.30-35; and

(82) ASTM F 1548-94, Standard Specification for the Performance of Fittings for Use with Gasketed Mechanical Couplings, Used in Piping Applications ("ASTM F 1548"), 56.30-35.

(f) *Expansion Joint Manufacturers Association Inc. (EJMA)*, 25 North Broadway, Tarrytown, NY 10591:

(1) Standards of the Expansion Joint Manufacturers Association, 1980, 56.60-1; and

(2) [Reserved]

(g) *Fluid Controls Institute Inc. (FCI)*, 31 South Street, Suite 303, Morristown, NJ 07960:

(1) FCI 69-1 Pressure Rating Standard for Steam Traps ("FCI 69-1"), 56.60-1; and

(2) [Reserved]

(h) *International Maritime Organization (IMO)*, Publications Section, 4 Albert Embankment, London, SE1 7SR United Kingdom:

(1) Resolution A.753(18) Guidelines for the Application of Plastic Pipes on Ships ("IMO Resolution A.753(18)"), 56.60-25; and

(2) [Reserved]

(i) *International Organization for Standardization (ISO)*, Case Postal 56, CH-1211 Geneva 20 Switzerland:

(1) ISO 15540 Ships and Marine Technology-Fire Resistance of Hose Assemblies-Test Methods, First Edition (Aug. 1, 1999) ("ISO 15540"), 56.60-25; and

(2) [Reserved]

(j) *Instrument Society of America (ISA)*, 67 Alexander Drive, Research Triangle Park, NC 27709:

(1) ISA-S75.02 (1996) ("ISA-S75.02"), 56.20-15; and

(2) [Reserved]

(k) *Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS)*, 127 Park Street NE, Vienna, VA 22180:

(1) SP-6-2001 Standard Finishes for Contact Faces of Pipe Flanges and Connecting-End Flanges of Valves and Fittings (2001) ("MSS SP-6"), 56.25-10; 56.60-1;

(2) SP-9-2001 Spot Facing for Bronze, Iron and Steel Flanges (2001) ("MSS SP-9"), 56.60-1;

(3) SP-25-1998 Standard Marking System for Valves, Fittings, Flanges and Unions (1998) ("MSS SP-25"), 56.15-1; 56.20-5; 56.60-1;

(4) SP-44-1996 Steel Pipe Line Flanges (Reaffirmed 2001) ("MSS SP-44"), 56.60-1;

(5) SP-45-2003 Bypass and Drain Connections (2003) ("MSS SP-45"), 56.20-20; 56.60-1;

(6) SP-51-2003 Class 150LW Corrosion Resistant Cast Flanges and Flanged Fittings (2003) ("MSS SP-51"), 56.60-1;

(7) SP-53-95 Quality Standard for Steel Castings and Forgings for Valves, Flanges and Fittings and Other Piping Components-Magnetic Particle Examination Method (1995) ("MSS SP-53"), 56.60-1;

(8) SP-55-2001 Quality Standard for Steel Castings for Valves, Flanges and Fittings and Other Piping Components-Visual Method (2001) ("MSS SP-55"), 56.60-1;

(9) SP-58 Pipe Hangers and Supports-Materials, Design and Manufacture (1993) ("MSS SP-58"), 56.60-1;

(10) SP-61-2003 Pressure Testing of Steel Valves (2003) ("MSS SP-61"), 56.60-1;

(11) SP-67 Butterfly Valves (1995) ("MSS SP-67"), 56.60-1;

(12) SP-69 Pipe Hangers and Supports-Selection and Application (1996) ("MSS SP-69"), 56.60-1;

(13) SP-72 Ball Valves with Flanged or Butt-Welding Ends for General Service (1987) ("MSS SP-72"), 56.60-1;

(14) SP-73 (R 96) Brazing Joints for Copper and Copper Pressure Fittings (1991) ("MSS SP-73"), 56.60-1; and

(15) SP-83 Class 3000 Steel Pipe Unions, Socket Welding and Threaded (1995) ("MSS SP-83"), 56.60-1;

(l) *Society of Automotive Engineers (SAE)*, 400 Commonwealth Drive, Warrendale, PA 15096:

(1) J1475 (1996) Surface Vehicle Hydraulic Hose Fittings for Marine Applications (June 1996) ("SAE J1475"), 56.60-25; and

(2) J1942 (1997) Standards Hose and Hose Assemblies for Marine Applications (May 1997) ("SAE J1942"), 56.60-25.

■ 87. Revise § 56.01-3 section heading and paragraph (b) to read as follows:

**§ 56.01-3 Power boilers, external piping and appurtenances (Replaces 100.1.1, 100.1.2, 122.1, 132 and 133).**

\* \* \* \* \*

(b) Specific requirements for external piping and appurtenances of power boilers, as defined in §§ 100.1.1 and 100.1.2, appearing in the various paragraphs of ASME B31.1

(incorporated by reference; see 46 CFR 56.01–2), are not adopted unless specifically indicated elsewhere in this part.

■ 88. Revise § 56.01–5 to read as follows:

**§ 56.01–5 Adoption of ASME B31.1 for power piping, and other standards.**

(a) Piping systems for ships and barges must be designed, constructed, and inspected in accordance with ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2), as limited, modified, or replaced by specific requirements in this part. The provisions in the appendices to ASME B31.1 are adopted and must be followed when the requirements of ASME B31.1 or the rules in this part make them mandatory. For general information, Table 56.01–5(a) lists the various paragraphs and sections in ASME B31.1 that are limited, modified, replaced, or reproduced by rules in this part.

**TABLE 56.01–5(a)—LIMITATIONS AND MODIFICATIONS IN THE ADOPTION OF ASME B31.1 FOR PRESSURE AND POWER PIPING**

Section or paragraph in ASME B31.1 and disposition	Unit in this part
100.1 replaced by .....	56.01–1.
100.2 modified by .....	56.07–5.
101 through 104.7 modified by.	56.07–10.
101.2 modified by .....	56.07–10(a), (b).
101.5 replaced by .....	56.07–10(c).
102.2 modified by .....	56.07–10(d).
102.3 and 104.1.2 modified by.	56.07–10(e).
104.3 modified by .....	56.07–10(f).
104.4 modified by .....	56.07–10(e).
104.5.1 modified by ...	56.30–10.
105 through 108 replaced by.	56.10–1 through 56.25–20.
110 through 118 replaced by.	56.30–1 through 56.30–35.
119.5.1 replaced by ...	56.35–10, 56.35–15.
119.7 replaced by .....	56.35–1.
122.1.4 replaced by ...	56.50–40.
122.3 modified by .....	56.50–97.
122.6 through 122.10 replaced by.	56.50–1 through 56.50–80.
123 replaced by .....	56.60–1.
Table 126.1 is replaced by.	56.30–5(c)(3), 56.60–1.
127 through 135 replaced by.	56.65–1, 56.70–10 through 56.90–10.
136 replaced by .....	56.95–1 through 56.95–10.
137 replaced by .....	56.97–1 through 56.97–40.

(viii) (b) When a section or paragraph of the regulations in this part relates to material in ASME B31.1, the relationship with ASME B31.1 will appear immediately after the heading of

the section or at the beginning of the paragraph as follows:

(1) (Modifies \_\_\_\_.) This indicates that the material in ASME B31.1 so numbered for identification is generally applicable but is being altered, amplified, or augmented.

(2) (Replaces \_\_\_\_.) This indicates that the material in ASME B31.1 so numbered for identification does not apply.

(3) (Reproduces \_\_\_\_.) This indicates that the material in ASME B31.1 so numbered for identification is being identically reproduced for convenience, not for emphasis.

(c) As stated in § 56.01–2 of this chapter, the standards of the American National Standards Institute (ANSI) and ASME specifically referred to in this part must be the governing requirements for the matters covered unless specifically limited, modified, or replaced by other rules in this subchapter. See 46 CFR 56.60–1(b) for the other adopted commercial standards applicable to piping systems that also constitute this subchapter.

■ 89. Revise § 56.07–5(a) introductory text and paragraphs (c) and (f) to read as follows:

**§ 56.07–5 Definitions (modifies 100.2).**

(a) *Piping.* The definitions contained in 100.2 of ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2) apply, as well as the following: \* \* \*

(c) *Schedule.* The word *Schedule* when used in this part refers to specific values as given in ASME B36.10M and B36.19M (both incorporated by reference; see 46 CFR 56.01–2).

(f) *Vital systems.* (1) Vital systems are those systems that are vital to a vessel's survivability and safety. For the purpose of this subchapter, the following are vital systems:

- (i) Systems for fill, transfer, and service of fuel oil;
- (ii) Fire-main systems;
- (iii) Fixed gaseous fire-extinguishing systems;
- (iv) Bilge systems;
- (v) Ballast systems;
- (vi) Steering systems and steering-control systems;
- (vii) Propulsion systems and their necessary auxiliaries and control systems;
- (viii) Ship's service and emergency electrical-generation systems and their auxiliaries vital to the vessel's survivability and safety;
- (ix) Any other marine-engineering system identified by the cognizant OCMI as crucial to the survival of the

vessel or to the protection of the personnel aboard.

(2) For the purpose of this subchapter, a system not identified by paragraph (1) of this definition is a non-vital system.

\* \* \* \* \*

■ 90. In § 56.07–10, revise the heading in paragraph (a), paragraph (a)(1), the heading in paragraph (b), the heading and introductory text in paragraph (d), paragraph (d)(1), the heading in paragraph (e), paragraph (e)(1), and the heading and paragraph (f) introductory text to read as follows:

**§ 56.07–10 Design conditions and criteria (modifies 101–104.7).**

(a) *Maximum allowable working pressure.* (1) The maximum allowable working pressure of a piping system must not be greater than the internal design pressure defined in 104.1.2 of ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2).

\* \* \* \* \*

(b) *Relief valves.* \* \* \*

\* \* \* \* \*

(d) *Ratings for pressure and temperature (modifies 102.2).* The material in 102.2 of ASME B31.1 applies, with the following exceptions:

(1) The details of components not having specific ratings as described in 102.2.2 of ASME B31.1 must be furnished to the Marine Safety Center for approval.

\* \* \* \* \*

(e) *Pressure design (modifies 102.3, 104.1.2, and 104.4).* (1) Materials for use in piping must be selected as described in § 56.60–1(a) of this part. Tabulated values of allowable stress for these materials must be measured as indicated in 102.3.1 of ASME B31.1 and in tables 56.60–1 and 56.60–2(a) of this part.

\* \* \* \* \*

(f) *Intersections (modifies 104.3).* The material in 104.3 of ASME B31.1 is applicable with the following additions:

\* \* \* \* \*

■ 91. Revise § 56.10–1(b) to read as follows:

**§ 56.10–1 Selection and limitations of piping components (replaces 105 through 108).**

\* \* \* \* \*

(b) The requirements in this subpart and in subparts 56.15 through 56.25 must be met instead of those in 105 through 108 in ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2); however, certain requirements are marked “reproduced.”

■ 92. In § 56.10–5, redesignate paragraphs (c)(2–a), (c)(3), (c)(4), and (c)(5) as paragraphs (c)(3), (c)(4), (c)(5), and (c)(6), respectively, and revise

newly redesignated paragraphs (c)(3) and (c)(6) to read as follows:

§ 56.10-5 Pipe.

\* \* \* \* \*

(c) \* \* \*

(3) Copper-nickel alloys may be used for water and steam service within the design limits of stress and temperature indicated in ASME B31.1 (incorporated by reference; see 46 CFR 56.01-2).

\* \* \* \* \*

(6) Aluminum-alloy pipe or tube along with similar junction equipment may be used within the limitation stated in 124.7 of ASME B31.1 and paragraph (c)(5) of this section.

\* \* \* \* \*

§ 56.15-1 [Amended]

■ 93. In § 56.15-1—

■ a. In paragraph (c)(2)(i), remove the term “ANSI B31.1” and add, in its place, the words “ASME B31.1 (incorporated by reference; see 46 CFR 56.01-2)”; and remove the words “ASME Code” and add, in their place, the words “ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 56.01-2)”;

■ c. In paragraph (c)(2)(ii), remove the words “Section I of the ASME Code” and add, in their place, the words “Section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 56.01-2)”;

■ d. In paragraph (c)(4)(ii)(B), remove the words “ASME Code” and add, in their place, the words “ASME Boiler and Pressure Vessel Code”; and

■ e. In paragraph (e), remove the words “MSS Standard SP-25” and add, in their place, the words “MSS SP-25 (incorporated by reference; see 46 CFR 56.01-2)”.

§ 56.15-5 [Amended]

■ 94. In § 56.15-5—

■ a. In paragraph (c)(2)(ii)(A), remove the term “ANSI B31.1” and add, in its place, the words “ASME B31.1 (incorporated by reference; see 46 CFR 56.01-2)”; and remove the term “ASME Code” and add, in its place, the words “ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 56.01-2)”; and

■ b. In paragraph (c)(2)(ii)(B), remove the words “Section I of the ASME Code” and add, in their place, the words “Section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 56.01-2)”.

§ 56.20-1 [Amended]

■ 95. In § 56.20-1—

■ a. In paragraph (c)(2)(i), remove the term “ANSI B31.1” and add, in its

place, the words “ASME B31.1 (incorporated by reference; see 46 CFR 56.01-2)” and remove the words “the ASME Code” and add, in their place, the words “the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 56.01-2)”;

■ b. In paragraph (c)(2)(ii), remove the words “the ASME Code” and add, in their place, the words “the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 56.01-2)”; and

■ c. In paragraph (d), remove the term “ANSI B16.34” and add, in its place, the words “ASME B16.34 (incorporated by reference; see 46 CFR 56.01-2)”.

■ 96. Revise § 56.20-5, including the section heading, to read as follows:

§ 56.20-5 Marking (modifies 107.2).

Each valve shall bear the manufacturer’s name or trademark and reference symbol to indicate the service conditions for which the manufacturer guarantees the valve. The marking shall be in accordance with MSS SP-25 (incorporated by reference; see 46 CFR 56.01-2).

■ 97. Revise § 56.20-9(a) to read as follows:

§ 56.20-9 Valve construction.

(a) Each valve must close with a right-hand (clockwise) motion of the handwheel or operating lever as seen by one facing the end of the valve stem. Each gate, globe, and angle valve must generally be of the rising-stem type, preferably with the stem threads external to the valve body. Where operating conditions will not permit such installations, the use of a nonrising-stem valve will be acceptable. Each nonrising-stem valve, lever-operated valve, or other valve where, because of design, the position of the disc or closure mechanism is not obvious must be fitted with an indicator to show whether the valve is opened or closed, except as provided for in § 56.50-1(g)(2)(iii) of this part. No such indicator is required for any valve located in a tank or similar inaccessible space when indicators are available at accessible sites. The operating levers of each quarter-turn (rotary) valve must be parallel to the fluid flow when open and perpendicular to the fluid flow when closed.

\* \* \* \* \*

■ 98. Revise § 56.20-15(c) to read as follows:

§ 56.20-15 Valves employing resilient material.

\* \* \* \* \*

(c) If a valve designer elects to use either a calculation or actual fire testing instead of material removal and

pressure testing, the calculation must employ ISA-S75.02 (incorporated by reference; see 46 CFR 56.01-2) to determine the flow coefficient (C<sub>v</sub>), or the fire testing must be conducted in accordance with API 607 (incorporated by reference; see 46 CFR 56.01-2).

■ 99. Revise § 56.20-20(a) to read as follows:

§ 56.20-20 Valve bypasses.

(a) Sizes of bypasses shall be in accordance with MSS SP-45 (incorporated by reference; see 46 CFR 56.01-2).

\* \* \* \* \*

■ 100. Amend § 56.25-5 by revising the first sentence to read as follows:

§ 56.25-5 Flanges.

Each flange must conform to the design requirements of either the applicable standards of Table 56.60-1(b) of this part, or of those of Appendix 2 of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 56.01-2). \* \* \*

■ 101. Revise § 56.25-7 to read as follows:

§ 56.25-7 Blanks.

Each blank must conform to the design requirements of 104.5.3 of ASME B31.1 (incorporated by reference; see 46 CFR 56.01-2).

■ 102. Revise § 56.25-10(a) to read as follows:

§ 56.25-10 Flange facings.

(a) Flange facings shall be in accordance with the applicable standards listed in Table 56.60-1(b) and MSS SP-6 (incorporated by reference; see 46 CFR 56.01-2).

\* \* \* \* \*

■ 103. Amend § 56.25-15 by revising the section heading, redesignating paragraphs (b) and (c) as paragraphs (c) and (d), respectively, and adding new paragraph (b) to read as follows:

§ 56.25-15 Gaskets (modifies 108.4).

\* \* \* \* \*

(b) Each gasket must conform to the design requirements of the applicable standards of Table 56.60-1(b) of this part.

\* \* \* \* \*

■ 104. Revise § 56.25-20 paragraphs (a)(1), (b), (d), and (e) to read as follows:

§ 56.25-20 Bolting.

(a) General. (1) Bolts, studs, nuts, and washers must comply with applicable standards and specifications listed in 46 CFR 56.60-1. Unless otherwise specified, bolting must be in accordance

with ASME B16.5 (incorporated by reference; see 46 CFR 56.01–2).

\* \* \* \* \*

(b) Carbon steel bolts or bolt studs may be used if expected normal operating pressure does not exceed 300 pounds per square inch gauge and the expected normal operating temperature does not exceed 400 °F. Carbon steel bolts must have heavy hexagon heads in accordance with ASME B18.2.1 (incorporated by reference, see 46 CFR 56.01–2) and must have heavy semifinished hexagonal nuts in accordance with ASME/ANSI B18.2.2 (incorporated by reference, see 46 CFR 56.01–2), unless the bolts are tightly fitted to the holes and flange stress calculations taking the bolt bending stresses into account are submitted. When class 250 cast iron flanges are used or when class 125 cast iron flanges are used with ring gaskets, the bolting material must be carbon steel conforming to ASTM A 307 (incorporated by reference, see 46 CFR 56.01–2), Grade B.

\* \* \* \* \*

(d) All alloy bolts or studs and accompanying nuts are to be threaded in accordance with ANSI/ASME B1.1 (incorporated by reference; see 46 CFR 56.01–2), Class 2A external threads, and Class 2B internal threads (8-thread series 8UN for one inch and larger).

(e) (*Reproduces 108.5.1*) Washers, when used under nuts, shall be of forged or rolled material with steel washers being used under steel nuts and bronze washers under bronze nuts.

■ 105. Revise § 56.30–1 to read as follows:

**§ 56.30–1 Scope (replaces 110 through 118).**

The selection and limitation of piping joints must be as required by this subpart rather than as required by 110 through 118 of ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2); however, certain requirements are marked “reproduced” in this subpart.

■ 106. Revise § 56.30–5(b)(3), (c)(1), (c)(3) and (d) to read as follows:

**§ 56.30–5 Welded joints.**

\* \* \* \* \*

(b) \* \* \*

(3) Consumable insert rings must be used. Commonly used types of butt welding end preparations are shown in ASME B16.25 (incorporated by reference; see 46 CFR 56.01–2).

\* \* \* \* \*

(c) \* \* \*

(1) Each socket weld must conform to ASME B16.11 (incorporated by

reference; see 46 CFR 56.01–2), to applicable standards listed in 46 CFR 56.60–1, Table 56.60–1(b), and to Figure 127.4.4C in ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2) as modified by § 56.30–10(b)(4) of this part. A gap of approximately one-sixteenth inch between the end of the pipe and the bottom of the socket must be provided before welding. This may best be provided by bottoming the pipe and backing off slightly before tacking.

\* \* \* \* \*

(3) (*Reproduces 111.3.4.*) Drains and bypasses may be attached to a fitting or valve by socket welding provided the socket depth, bore diameter and shoulder thickness conform to ASME B16.11.

(d) *Fillet welds.* A fillet weld may vary from convex to concave. The size of a fillet weld is determined as shown in Figure 127.4.4A of ASME B31.1. Fillet-weld details for socket-welding components must meet § 56.30–5(c). Fillet-weld details for flanges must meet § 56.30–10 of this part (see also § 56.70–15(d)(3) and (4) of this part for applications of fillet welds).

\* \* \* \* \*

■ 107. Amend § 56.30–10 by revising paragraph (b) introductory text, (b)(1), and (b)(3) through (5), and remove the note that follows Figure 56.30–10(b) to read as follows:

**§ 56.30–10 Flanged joints (modifies 104.5.1(a)).**

\* \* \* \* \*

(b) Flanges may be attached by any method shown in Figure 56.30–10(b) or by any additional means that may be approved by the Marine Safety Center. Pressure temperature ratings of the appropriate ANSI/ASME standard must not be exceeded.

\* \* \* \* \*

(2) *Figure 56.30–10(b), Method 2.* ASME B16.5 (incorporated by reference; see 46 CFR 56.01–2) Class 150 and Class 300 low-hubbed flanges with screw threads, plus the addition of a strength fillet weld of the size as shown, may be used in Class I systems not exceeding 750 °F or 4 NPS, in Class II systems without diameter limitations, and in Class II–L systems not exceeding 1 NPS. If 100 percent radiography is required by § 56.95–10 of this part for the class, diameter, wall thickness, and material of pipe being joined, the use of the threaded flanges is not permitted and butt welding flanges must be provided. For Class II piping systems, the size of the strength fillet may be limited to a maximum of 0.525 inch instead of 1.4T.

(3) *Figure 56.30–10(b), Method 3.* Slip-on flanges meeting ASME B16.5 may be

used in piping systems of Class I, Class II, or Class II–L not to exceed the service pressure-temperature ratings for flanges of class 300 and lower, within the temperature limitations of the material selected for use, and not to exceed 4-inch Nominal Pipe Size (NPS) in systems of Class I and Class II–L. If 100-percent radiography is required by 46 CFR 56.95–10 for the class, diameter, wall thickness, and material of the pipe being joined, then slip-on flanges are not permitted and butt welding flanges are required. The configuration in Figure 127.4.4B(b) of ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2), using a face and backweld, may be preferable where eliminating void spaces is desirable. For systems of Class II, the size of the strength fillet may be limited to a maximum of 0.525 inch instead of 1.4T, and the distance from the face of the flange to the end of the pipe may be a maximum of three-eighths of an inch. Restrictions on the use of slip-on flanges appear in § 56.50–105 of this part for low-temperature piping systems.

(4) *Figure 56.30–10(b), Method 4.* ASME B16.5 socket welding flanges may be used in Class I or II–L systems not exceeding 3 NPS for class 600 and lower class flanges and 2½ NPS for class 900 and class 1500 flanges within the service pressure-temperature ratings of the standard. \* \* \*

(5) *Figure 56.30–10(b), Method 5.* Flanges fabricated from steel plate meeting the requirements of part 54 of this chapter may be used for Class II piping for pressures not exceeding 150 pounds per square inch and temperatures not exceeding 450 °F. Plate material listed in UCS–6(b) of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 56.01–2) may not be used in this application, except that material meeting ASTM A 36 (incorporated by reference, see 46 CFR 56.01–2) may be used. The fabricated flanges must conform at least to the ASME B16.5 class 150 flange dimensions. The size of the strength fillet weld may be limited to a maximum of 0.525 inches instead of 1.4T and the distance from the face of the flange to the end of the pipe may be a maximum of three-eighths inch. In the following figure, T is nominal pipe wall thickness used. Refer to text in paragraph (b) of this section for modifications on Class II piping systems. Fillet weld leg size need not exceed the thickness of the applicable ASME hub.

\* \* \* \* \*

■ 108. Revise § 56.30–20(b) and (d) to read as follows:

§ 56.30–20 Threaded joints.

\* \* \* \* \*

(b) (Reproduces 114.1.) All threads on piping components must be taper pipe threads in accordance with the applicable standard listed in 46 CFR 56.60–1, Table 56.60–1(b). Threads other than taper pipe threads may be used for piping components where tightness of the joint depends on a seal weld or a seating surface other than the threads, and where experience or test has demonstrated that such threads are suitable.

\* \* \* \* \*

(d) No pipe with a wall thickness less than that of standard weight of ASME B36.10M (incorporated by reference; see 46 CFR 56.01–2) steel pipe may be threaded regardless of service. For restrictions on the use of pipe in steam service more than 250 pounds per square inch or water service over 100 pounds per square inch and 200 °F (938C), see part 104.1.2(c)(1) of ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2). Restrictions on the use of threaded joints apply for low-temperature piping and must be checked when designing for these systems.

§ 56.30–30 [Amended]

■ 109. In § 56.30–30(b)(1), remove the words “ASME Code” and, in their place, add the words “ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 56.01–2)”.

■ 110. Revise § 56.35–1(b) to read as follows:

§ 56.35–1 Pipe-stress calculations (replaces 119.7).

\* \* \* \* \*

(b) The Marine Safety Center (MSC) will give special consideration to the use of the full tabulated value of “S” in computing S<sub>h</sub> and S<sub>c</sub> where all material used in the system is subjected to further nondestructive testing specified by the MSC, and where the calculations prescribed in 119.6.4 and 102.3.2 of ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2) and 46 CFR 56.07–10 are performed. The procedures for nondestructive testing and the method of stress analysis must be approved by the MSC before the submission of computations and drawings for approval.

■ 111. Amend § 56.50–1 by revising the section heading and the introductory text to read as follows:

§ 56.50–1 General (replaces 122).

The requirements in this subpart for piping systems apply instead of those in section 122 of ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2). Installation requirements applicable to all systems:

\* \* \* \* \*

■ 112. Revise § 56.50–10 section heading and paragraph (a) to read as follows:

§ 56.50–10 Special gauge requirements.

■ (a) Where pressure-reducing valves are employed, a pressure gauge must be provided on the low-pressure side of the reducing station.

\* \* \* \* \*

■ 113. In § 56.50–15—

■ a. In paragraph (b), remove the term “ANSI–B31.1” and add, in its place, the words “ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2)” and remove the words “Table 56.60–1(b)” and add in their place the words “46 CFR 56.60–1, Table 56.60–1(b)”; and

■ b. Revise paragraph (f) to read as follows:

§ 56.50–15 Steam and exhaust piping.

\* \* \* \* \*

(f) The auxiliary steam piping of each vessel equipped with more than one boiler must be so arranged that steam for the whistle and other vital auxiliary systems, such as the electrical-generation plant, may be supplied from any power boiler.

\* \* \* \* \*

■ 114. Revise § 56.50–30(b)(1) to read as follows:

§ 56.50–30 Boiler feed piping.

\* \* \* \* \*

(b) \* \* \*

(1) Stop and stop-check valves must be fitted in the main feed line and must be attached as closely as possible to drum inlets or to the economizer inlet on boilers fitted with integral economizers.

\* \* \* \* \*

■ 115. Revise § 56.50–40 section heading and paragraph (a)(1) to read as follows:

§ 56.50–40 Blowoff piping (replaces 122.1.4).

(a)(1) The owner or operator of a vessel must follow the requirements for blowoff piping in this section instead of the requirements in 122.1.4 of ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2).

\* \* \* \* \*

§ 56.50–60 [Amended]

■ 116. In § 56.50–60—

■ a. In paragraph (d)(1) introductory text, remove the term “ASTM A395” and add, in its place, the words “ASTM A 395 (incorporated by reference; see 46 CFR 56.01–2)”; and

■ b. In paragraph (d)(2), remove the words “(incorporated by reference; see § 56.01–2)”.

§ 56.50–65 [Amended]

■ 117. In § 56.50–65(a), remove the term “ANSI–B31.1” and add, in its place, the words “ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2)”.

■ 118. Revise § 56.50–70(a)(2) and (b)(2) to read as follows:

§ 56.50–70 Gasoline fuel systems.

(a) \* \* \*

(2) Thicknesses of tubing walls must not be less than the larger of that shown in Table 56.50–70(a) of this section or that required by 46 CFR 56.07–10(e) and 104.1.2 of ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2).

\* \* \* \* \*

(b) \* \* \*

(2) Either a short length of suitable metallic or nonmetallic flexible tubing or hose or a loop of annealed copper tubing must be installed in the fuel-supply line at or near the engine to prevent damage by vibration.

(i) If nonmetallic flexible hose is used, it must meet the requirements of 46 CFR 56.60–25(b) for fuel service.

(ii) Flexible hose connections should maintain metallic contact between the sections of the fuel-supply lines; however, if they do not, the fuel tank must be grounded.

\* \* \* \* \*

■ 119. Revise § 56.50–97 section heading and paragraph (a) introductory text to read as follows:

§ 56.50–97 Piping for instruments, control, and sampling (modifies 122.3).

(a) Piping for instruments, control, and sampling must comply with paragraph 122.3 of ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2) except that:

\* \* \* \* \*

■ 120. Amend § 56.50–105 by adding a note to Table 56.50–105, following the numbered footnotes, to read as follows:

§ 56.50–105 Low-temperature piping.

\* \* \* \* \*

Table 56.50–105—Acceptable Materials and Toughness Test Criteria <sup>2</sup>

\* \* \* \* \*

<sup>2</sup> Other material specifications for product forms acceptable under part 54 for use at low temperatures may also be used for piping



systems provided the applicable toughness requirements of this Table are also met.

\* \* \* \* \*

**Note:** The ASTM standards listed in table 56.50–105 are incorporated by reference; see 46 CFR 56.01–2.

\* \* \* \* \*

\* \* \* \* \*

■ 121. Revise § 56.60–1 to read as follows:

**§ 56.60–1 Acceptable materials and specifications (replaces 123 and Table 126.1 in ASME B31.1).**

(a)(1) The material requirements in this subpart shall be followed in lieu of those in 123 in ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2).

(2) Materials used in piping systems must be selected from the specifications that appear in Table 56.60–1(a) of this section or 46 CFR 56.60–2, Table 56.60–

2(a), or they may be selected from the material specifications of sections I or VIII of the ASME Boiler and Pressure Vessel Code (both incorporated by reference; see 46 CFR 56.01–2) if not prohibited by a regulation of this subchapter dealing with the particular section of the ASME Boiler and Pressure Vessel Code. Table 56.60–1(a) of this section contains only pipe, tubing, and fitting specifications. Determination of acceptability of plate, forgings, bolting, nuts, and castings may be made by reference to the ASME Boiler and Pressure Vessel Code as previously described. Additionally, accepted materials for use as piping system components appear in 46 CFR 56.60–2, Table 56.60–2(a). Materials conforming to specifications not described in this subparagraph must receive the specific approval of the Marine Safety Center before being used. Materials listed in Table 126.1 of ASME B31.1 are not

accepted unless specifically permitted by this paragraph.

(b) Components made in accordance with the commercial standards listed in Table 56.60–1(b) of this section and made of materials complying with paragraph (a) this section may be used in piping systems within the limitations of the standards and within any further limitations specified in this subchapter.

**Note:** Table 56.60–1(a) replaces Table 126.1 in ASME B31.1 and sets forth specifications of pipes, tubing, and fittings intended for use in piping-systems. The first column lists acceptable standards from ASTM (all incorporated by reference; see 46 CFR 56.01–2); the second lists those from ASME (all incorporated by reference; see 46 CFR 56.01–2). The Coast Guard will consider use of alternative pipes, tubing, and fittings when it receives certification of their mechanical properties. Without this certification it will restrict use of such alternatives to piping-systems inside heat exchangers that ensure containment of the material inside pressure shells.

TABLE 56.60–1(a)—ADOPTED SPECIFICATIONS AND STANDARDS

ASTM standards	ASME standards	Notes
Pipe, seamless:		
A 106 Carbon steel .....	ASME B31.1.	
A 335 Ferritic alloys .....	ASME B31.1.	
A 376 Austenitic alloys .....	ASME B31.1 .....	(1).
Pipe, seamless and welded:		
A 53 Types S, F, and E steel pipe .....	ASME B31.1 .....	(2,3,4).
A 312 Austenitic steel (welded with no filler metal) .....	ASME B31.1 .....	(1,4).
A 333 Low temperature steel pipe .....	Sec. VIII of the ASME Boiler and Pressure Vessel Code ....	(5).
Pipe, welded:		
A 134 Fusion welded steel plate pipe .....	See footnote 7 .....	(7).
A 135 ERW pipe .....	ASME B31.1 .....	(3).
A 139 Grade B only, fusion welded steel pipe .....	ASME B31.1 .....	(8).
A 358 Electric fusion welded pipe, high temperature, austenitic.	ASME B31.1 .....	(1,4,9).
Pipe, forged and bored:		
A 369 Ferritic alloy .....	ASME B31.1.	
Pipe, centrifugally cast: .....	(None applicable) .....	(1,9)
Tube, seamless:		
A 179 Carbon steel heat exchanger and condenser tubes.	UCS23, Sec. VIII of the ASME Boiler and Pressure Vessel Code.	(11).
A 192 Carbon steel boiler tubes .....	PG23.1, Sec. I of the ASME Boiler and Pressure Vessel Code.	(10).
A 210 Medium carbon boiler tubes .....	PG23.1, Sec. I of the ASME Boiler and Pressure Vessel Code.	
A 213 Ferritic and austenitic boiler tubes .....	PG23.1, Sec. I of the ASME Boiler and Pressure Vessel Code.	(1).
Tube, seamless and welded:		
A 268 Seamless and ERW ferritic stainless tubing .....	PG23.1, Sec. I of the ASME Boiler and Pressure Vessel Code.	(4).
A 334 Seamless and welded (no added filler metal) carbon and low alloy tubing for low temperature.	UCS23, Sec. VIII of the ASME Boiler and Pressure Vessel Code.	(4,5).
Tube, welded:		
A 178 (Grades A and C only) ERW boiler tubes .....	PG23.1, Sec. I of the ASME Boiler and Pressure Vessel Code.	(10 Grade A) (4).
A 214 ERW heat exchanger and condenser tubes .....	UCS27, Sec. VIII of the ASME Boiler and Pressure Vessel Code.	
A 226 ERW boiler and superheater tubes .....	PG23.1, Sec. I of the ASME Boiler and Pressure Vessel Code.	(4,10).
A 249 Welded austenitic boiler and heat exchanger tubes (no added filler metal).	PG23.1, Sec. I of the ASME Boiler and Pressure Vessel Code.	(1,4).
Wrought fittings (factory made):		
A 234 Carbon and ferritic alloys .....	Conforms to applicable American National Standards (ASME B16.9 and ASME B16.11).	(12).

TABLE 56.60-1(a)—ADOPTED SPECIFICATIONS AND STANDARDS—Continued

ASTM standards	ASME standards	Notes
A 403 Austenitic alloys .....	.....do .....	(12).
A 420 Low temperature carbon and steel alloy .....	.....do .....	(12).
Castings, <sup>13</sup> iron:		
A 47 Malleable iron .....	Conform to applicable American National Standards or refer to UCI-23 or UCD-23, Sec. VIII of the ASME Boiler and Pressure Vessel Code.	(14).
A 126 Gray iron .....	.....do .....	(14).
A 197 Malleable iron .....	.....do .....	(14).
A 395 Ductile iron .....	UCD-23, Sec. VIII of the ASME Boiler and Pressure Vessel Code.	(14).
A 536 Ductile iron .....	See footnote 20 .....	(20).

Nonferrous Materials<sup>15</sup>

Pipe, seamless:		
B 42 Copper .....	UNF23, Sec. VIII of the ASME Boiler and Pressure Vessel Code.	(16).
B 43 Red brass .....	.....do.	
B 241 Aluminum alloy .....	.....do.	
Pipe and tube, seamless:		
B 161 Nickel .....	.....do.	
B 165 Nickel-copper .....	.....do.	
B 167 Ni-Cr-Fe .....	.....do.	
B 315 Copper-silicon .....	.....do.	
Tube, seamless:		
B 68 Copper .....	See footnote 17 .....	(16,17,18).
B 75 Copper .....	UNF23, Sec. VIII of the ASME Boiler and Pressure Vessel Code.	(16).
B 88 Copper .....	See footnote 17 .....	(16,17).
B 111 Copper and copper alloy .....	UNF23, Sec. VIII of the ASME Boiler and Pressure Vessel Code.	
B 210 Aluminum alloy, drawn .....	.....do.	
B 234 Aluminum alloy, drawn .....	.....do.	
B 280 Copper tube for refrigeration service .....	See footnote 17 .....	(16,17).
Welding fittings:		
B 361 Wrought aluminum welding fittings .....	Shall meet ASME Standards.	

ASTM specification	Minimum tensile	Longitudinal joint efficiency	P No.	Allowable stresses (p.s.i.)
A 134:				
Grade 285A .....	45,000	0.80	1	11,250 × 0.8 = 9,000.
Grade 285B .....	50,000	0.80	1	12,500 × 0.8 = 10,000.
Grade 285C .....	55,000	0.80	1	13,750 × 0.8 = 11,000.

**Note:** When using 104.1.2 in ASME B31.1 to compute wall thickness, the stress shown here shall be applied as though taken from the stress tables. An additional factor of 0.8 may be required by § 56.07-10(c) and (e).

<sup>1</sup> For austenitic materials where two sets of stresses appear, use the lower values.

<sup>2</sup> Type F (Furnace welded, using open hearth, basic oxygen, or electric furnace only) limited to Class II applications with a maximum service temperature of 450 °F. Type E (ERW grade) limited to maximum service temperature of 650 °F, or less.

<sup>3</sup> Electric resistance welded pipe or tubing of this specification may be used to a maximum design pressure of 350 pounds per square inch gage.

<sup>4</sup> Refer to limitations on use of welded grades given in § 56.60-2(b).

<sup>5</sup> Use generally considered for Classes I-L and II-L applications. For Class I-L service only, the seamless grade is permitted. For other service refer to footnote 4 and to § 56.50-105.

<sup>6</sup> Furnace lap or furnace butt grades only. Limited to Class II applications only where the maximum service temperature is 450 °F, or less.

<sup>7</sup> Limited to Grades 285A, 285B, and 285C only (straight and spiral seam). Limited to Class II applications only where maximum service temperature is 300 °F or less for straight seam, and 200 °F or less for spiral seam.

<sup>8</sup> Limited to Class II applications where the maximum service temperature is 300 °F or less for straight seam and 200 °F or less for spiral seam.

<sup>9</sup> For Class I applications only the Class I Grade of the specification may be used.

<sup>10</sup> When used in piping systems, a certificate shall be furnished by the manufacturer certifying that the mechanical properties at room temperature specified in ASTM A 520 (incorporated by reference; see 46 CFR 56.01-2) have been met. Without this certification, use is limited to applications within heat exchangers.

<sup>11</sup> When used in piping systems, a certificate shall be furnished by the manufacturer certifying that the mechanical properties for A192 in ASTM A 520 have been met. Without this certification, use is limited to applications within heat exchangers.

<sup>12</sup> Hydrostatic testing of these fittings is not required but all fittings shall be capable of withstanding without failure, leakage, or impairment of serviceability, a hydrostatic test of 1½ times the designated rating pressure.

<sup>13</sup> Other acceptable iron castings are in UCI-23 and UCD-23 of section VIII of the ASME Boiler and Pressure Vessel Code. (See also §§ 56.60-10 and 56.60-15.) Acceptable castings of materials other than cast iron may be found in sections I or VIII of the ASME Boiler and Pressure Vessel Code.

<sup>14</sup> Acceptable when complying with American National Standards Institute standards. Ductile iron is acceptable for temperatures not exceeding 650 °F. For pressure temperature limitations refer to UCD-3 of section VIII of the ASME Boiler and Pressure Vessel Code. Other grades of cast iron are acceptable for temperatures not exceeding 450 °F. For pressure temperature limitations refer to UCI-3 of section VIII of the ASME Boiler and Pressure Vessel Code.

<sup>15</sup> For limitations in use refer to §§ 56.10-5(c) and 56.60-20.

<sup>16</sup> Copper pipe must not be used for hot oil systems except for short flexible connections at burners. Copper pipe must be annealed before installation in Class I piping systems. See also §§ 56.10–5(c) and 56.60–20.

<sup>17</sup> The stress values shall be taken from UNF23 of section VIII of the ASME Boiler and Pressure Vessel Code for B75 annealed and light drawn temper as appropriate.

<sup>18</sup> B68 shall be acceptable if provided with a mill hydrostatic or eddy current test.

<sup>19</sup> Centrifugally cast pipe must be specifically approved by the Marine Safety Center.

<sup>20</sup> Limited to pipe fittings and valves. See 46 CFR 56.60–15(d) for additional information.

TABLE 56.60–1(b)—ADOPTED STANDARDS APPLICABLE TO PIPING SYSTEMS (REPLACES TABLE 126.1)

American National Standards Institute (all incorporated by reference; see 46 CFR 56.01–2)	
ANSI/ASME B1.1 .....	1982 Unified Inch Screw Threads (UN and UNR Thread Form).
ANSI/ASME B1.20.1 .....	1983 Pipe Threads, General Purpose (Inch).
ANSI/ASME B1.20.3 .....	1976 (Reaffirmed 1982) Dryseal Pipe Threads (Inch).
ANSI/ASME B16.15 .....	1985 [Reaffirmed 1994] Cast Bronze Threaded Fittings, Classes 125 and 250.
American Society of Mechanical Engineers (ASME) International (all incorporated by reference; see 46 CFR 56.01–2)	
ASME B16.1 .....	1998 Cast Iron Pipe Flanges and Flanged Fittings, Classes 25, 125, 250.
ASME B16.3 .....	1998 Malleable Iron Threaded Fittings, Classes 150 and 300.
ASME B16.4 .....	1998 Gray Iron Threaded Fittings, Classes 125 and 250.
ASME B16.5 .....	2003 Pipe Flanges and Flanged Fittings NPS ½ Through NPS 24 Metric/Inch Standard. <sup>3</sup>
ASME B16.9 .....	2003 Factory-Made Wrought Steel Buttwelding Fittings.
ASME B16.10 .....	2000 Face-to-Face and End-to-End Dimensions of Valves.
ASME B16.11 .....	2001 Forged Fittings, Socket-Welding and Threaded.
ASME B16.14 .....	1991 Ferrous Pipe Plugs, Bushings, and Locknuts with Pipe Threads.
ASME B16.18 .....	2001 Cast Copper Alloy Solder Joint Pressure Fittings. <sup>4</sup>
ASME B16.20 .....	1998 (Revision of ASME B16.20 1993) Metallic Gaskets for Pipe Flanges: Ring-Joint, Spiral-Wound, and Jacketed.
ASME B16.21 .....	2005 Nonmetallic Flat Gaskets for Pipe Flanges.
ASME B16.22 .....	2001 Wrought Copper and Copper Alloy Solder Joint Pressure Fittings. <sup>4</sup>
ASME B16.23 .....	2002 Cast Copper Alloy Solder Joint Drainage Fittings: DWV. <sup>4</sup>
ASME B16.24 .....	2001 Cast Copper Alloy Pipe Flanges and Flanged Fittings: Class 150, 300, 400, 600, 900, 1500, and 2500. <sup>3</sup>
ASME B16.25 .....	2003 Buttwelding Ends.
ASME B16.28 .....	1994 Wrought Steel Buttwelding Short Radius Elbows and Returns. <sup>4</sup>
ASME B16.29 .....	2007 Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings-DWV. <sup>4</sup>
ASME B16.34 .....	1996 Valves—Flanged, Threaded, and Welding End. <sup>3</sup>
ASME B16.42 .....	1998 Ductile Iron Pipe Flanges and Flanged Fittings, Classes 150 and 300.
ASME B18.2.1 .....	1996 Square and Hex Bolts and Screws (Inch Series).
ASME/ANSI B18.2.2 .....	1987 Square and Hex Nuts (Inch Series).
ASME B31.1 .....	2001 Power Piping ASME Code for Pressure Piping, B31.
ASME B36.10M .....	2004 Welded and Seamless Wrought Steel Pipe.
ASME B36.19M .....	2004 Stainless Steel Pipe.
American Society for Testing and Materials (ASTM) (all incorporated by reference; see 46 CFR 56.01–2)	
ASTM F 682 .....	Standard Specification for Wrought Carbon Steel Sleeve-Type Pipe Couplings.
ASTM F 1006 .....	Standard Specification for Entrainment Separators for Use in Marine Piping Applications. <sup>4</sup>
ASTM F 1007 .....	Standard Specification for Pipe-Line Expansion Joints of the Packed Slip Type for Marine Application.
ASTM F 1020 .....	Standard Specification for Line-Blind Valves for Marine Applications.
ASTM F 1120 .....	Standard Specification for Circular Metallic Bellows Type Expansion Joints for Piping Applications. <sup>4</sup>
ASTM F 1123 .....	Standard Specification for Non-Metallic Expansion Joints.
ASTM F 1139 .....	Standard Specification for Steam Traps and Drains.
ASTM F 1172 .....	Standard Specification for Fuel Oil Meters of the Volumetric Positive Displacement Type.
ASTM F 1173 .....	Standard Specification for Thermosetting Resin Fiberglass Pipe and Fittings to be Used for Marine Applications.
ASTM F 1199 .....	Standard Specification for Cast (All Temperature and Pressures) and Welded Pipe Line Strainers (150 psig and 150 Degrees F Maximum).
ASTM F 1200 .....	Standard Specification for Fabricated (Welded) Pipe Line Strainers (Above 150 psig and 150 Degrees F.)
ASTM F 1201 .....	Standard Specification for Fluid Conditioner Fittings in Piping Applications above 0 Degrees F.
Expansion Joint Manufacturers Association Inc. (incorporated by reference; see 46 CFR 56.01–2)	
Standards of the Expansion Joint Manufacturers Association, 1980	
Fluid Controls Institute Inc. (incorporated by reference; see 46 CFR 56.01–2)	
FCI 69–1 .....	Pressure Rating Standard for Steam Traps.

TABLE 56.60-1(b)—ADOPTED STANDARDS APPLICABLE TO PIPING SYSTEMS (REPLACES TABLE 126.1)—Continued

Manufacturers' Standardization Society of the Valve and Fittings Industry, Inc. (all incorporated by reference; see 46 CFR 56.01-2)<sup>4</sup>

SP-6	Standard Finishes for Contact Faces of Pipe Flanges and Connecting-End Flanges of Valves and Fittings.
SP-9	Spot Facing for Bronze, Iron and Steel Flanges.
SP-25	Standard Marking System for Valves, Fittings, Flanges and Unions.
SP-44	Steel Pipe Line Flanges. <sup>4</sup>
SP-45	Bypass and Drain Connection Standard.
SP-51	Class 150LW Corrosion Resistant Cast Flanges and Flanged Fittings. <sup>4</sup>
SP-53	Quality Standard for Steel Castings and Forgings for Valves, Flanges and Fittings and Other Piping Components—Magnetic Particle Examination Method.
SP-55	Quality Standard for Steel Castings for Valves, Flanges and Fittings and Other Piping Components—Visual Method.
SP-58	Pipe Hangers and Supports—Materials, Design and Manufacture.
SP-61	Pressure Testing of Steel Valves.
SP-67	Butterfly Valves. <sup>2,4</sup>
SP-69	Pipe Hangers and Supports—Selection and Application.
SP-72	Ball Valves with Flanged or Butt-Welding Ends for General Service. <sup>4</sup>
SP-73	Brazing Joints for Copper and Copper Pressure Fittings.
SP-83	Class 3000 Steel Pipe Unions, Socket-Welding and Threaded.

<sup>1</sup> [Reserved]

<sup>2</sup> In addition, for bronze valves, adequacy of body shell thickness shall be satisfactory to the Marine Safety Center. Refer to § 56.60-10 of this part for cast-iron valves.

<sup>3</sup> Mill or manufacturer's certification is not required, except where a needed portion of the required marking is deleted because of size or is absent because of age of existing stocks.

<sup>4</sup> Because this standard offers the option of several materials, some of which are not generally acceptable to the Coast Guard, compliance with the standard does not necessarily indicate compliance with these rules. The marking on the component or the manufacturer or mill certificate must indicate the specification or grade of the materials as necessary to fully identify the materials. The materials must comply with the requirements in this subchapter governing the particular application.

■ 122. Revise § 56.60-2(c)(1)(ii) and table 56.60-2(a) to read as follows:

**§ 56.60-2 Limitations on materials.**

\* \* \* \* \*

(c) \* \* \*

(1) \* \* \*

(ii) Ultrasonic examination as required by item S-6 in ASTM A 376 (incorporated by reference; see 46 CFR 56.01-2) shall be certified as having

been met in all applications except where 100 percent radiography is a requirement of the particular material specification.

\* \* \* \* \*

TABLE 56.60-2(a)—ADOPTED SPECIFICATIONS NOT LISTED IN THE ASME BOILER AND PRESSURE VESSEL CODE \*

ASTM specifications	Source of allowable stress	Notes
Ferrous Materials <sup>1</sup>		
Bar stock:		
A 276 ..... (Grades 304-A, 304L-A, 310-A, 316-A, 316L-A, 321-A, 347-A, and 348-A).	See footnote 4 .....	(4).
A 575 and A 576. (Grades 1010-1030) .....	See footnote 2 .....	(2,3).
Nonferrous Materials		
Bar stock:		
B 16 (soft and half hard tempers) .....	See footnote 5 .....	(5,7).
B 21 (alloys A, B, and C) .....	See footnote 8 .....	(8).
B 124:		
Alloy 377 .....	See footnotes 5 and 9 .....	(5,9).
Alloy 464 .....	See footnote 8 .....	(8,10).
Alloy 655 .....	See footnote 11 .....	(11).
Alloy 642 .....	See footnote 12 .....	(7,12).
Alloy 630 .....	See footnote 13 .....	(7,13).
Alloy 485 .....	See footnote 8 .....	(8,10).
Forgings:		
B 283 (forging brass) .....	See footnotes 5 and 9 .....	(5,9).
Castings:		
B 26 .....	See footnotes 5, 14, and 15 .....	(5,14,15).
B 85 .....	See footnotes 5, 14, and 15 .....	(5,14,15).

\* **Note:** Table 56.60-2(a) is a listing of adopted bar stock and nonferrous forging and casting specifications not listed in the ASME Boiler and Pressure Vessel Code. Particular attention should be given to the supplementary testing requirements and service limitations contained in the footnotes. All ASTM standards referred to in Table 56.60-2(a) and its footnotes are incorporated by reference (see 46 CFR 56.01-2).

<sup>1</sup> For limitations in use refer to 46 CFR 56.60-5.

<sup>2</sup> Allowable stresses shall be the same as those listed in UCS23 of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 56.01-2) for SA-675 material of equivalent tensile strength.

<sup>3</sup> Physical testing shall be performed as for material manufactured to ASME SA-675 (incorporated by reference, see 46 CFR 56.01-2), except that the bend test shall not be required.

<sup>4</sup> Allowable stresses shall be the same as those listed in UCS23 of section VIII of the ASME Boiler and Pressure Vessel Code for the corresponding SA-182 material.

<sup>5</sup> Limited to air and hydraulic service with a maximum design temperature of 150 °F. The material must not be used for salt water service or other fluids that may cause dezincification or stress corrosion cracking.

<sup>6</sup> [Reserved]

<sup>7</sup> An ammonia vapor test, in accordance with ASTM B 858M-95 shall be performed on a representative model of each finished product design.

<sup>8</sup> Allowable stresses shall be the same as those listed in UNF23 of section VIII of the ASME Boiler and Pressure Vessel Code for SB-171, naval brass.

<sup>9</sup> An ammonia vapor test, in accordance with ASTM B 858M, shall be performed on a representative model for each finished product design. Tension tests shall be performed to determine tensile strength, yield strength, and elongation. Minimum values shall be those listed in Table 3 of ASTM B 283.

<sup>10</sup> Physical testing, including mercurous nitrate test, shall be performed as for material manufactured to ASTM B 21.

<sup>11</sup> Physical testing shall be performed as for material manufactured to ASTM B 96. Allowable stresses shall be the same as those listed in UNF23 of section VIII of the ASME Boiler and Pressure Vessel Code for SB-96 and shall be limited to a maximum allowable temperature of 212 °F.

<sup>12</sup> Physical testing shall be performed as for material manufactured to ASTM B 171, alloy D. Allowable stresses shall be the same as those listed in UNF23 of section VIII of the ASME Boiler and Pressure Vessel Code for SB-171, aluminum bronze D.

<sup>13</sup> Physical testing shall be performed as for material manufactured to ASTM B 171, alloy E. Allowable stresses shall be the same as those listed in UNF23 of section VIII of the ASME Boiler and Pressure Vessel Code for SB-171, aluminum bronze, alloy E.

<sup>14</sup> Tension tests shall be performed to determine tensile strength, yield strength, and elongation. Minimum values shall be those listed in table X-2 of ASTM B 85.

<sup>15</sup> Those alloys with a maximum copper content of 0.6 percent or less shall be acceptable under this specification. Cast aluminum shall not be welded or brazed.

■ 123. Revise § 56.60-3(b) to read as follows:

**§ 56.60-3 Ferrous materials.**

\* \* \* \* \*

(b) (Reproduces 124.2.C) Carbon or alloy steel having carbon content of more than 0.35 percent shall not be used in welded construction, nor be shaped by oxygen-cutting process or other thermal-cutting process.

■ 124. Revise § 56.60-5(a) and (b) to read as follows:

**§ 56.60-5 Steel (High-temperature applications).**

(a) (Reproduces 124.2.A.) Upon prolonged exposure to temperatures above 775 °F (412 °C), the carbide phase of plain carbon steel, plain nickel-alloy steel, carbon-manganese-alloy steel, manganese-vanadium-alloy steel, and carbon-silicon steel may convert to graphite.

(b) (Reproduces 124.2.B.) Upon prolonged exposure to temperatures above 875 °F (468 °C), the carbide phase of alloy steels, such as carbon-molybdenum, manganese-molybdenum-vanadium, manganese-chromium-vanadium, and chromium-vanadium, may convert to graphite.

\* \* \* \* \*

■ 125. Revise § 56.60-10(a) to read as follows:

**§ 56.60-10 Cast iron and malleable iron.**

(a) The low ductility of cast iron and malleable iron should be recognized and the use of these metals where shock loading may occur should be avoided. Cast iron and malleable iron components shall not be used at temperatures above 450 °F. Cast iron and malleable iron fittings conforming to the specifications of 46 CFR 56.60-1, Table 56.60-1(a) may be used at

pressures not exceeding the limits of the applicable standards shown in that table at temperatures not exceeding 450 °F.

Valves of either of these materials may be used if they conform to the standards for class 125 and class 250 flanges and flanged fittings in ASME B16.1 (incorporated by reference; see 46 CFR 56.01-2) and if their service does not exceed the rating as marked on the valve.

\* \* \* \* \*

■ 126. Revise § 56.60-15(a) and (b)(2) to read as follows:

**§ 56.60-15 Ductile iron.**

(a) Ductile cast iron components made of material conforming to ASTM A 395 (incorporated by reference, see 46 CFR 56.01-2) may be used within the service restrictions and pressure-temperature limitations of UCD-3 of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 56.01-2).

(b) \* \* \*

(2) Large castings for components, such as hydraulic cylinders, are examined as specified for a casting quality factor of 90 percent in accordance with UG-24 of section VIII of the ASME Boiler and Pressure Vessel Code; and

\* \* \* \* \*

■ 127. Amend § 56.60-25 by revising paragraph (a) introductory text, paragraphs (b)(1), (b)(2), (b)(3), and (b)(5), and by adding paragraph (b)(6) to read as follows:

**§ 56.60-25 Nonmetallic materials.**

(a) Plastic pipe installations shall be in accordance with IMO Resolution A.753(18) (incorporated by reference;

see 46 CFR 56.01-2) and the following supplemental requirements:

\* \* \* \* \*

(b) *Nonmetallic flexible hose.* (1) Nonmetallic flexible hose must be in accordance with SAE J1942 (incorporated by reference; see 46 CFR 56.01-2) and may be installed only in vital and nonvital fresh and salt water systems, nonvital pneumatic systems, lube oil and fuel systems, and fluid power systems.

(2) Nonmetallic flexible hose may be used in vital fresh and salt water systems at a maximum service pressure of 1,034 kPa (150 psi). Nonmetallic flexible hose may be used in lengths not exceeding 76 cm (30 inches) where flexibility is required, subject to the limits in paragraphs (a)(1) through (4) of this section. Nonmetallic flexible hose may be used for plastic pipe in duplicate installations in accordance with this paragraph (b).

(3) Nonmetallic flexible hose may be used for plastic pipe in non-vital fresh and salt water systems and non-vital pneumatic systems, subject to the limits of paragraphs (a)(1) through (4) of this section. Unreinforced hoses are limited to a maximum service pressure of 345 kPa (50 psi); reinforced hoses are limited to a maximum service pressure of 1,034 kPa (150 psi).

\* \* \* \* \*

(5) Nonmetallic flexible hose must be complete with factory-assembled end fittings requiring no further adjustment of the fittings on the hose, except that field attachable type fittings may be used. Hose end fittings must comply with SAE J1475 (incorporated by reference; see 46 CFR 56.01-2). Field attachable fittings must be installed following the manufacturer's recommended practice. If special

equipment is required, such as crimping machines, it must be of the type and design specified by the manufacturer. A hydrostatic test of each hose assembly must be conducted in accordance with § 56.97-5 of this part.

(6) The fire-test procedures of ISO 15540 (incorporated by reference; see 46 CFR 56.01-2) are an acceptable alternative to those procedures of SAE J1942. All other tests of SAE J1942 are still required.

\* \* \* \* \*

■ 128. Revise § 56.65-1 to read as follows:

**§ 56.65-1 General (replaces 127 through 135).**

The requirements for fabrication, assembly and erection in subparts 56.70 through 56.90 shall apply in lieu of 127 through 135.4 of ASME B31.1 (incorporated by reference; see 46 CFR 56.01-2). Those paragraphs reproduced are so noted.

■ 129. Revise § 56.70-5(a) to read as follows:

**§ 56.70-5 Material.**

(a) *Filler metal.* All filler metal, including consumable insert material, must comply with the requirements of section IX of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 56.01-2) and 46 CFR 57.02-5.

\* \* \* \* \*

■ 130. In § 56.70-10—

■ a. Revise the heading of paragraph (a), and paragraphs (a)(1)(ii) and (b) to read as set out below; and

■ b. In paragraph (a)(3), remove the words “(see Fig. 127.3.1)” and add, in their place, the words “(see Fig. 127.3)”:

**§ 56.70-10 Preparation (modifies 127.3).**

(a) *Butt welds (reproduces 127.3).* (1) \* \* \*

(ii) Butt-welding end preparation dimensions contained in ASME B16.25 (incorporated by reference; see 46 CFR 56.01-2) or any other end preparation that meets the procedure qualification requirements are acceptable.

\* \* \* \* \*

(b) *Fillet welds (modifies 127.4.4).* In making fillet welds, the weld metal must be deposited in such a way as to obtain adequate penetration into the base metal at the root of the weld. Piping components that are to be joined utilizing fillet welds must be prepared in accordance with applicable provisions and requirements of this section. For typical details, see Figures 127.4.4A and 127.4.4C of ASME B31.1 (incorporated by reference; see 46 CFR 56.01-2) and 46 CFR 56.30-10(b). See

46 CFR 56.30-5(d) for additional requirements.

■ 131. In § 56.70-15—

■ a. Revise paragraphs (b)(1), (b)(5), and (b)(6) introductory text, the paragraph headings in paragraphs (f) introductory text and (g) introductory text, and paragraph (g)(4) to read as set out below;

■ b. In paragraph (b)(8)(ii), remove the words “ASME Code” and, in their place, add the words “ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 56.01-2)”;

■ c. In paragraph (c), remove the term “ANSI-B31.1” and add, in its place, the term “ASME B31.1 (incorporated by reference; see 46 CFR 56.01-2)”;

■ d. In paragraphs (d)(1) and (g)(1) through (7), remove the terms “ANSI-B31.1” and “ANSI B31.1” wherever they appear and add, in their place, the term “ASME B31.1”.

**§ 56.70-15 Procedure.**

\* \* \* \* \*

(b) \* \* \*

(1) Girth butt welds must be complete penetration welds and may be made with a single vee, double vee, or other suitable type of groove, with or without backing rings or consumable inserts.

\* \* \* \* \*

(5) When components of different outside diameters are welded together, the weld joint must be filled to the outside surface of the component having the larger diameter. There must be a gradual transition, not exceeding a slope of 1:3, in the weld between the two surfaces. To avoid unnecessary weld deposit, the outside surface of the component having the larger diameter must be tapered at an angle not to exceed 30 degrees with the axis of the pipe. (See Fig. 127.4.2 of ASME B31.1 (incorporated by reference; see 46 CFR 56.01-2).)

(6) As-welded surfaces are permitted; however, the surface of the welds must be sufficiently free from coarse ripple, grooves, overlaps, abrupt ridges and valleys to meet the following:

\* \* \* \* \*

(f) *Weld defect repairs.* \* \* \*

\* \* \* \* \*

(g) *Welded branch connections.* \* \* \*

(4) Branch connections (including specially made, integrally reinforced branch connection fittings) that abut the outside surface of the run wall, or that are inserted through an opening cut in the run wall, shall have opening and branch contour to provide a good fit and shall be attached by means of full penetration groove welds except as otherwise permitted in paragraph (g)(7) of this section. The full penetration groove welds shall be finished with

cover fillet welds having a minimum throat dimension not less than 2t<sub>c</sub>. The limitation as to imperfection of these groove welds shall be as set forth in 127.4.2(C) of ASME B31.1 for girth welds.

\* \* \* \* \*

■ 132. Revise § 56.70-20(a) to read as follows:

**§ 56.70-20 Qualification, general.**

(a) Qualification of the welding procedures to be used, and of the performance of welders and welding operators, is required, and shall comply with the requirements of section IX of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 56.01-2) except as modified by part 57 of this subchapter.

\* \* \* \* \*

■ 133. Revise § 56.75-5(c) to read as follows:

**§ 56.75-5 Filler metal.**

\* \* \* \* \*

(c) Fluxes that are fluid and chemically active at the brazing temperature must be used when necessary to prevent oxidation of the filler metal and of the surfaces to be joined and to promote free flowing of the filler metal.

■ 134. Revise § 56.75-10 section heading to read as follows:

**§ 56.75-10 Joint clearance.**

\* \* \* \* \*

■ 135. Revise § 56.75-15 section heading to read as follows:

**§ 56.75-15 Heating.**

\* \* \* \* \*

■ 136. Revise § 56.75-20(a) to read as follows:

**§ 56.75-20 Brazing qualification.**

(a) The qualification of the performance of brazers and brazing operators shall be in accordance with the requirements of part C, Section IX of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 56.01-2) and part 57 of this subchapter.

\* \* \* \* \*

■ 137. Revise § 56.75-25(b) to read as follows:

**§ 56.75-25 Detail requirements.**

\* \* \* \* \*

(b) The surfaces to be brazed must be clean and free from grease, oxides, paint, scale, and dirt of any kind. Any suitable chemical or mechanical cleaning method may be used to provide a clean, wettable surface for brazing.

\* \* \* \* \*

**§ 56.80–5 [Amended]**

■ 138. In § 56.80–5, remove the term “ANSI-B31.1” and add, in its place, the words “ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2)”.

■ 139. Revise § 56.80–15(a), (c), (d), (e), and (g) to read as follows:

**§ 56.80–15 Heat treatment of bends and formed components.**

(a) Carbon-steel piping that has been heated to at least 1,650 °F (898 °C) for bending or other forming requires no subsequent heat treatment.

\* \* \* \* \*

(c) Cold bending and forming of carbon steel having a wall thickness of three-fourths of an inch and heavier, and all ferritic-alloy pipe in nominal pipe sizes of 4 inches and larger, or one-half-inch wall thickness or heavier, will require a stress-relieving treatment.

(d) Cold bending of carbon-steel and ferritic-alloy steel pipe in sizes and wall thicknesses less than specified in 129.3.3 of ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2) may be used without a postheat treatment.

(e) For other materials the heat treatment of bends and formed components must be such as to ensure pipe properties that are consistent with the original pipe specification.

\* \* \* \* \*

(g) Austenitic stainless-steel pipe that has been heated for bending or other forming may be used in the “as-bent” condition unless the design specification requires post-bending heat treatment.

■ 140. Revise § 56.85–5 to read as follows:

**§ 56.85–5 Heating and cooling method.**

Heat treatment may be accomplished by a suitable heating method that will provide the desired heating and cooling rates, the required metal temperature, metal temperature uniformity, and temperature control.

■ 141. Revise § 56.85–10(b) and (c) to read as follows:

**§ 56.85–10 Preheating.**

\* \* \* \* \*

(b) During the welding of dissimilar materials, the minimum preheat temperature may not be lower than either the highest temperature listed in Table 56.85–10 for any of the materials to be welded or the temperature established in the qualified welding procedure.

(c) The preheat temperature shall be checked by use of temperature-indicating crayons, thermocouples, pyrometers, or other suitable methods to ensure that the required preheat

temperature is obtained before, and uniformly maintained during the welding.

\* \* \* \* \*

■ 142. Revise § 56.85–15(d), (e), and (i) to read as follows:

**§ 56.85–15 Postheat treatment.**

\* \* \* \* \*

(d) The postheating treatment selected for parts of an assembly must not adversely affect other components. Heating a fabricated assembly as a complete unit is usually desirable; however, the size or shape of the unit or the adverse effect of a desired treatment on one or more components where dissimilar materials are involved may dictate alternative procedures. For example, it may be heated as a section of the assembly before the attachment of others or local circumferential-band heating of welded joints in accordance with 46 CFR 56.85–10, Table 56.85–10 Note (12) and 46 CFR 56.85–15(j)(3).

(e) Postheating treatment of welded joints between dissimilar metals having different postheating requirements must be established in the qualified welding procedure.

\* \* \* \* \*

(i) For those materials listed under P–1, when the wall thickness of the thicker of the two abutting ends, after their preparation, is less than three-fourths inch, the weld needs no postheating treatment. In all cases, where the nominal wall thickness is three-fourths inch or less, postheating treatment is not required.

\* \* \* \* \*

■ 143. Revise § 56.90–5(b) and (d) to read as follows:

**§ 56.90–5 Bolting procedure.**

\* \* \* \* \*

(b) When bolting gasketed flanged joints, the gasket must be properly compressed in accordance with the design principles applicable to the type of gasket used.

\* \* \* \* \*

(d) All bolts must be engaged so that there is visible evidence of complete threading through the nut or threaded attachment.

■ 144. Revise § 56.90–10 section heading to read as follows:

**§ 56.90–10 Threaded piping (modifies 135.5).**

\* \* \* \* \*

**§ 56.95–1 [Amended]**

■ 145. In § 56.95–1—

■ a. In paragraph (a), remove the term “ANSI-B31.1” and add, in its place, the

words “ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2)”;

■ b. In paragraph (b) remove the term “ANSI-B31.1” and add, in its place, the term “ASME B31.1”.

**§ 56.95–10 [Amended]**

■ 146. In § 56.95–10—

■ a. In paragraph (a) introductory text, remove the term “ANSI-B31.1” and add, in its place, the words “ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2)”;

■ b. In paragraph (c)(1)(i), remove the words “ASME Code” and, in their place, add the words “ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 56.01–2)”;

■ c. In paragraph (c)(1)(ii), remove the words “ASME Code” and, in their place, add the words “ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 56.01–2)”;

■ d. In paragraph (c)(4) introductory text, remove the words, “ASME Code” and, in their place, add the words “ASME Boiler and Pressure Vessel Code”; and

■ e. In paragraph (c)(5) remove the words “ASME Code” and, in their place, add the words “ASME Boiler and Pressure Vessel Code”.

**§ 56.97–1 [Amended]**

■ 147. Amend § 56.97–1(a) by removing the term “ANSI-B31.1” and adding, in its place, the words “ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2)”.

■ 148. Revise § 56.97–25 section heading to read as follows:

**§ 56.97–25 Preparation for testing (reproduces 137.2).**

\* \* \* \* \*

■ 149. Revise § 56.97–30 section heading to read as follows:

**§ 56.97–30 Hydrostatic tests (modifies 137.4).**

\* \* \* \* \*

**PART 58—MAIN AND AUXILIARY MACHINERY AND RELATED SYSTEMS**

■ 150. The authority citation for part 58 continues to read as follows:

**Authority:** 43 U.S.C. 1333; 46 U.S.C. 3306, 3703; Executive Order 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

**§ 58.01–5 [Amended]**

■ 151. In § 58.01–5, remove the words “the American Bureau of Shipping or other recognized classification society,” and add, in their place, the words “the ABS Steel Vessel Rules (incorporated by reference, see 46 CFR 58.03–1)”.

■ 152. Revise § 58.01–10(a)(3) to read as follows:

**§ 58.01–10 Fuel oil.**

(a) \* \* \*

(3) Subject to such further precautions as the Commanding Officer, Marine Safety Center, considers necessary, and provided that the ambient temperature of the space in which such fuel oil is stored or used does not rise to within 18 °F (10 °C) below the flashpoint of the fuel oil, fuel oil having a flashpoint of less than 140 °F (60 °C) but not less than 110 °F (43 °C) may be used.

\* \* \* \* \*

■ 153. Revise § 58.01–50(a) to read as follows:

**§ 58.01–50 Machinery space, noise.**

(a) Each machinery space must be designed to minimize the exposure of personnel to noise in accordance with IMO A.468(XII) (incorporated by reference, see 46 CFR 58.03–1). No person may encounter a 24-hour effective noise level greater than 82 dB(A) when noise is measured using a sound-level meter and an A-weighting filter.

\* \* \* \* \*

■ 154. Revise § 58.03–1 to read as follows:

**§ 58.03–1 Incorporation by reference.**

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Coast Guard must publish notice of change in the **Federal Register** and the material must be available to the public. All approved material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030 or go to [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html). This material is also available for inspection at the U.S. Coast Guard, Office of Design and Engineering Standards (CG–521), 2100 Second Street, SW., Washington, DC 20593–0001, and is available from the sources listed below.

(b) *American Boat and Yacht Council (ABYC)*, 613 Third Street, Suite 10, Annapolis, MD 21403:

(1) P–1–73, Safe Installation of Exhaust Systems for Propulsion and Auxiliary Machinery, 1973 (“ABYC P–1”), 58.10–5; and

(2) [Reserved]

(c) *American Bureau of Shipping (ABS)*, ABS Plaza, 16855 Northchase Drive, Houston, TX 77060.

(1) Rules for Building and Classing Steel Vessels, Part 4 Vessel Systems and Machinery (2003) (“ABS Steel Vessel Rules”), 58.01–5; 58.05–1; 58.10–15; 58.20–5; 58.25–5; and

(2) [Reserved]

(d) *American National Standards Institute (ANSI)*, 11 West 42nd Street, New York, NY 10036:

(1) ANSI B31.3, Chemical Plant and Petroleum Refinery Piping, 1987 (“ANSI B31.3”), 58.60–7;

(2) ANSI B31.5, Refrigeration Piping, 1987 (“ANSI B31.5”), 58.20–5; 58.20–20; and

(3) ANSI B93.5, Recommended practice for the use of Fire Resistant Fluids for Fluid Power Systems, 1979 (“ANSI B93.5”), 58.30–10.

(e) *American Petroleum Institute (API)*, 1220 L Street, NW., Washington, DC 20005–4070:

(1) API RP 14C, Analysis, Design, Installation and Testing of Basic Surface Safety Systems for Offshore Production Platforms, 1986 (“API RP 14C”), 58.60–9; and

(2) API RP 53, Recommended Practice for Blowout Prevention Equipment Systems for Drilling Wells, 1984 (“API RP 53”), 58.60–7.

(f) *American Society of Mechanical Engineers (ASME) International*, Three Park Avenue, New York, NY 10016–5990:

(1) 2001 ASME Boiler and Pressure Vessel Code, Section I, Rules for Construction of Power Boilers (July 1, 2001) (“Section I of the ASME Boiler and Pressure Vessel Code”), 58.30–15; and

(2) ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, Rules for Construction of Pressure Vessels (1998 with 1999 and 2000 addenda) (“Section VIII of the ASME Boiler and Pressure Vessel Code”), 58.30–15.

(g) *ASTM International (formerly American Society for Testing and Materials) (ASTM)*, 100 Barr Harbor Drive, West Conshohocken, PA 19428–2959:

(1) ASTM A 193/A 193M–98a, Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service (“ASTM A 193”), 58.30–15;

(2) ASTM B 96–93, Standard Specification for Copper-Silicon Alloy Plate, Sheet, Strip, and Rolled Bar for General Purposes and Pressure Vessels (“ASTM B 96”), 58.50–5;

(3) ASTM B 122/B 122M–95, Standard Specification for Copper-Nickel-Tin Alloy, Copper-Nickel-Zinc Alloy (Nickel Silver), and Copper-

Nickel Alloy Plate, Sheet, Strip, and Rolled Bar (“ASTM B 122”), 58.50–5;

(4) ASTM B 127–93a, Standard Specification for Nickel-Copper Alloy (UNS NO4400) Plate, Sheet, and Strip (“ASTM B 127”), 58.50–5; 58.50–10;

(5) ASTM B 152–97a, Standard Specification for Copper Sheet, Strip, Plate, and Rolled Bar (“ASTM B 152”), 58.50–5;

(6) ASTM B 209–96, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (“ASTM B 209”), 58.50–5; 58.50–10;

(7) ASTM D 92–97, Standard Test Method for Flash and Fire Points by Cleveland Open Cup (“ASTM D 92”), 58.30–10;

(8) ASTM D 93–97, Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester (“ASTM D 93”), 58.01–10; and

(9) ASTM D 323–94, Standard Test Method for Vapor Pressure of Petroleum Products (Reid Method) (“ASTM D 323”), 58.16–5.

(h) *International Maritime Organization (IMO)*, Publications Section, 4 Albert Embankment, London SE1 7SR, United Kingdom:

(1) A.467(XII), Guidelines for Acceptance of Non-Duplicated Rudder Actuators for Tankers, Chemical Tankers and Gas Carriers of 10,000 Tons Gross Tonnage and Above But Less Than 100,000 Tonnes Deadweight, 1981 (“IMO A.467(XII)”), 58.25–60; and

(2) A.468(XII), Code on Noise Levels on Board Ships, 1981 (“IMO A.468(XII)”), 58.01–50.

(i) *National Fire Protection Association (NFPA)*, 1 Batterymarch Park, Quincy, MA 02169:

(1) NFPA 302, Fire Protection Standard for Pleasure and Commercial Craft, 1989 (“NFPA 302”), 58.10–5; and

(2) [Reserved]

(j) *Society of Automotive Engineers (SAE)*, 400 Commonwealth Drive, Warrendale, PA 15096:

(1) SAE J–1928, Devices Providing Backfire Flame Control for Gasoline Engines in Marine Applications, 1989 (“SAE J–1928”), 58.10–5; and

(2) SAE J429, Mechanical and Material Requirements for Externally Threaded Fasteners (Aug. 1983) (“SAE J429”), 58.30–15.

(k) *Underwriters Laboratories, Inc. (UL)*, 12 Laboratory Drive, Research Triangle Park, NC 27709:

(1) UL 1111, Marine Carburetor Flame Arresters, 1988 (“UL 1111”), 58.10–5; and

(2) [Reserved]

■ 155. Revise § 58.05–1 to read as follows:



**§ 58.05–1 Material, design and construction.**

(a) The material, design, construction, workmanship, and arrangement of main propulsion machinery and of each auxiliary, directly connected to the engine and supplied as such, must be at least equivalent to the standards established by the ABS Steel Vessel Rules (incorporated by reference, see 46 CFR 58.03–1), except as otherwise provided by this subchapter.

(b) When main and auxiliary machinery is to be installed without classification society review, the builder shall submit in quadruplicate to the cognizant Officer in Charge, Marine Inspection, such drawings and particulars of the installation as are required by the American Bureau of Shipping Rules for Building and Classing Steel Vessels, Part 4 Vessel Systems and Machinery (2003) for similar installations on classed vessels.

■ 156. Revise § 58.10–5(b)(3)(i) and (d)(1) introductory text to read as follows:

**§ 58.10–5 Gasoline engine installations.**

\* \* \* \* \*

(b) \* \* \*

(3) \* \* \*

(i) A backfire flame arrester complying with SAE J–1928 (incorporated by reference; see 46 CFR 58.03–1) or UL 1111 (incorporated by reference; see 46 CFR 58.03–1) and marked accordingly. The flame arrester must be suitably secured to the air intake with a flamtight connection.

\* \* \* \* \*

(d) *Exhaust pipe.* (1) Exhaust pipe installations must conform to the requirements of ABYC P–1 and part 1, section 23 of NFPA 302 (both incorporated by reference; see 46 CFR 58.03–1) and the following additional requirements:

\* \* \* \* \*

**§ 58.10–15 [Amended]**

■ 157. In § 58.10–15(a), remove the words “the American Bureau of Shipping or other recognized classification society” and add, in their place, the words “the ABS Steel Vessel Rules (incorporated by reference, see 46 CFR 58.03–1)”.

■ 158. Revise § 58.16–10(b)(1) and (c) to read as follows:

**§ 58.16–10 Approvals.**

\* \* \* \* \*

(b) \* \* \*

(1) Cylinders in which liquefied petroleum gas is stored and handled must be constructed, tested, marked, maintained, and retested in accordance with 49 CFR part 178.

\* \* \* \* \*

(c) *Safety-relief devices.* All required safety-relief devices must be approved as to type, size, pressure setting, and location by the Commandant (CG–521) as being in accordance with 49 CFR part 178.

\* \* \* \* \*

■ 159. Revise § 58.20–5(a) to read as follows:

**§ 58.20–5 Design.**

(a) Refrigeration machinery may be accepted for installation provided the design, material, and fabrication comply with the applicable requirements of the ABS Steel Vessel Rules (incorporated by reference, see 46 CFR 58.03–1). The minimum pressures for design of all components must be those listed for piping in Table 501.2.4 of ANSI B31.5 (incorporated by reference; see 46 CFR 58.03–1). In no case may pressure components be designed for a pressure less than that for which the safety devices of the system are set. Pressure vessels must be designed in accordance with part 54 of this subchapter.

\* \* \* \* \*

**§ 58.20–20 [Amended]**

■ 160. In § 58.20–20(b), remove the term “ANSI–B31.5” and add, in its place, the words “ANSI B31.5 (incorporated by reference; see 46 CFR 58.03–1)”.

**§ 58.25–5 [Amended]**

■ 161. In § 58.25–5(d), remove the words, “the American Bureau of Shipping or other recognized classification society,” and add, in their place, the words “the ABS Steel Vessel Rules (incorporated by reference, see 46 CFR 58.03–1)”.

■ 162. Revise § 58.25–60 to read as follows:

**§ 58.25–60 Non-duplicated hydraulic rudder actuators.**

Non-duplicated hydraulic rudder actuators may be installed in the steering-gear control systems on each vessel of less than 100,000 deadweight tons. These actuators must meet IMO A.467(XII) (incorporated by reference, see 46 CFR 58.03–1) and be acceptable

to the Commanding Officer, Marine Safety Center. Also, the piping for the main gear must comply with 46 CFR 58.25–10(e)(3).

**§ 58.30–10 [Amended]**

■ 163. In § 58.30–10(e), remove the words, “ANSI–B93.5 (Recommended Practice for the Use of Fire Resistant Fluids for Fluid Power Systems)” and, in their place, add the words “ANSI B93.5 (incorporated by reference; see 46 CFR 58.03–1)”.

■ 164. Revise § 58.30–15(b) and (c) to read as follows:

**§ 58.30–15 Pipe, tubing, valves, fittings, pumps, and motors.**

\* \* \* \* \*

(b) Materials used in the manufacture of tubing, pipes, valves, flanges, and fittings shall be selected from those specifications that appear in 46 CFR 56.60–1, Table 56.60–1(a) or 46 CFR 56.60–2, Table 56.60–2(a); or they may be selected from the material specifications of Section I or Section VIII of the ASME Boiler and Pressure Vessel Code (both incorporated by reference; see 46 CFR 58.03–1) if not prohibited by the section of this subchapter dealing with the particular section of the ASME Boiler and Pressure Vessel Code. Materials designated by other specifications shall be evaluated on the basis of physical and chemical properties. To assure these properties, the specifications shall specify and require such physical and chemical testing as considered necessary by the Commandant. All tubing and pipe materials shall be suitable for handling the hydraulic fluid used and shall be of such chemical and physical properties as to remain ductile at the lowest operating temperature.

(c) Bolting shall meet the requirements of 46 CFR 56.25–20 except that regular hexagon bolts conforming to SAE J429, grades 2 through 8 (incorporated by reference, see 46 CFR 58.03–1), or ASTM A 193 (incorporated by reference, see 46 CFR 58.03–1) may be used in sizes not exceeding 1½ inches.

\* \* \* \* \*

■ 165. Revise table 58.50–5(a) to read as follows:

**§ 58.50–5 Gasoline fuel tanks.**

(a) \* \* \*

TABLE 58.50–5(a)

Material	ASTM specification (all incorporated by reference; see 46 CFR 58.03–1)	Thickness in inches and gage numbers <sup>1</sup> vs. tank capacities for—		
		1- through 80-gallon tanks	More than 80- and not more than 150-gallon tanks	Over 150-gallon tanks <sup>2</sup>
Aluminum <sup>5</sup> .....	B 209, Alloy 5086 <sup>6</sup> .....	0.250 (USSG 3) .....	0.250 (USSG 3) .....	0.250 (USSG 3).
Nickel-copper .....	B 127, Hot rolled sheet or plate .....	0.037 (USSG 20). <sup>3</sup> .....	0.050 (USSG 18) .....	0.107 (USSG 12).
Copper-nickel .....	B 122, Alloy No. 5 .....	0.045 (AWG 17) .....	0.057 (AWG 15) .....	0.128 (AWG 8).
Copper .....	B 152, Type ETP .....	0.057 (AWG 15) .....	0.080 (AWG 12) .....	0.182 (AWG 5).
Copper-silicon .....	B 96, alloys C65100 and C65500 ....	0.050 (AWG 16) .....	0.064 (AWG 14) .....	0.144 (AWG 7).
Steel or iron <sup>4</sup> .....	.....	0.0747 (MfgStd 14) .....	0.1046 (MfgStd 12) .....	0.179 (MfgStd 7).

<sup>1</sup> Gauges used are U.S. standard “USSG” for aluminum and nickel-copper; “AWG” for copper, copper-nickel and copper-silicon; and “MfgStd” for steel.

<sup>2</sup> Tanks over 400 gallons shall be designed with a factor of safety of four on the ultimate strength of the material used with a design head of not less than 4 feet of liquid above the top of the tank.

<sup>3</sup> Nickel-copper not less than 0.031 inch (USSG 22) may be used for tanks up to 30-gallon capacity.

<sup>4</sup> Fuel tanks constructed of iron or steel, which is less than 3/16-inch thick shall be galvanized inside and outside by the hot dip process.

<sup>5</sup> Anodic to most common metals. Avoid dissimilar metal contact with tank body.

<sup>6</sup> And other alloys acceptable to the Commandant.

\* \* \* \* \*

■ 166. Revise table 58.50–10(a) to read as follows: **§ 58.50–10 Diesel fuel tanks.**  
(a) \* \* \*

TABLE 58.50–10(a)

Material	ASTM specification (all incorporated by reference; see 46 CFR 58.03–1)	Thickness in inches and gage numbers <sup>1</sup> vs. tank capacities for—		
		1- through 80-gallon tanks	More than 80- and not more than 150-gallon tanks	Over 150-gallon tanks <sup>2</sup>
Aluminum <sup>5</sup> .....	B 209, Alloy 5086 <sup>6</sup> .....	0.250 (USSG 3) .....	0.250 (USSG 3) .....	0.250 (USSG 3).
Nickel-copper .....	B 127, Hot rolled sheet or plate .....	0.037 (USSG 20). <sup>3</sup> .....	0.050 (USSG 18) .....	0.107 (USSG 12).
Steel or iron <sup>4</sup> .....	.....	0.0747 (MfgStd 14) .....	0.1046 (MfgStd 12) .....	0.179 (MfgStd 7).

<sup>1</sup> Gauges used are U.S. standard “USSG” for aluminum and nickel-copper and “MfgStd” for steel or iron.

<sup>2</sup> Tanks over 400 gallons shall be designed with a factor of safety of four on the ultimate strength of the material used with design head of not less than 4 feet of liquid above the top of the tank.

<sup>3</sup> Nickel-copper not less than 0.031 inch (USSG 22) may be used for tanks up to 30-gallon capacity.

<sup>4</sup> For diesel tanks the steel or iron shall not be galvanized on the interior.

<sup>5</sup> Anodic to most common metals. Avoid dissimilar metal contact with tank body.

<sup>6</sup> And other alloys acceptable to the Commandant.

\* \* \* \* \*

■ 167. Revise § 58.50–15 to read as follows:

**§ 58.50–15 Alternate material for construction of independent fuel tanks.**

(a) Materials other than those specifically listed in 46 CFR 58.50–5, Table 58.50–5(a) and in 46 CFR 58.50–10, Table 58.50–10(a) may be used for fuel tank construction only if the tank as constructed meets material and testing requirements approved by the Commandant (CG–521). Approved testing may be accomplished by any acceptable laboratory, such as the Marine Department, Underwriters’ Laboratories, Inc., or may be done by the fabricator if witnessed by a marine inspector.

(b) [Reserved]

■ 168. Revise § 58.60–7 to read as follows:

**§ 58.60–7 Industrial systems: Piping.**

The piping for industrial systems under this subpart must meet ANSI

B31.3 (incorporated by reference, see 46 CFR 58.03–1), except that blow out preventor control systems must also meet API RP 53 (incorporated by reference, see 46 CFR 58.03–1).

■ 169. Revise § 58.60–9 to read as follows:

**§ 58.60–9 Industrial systems: Design.**

Each system under this subpart must be designed and analyzed in accordance with the principles of API RP 14C (incorporated by reference, see 46 CFR 58.03–1).

**PART 59—REPAIRS TO BOILERS, PRESSURE VESSELS AND APPURTENANCES**

■ 170. The authority citation for part 59 continues to read as follows:

**Authority:** 46 U.S.C. 3306, 3703; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 227; Department of Homeland Security Delegation No. 0170.1.

■ 171. Revise § 59.01–2 to read as follows:

**§ 59.01–2 Incorporation by reference.**

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Coast Guard must publish notice of change in the **Federal Register** and the material must be available to the public. All approved material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030 or go to [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html). The material is also available for inspection at the U.S. Coast Guard, Office of Design and Engineering Standards (CG–521), 2100 Second Street, SW., Washington, DC 20593–

0001, and is available from the sources listed below.

(b) *American Society of Mechanical Engineers (ASME) International*, Three Park Avenue, New York, NY 10016-5990:

(1) 2001 ASME Boiler and Pressure Vessel Code, Section I, Rules for Construction of Power Boilers (July 1, 2001) ("Section I of the ASME Boiler and Pressure Vessel Code"), 59.10-5;

(2) ASME Boiler and Pressure Vessel Code, Section VII, Recommended Guidelines for the Care of Power Boilers (July 1, 2001) ("Section VII of the ASME Boiler and Pressure Vessel Code"), 59.01-5;

(3) ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, Rules for Construction of Pressure Vessels (1998 with 1999 and 2000 addenda) ("Section VIII of the ASME Boiler and Pressure Vessel Code"), 59.10-5; 59.10-10; and

(4) ASME Boiler and Pressure Vessel Code, Section IX, Welding and Brazing Qualifications (1998) ("Section IX of the ASME Boiler and Pressure Vessel Code"), 59.10-5.

#### § 59.01-3 [Removed]

■ 172. Remove § 59.01-3.

■ 173. Revise § 59.01-5(e) to read as follows:

#### § 59.01-5 Repairs, replacements, or alterations.

\* \* \* \* \*

(e) Where applicable, manufacturers' instruction books, manuals, and the like, and section VII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 59.01-2) must be used for guidance.

#### § 59.10-5 [Amended]

■ 174. In § 59.10-5—

■ a. In paragraph (i), remove the term "ASME Code" and, in its place, add the words "ASME Boiler and Pressure Vessel Code (all incorporated by reference; see 46 CFR 59.01-2)"; and

■ b. In paragraphs (j) and (k), remove the words "ASME Code" wherever they appear and, in their place, add the words "ASME Boiler and Pressure Vessel Code".

#### § 59.10-10 [Amended]

■ 175. In § 59.10-10(f), remove the words "section VIII, ASME Code" and, in their place, add the words "section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference, see 46 CFR 59.01-2)".

### PART 61—PERIODIC TESTS AND INSPECTIONS

■ 176. The authority citation for part 61 continues to read as follows:

**Authority:** 43 U.S.C. 1333; 46 U.S.C. 2103, 3306, 3307, 3703; E.O. 12234, 45 FR 58801, 3 CFR 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

■ 177. Revise § 61.15-10 section heading and paragraph (b) to read as follows:

#### § 61.15-10 Liquefied-petroleum-gas piping for heating and cooking.

\* \* \* \* \*

(b) Test the system for leakage in accordance with the following procedure: With the appliance valve closed, the master shutoff valve on the appliance open, and one cylinder valve open, note pressure in gauge.

### PART 62—VITAL SYSTEM AUTOMATION

■ 178. The authority citation for part 62 continues to read as follows:

**Authority:** 46 U.S.C. 3306, 3703, 8105; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

■ 179. Revise § 62.05-1 to read as follows:

#### § 62.05-1 Incorporation by reference.

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Coast Guard must publish notice of change in the **Federal Register** and the material must be available to the public. All approved material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030 or go to [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html). The material is also available for inspection at the U.S. Coast Guard, Office of Design and Engineering Standards (CG-521), 2100 Second Street, SW., Washington, DC 20593-0001, and is available from the sources listed below.

(b) *American Bureau of Shipping (ABS)*, ABS Plaza, 16855 Northchase Drive, Houston, TX 77060:

(1) Rules for Building and Classing Steel Vessels, Part 4 Vessel Systems and Machinery (2003) ("ABS Steel Vessel Rules"), 62.25-30; 62.35-5; 62.35-35; 62.35-40; 62.35-50; 62.50-30; and

(2) [Reserved]

■ 180. Revise § 62.25-1(c) to read as follows:

#### § 62.25-1 General.

\* \* \* \* \*

(c) Each console for a vital control or alarm system and any similar enclosure that relies upon forced cooling for proper operation of the system must have a backup means of providing cooling. It must also have an alarm activated by the failure of the temperature-control system.

■ 181. Revise § 62.25-5(a) to read as follows:

#### § 62.25-5 All control systems.

(a) Local and remote starting for any propulsion engine or turbine equipped with a jacking or turning gear must be prevented while the turning gear is engaged.

\* \* \* \* \*

■ 182. Revise § 62.25-30(a)(1), (2), (3), and (5) to read as follows:

#### § 62.25-30 Environmental design standards.

(a) \* \* \*

(1) Ship motion and vibration described in Table 9 of section 4-9-7 of the ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 62.05-1); note that inclination requirements for fire and flooding safety systems are described in 46 CFR 112.05-5(c).

(2) Ambient air temperatures described in Table 9 of part 4-9-7 of the ABS Steel Vessel Rules.

(3) Electrical voltage and frequency tolerances described in Table 9 of part 4-9-7 of the ABS Steel Vessel Rules.

\* \* \* \* \*

(5) Hydraulic and pneumatic pressure variations described in Table 9 of part 4-9-7 of the ABS Steel Vessel Rules.

\* \* \* \* \*

■ 183. Revise § 62.35-5 section heading and paragraph (d) to read as follows:

#### § 62.35-5 Remote propulsion-control systems.

\* \* \* \* \*

(d) *Transfer of control location.* Transfer of control location must meet section 4-9-2/5.11 of the ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 62.05-1). Manual alternative-propulsion-control locations must be capable of overriding, and of operating independent of, all remote and automatic propulsion-control locations.

\* \* \* \* \*

■ 184. Revise § 62.35-35 to read as follows:

#### § 62.35-35 Starting systems for internal-combustion engines.

The starting systems for propulsion engines and for prime movers of ships' service generators required to start

automatically must meet sections 4-6-5/9.5 and 4-8-2/11.11 of the ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 62.05-1).

■ 185. Revise § 62.35-40(c) to read as follows:

§ 62.35-40 Fuel systems.

\* \* \* \* \*

(c) Automatic fuel heating. Automatic fuel heating must meet section 4-9-3/15.1 of the ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 62.05-1).

\* \* \* \* \*

■ 186. Amend § 62.35-50 by revising footnotes 1, 2, 8, and 9 following Table 62.35-50, and, in the notes on Table 62.35-50, by revising 1 and 9 to read as follows:

§ 62.35-50 Tabulated monitoring and safety control requirements for specific systems.

\* \* \* \* \*

TABLE 62.35-50—MINIMUM SYSTEM MONITORING AND SAFETY CONTROL REQUIREMENTS FOR SPECIFIC SYSTEMS (NOTE 1)

\* \* \* \* \*

<sup>1</sup> See the ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 62.05-1) Part 4-9-4, tables 7A and 8.

<sup>2</sup> See ABS Steel Vessel Rules Part 4-9-4, tables 7A and 8.

\* \* \* \* \*

<sup>8</sup> See ABS Steel Vessel Rules Part 4-9-4, Table 8; and 46 CFR 58.10-15(f).

<sup>9</sup> See ABS Steel Vessel Rules Part 4-9-4, tables 7A and 8.

Notes on Table 62.35-50:

1. The monitoring and controls listed in this table are applicable if the system listed is provided or required.

\* \* \* \* \*

9. Main and remote control stations, including the navigational bridge, must provide visual and audible alarms in the event of a fire in the main machinery space.

\* \* \* \* \*

■ 187. Revise § 62.50-30(c) and the introductory text of paragraph (k) to read as follows:

§ 62.50-30 Additional requirements for periodically unattended machinery plants.

\* \* \* \* \*

(c) Fuel systems. Each system for the service or treatment of fuel must meet section 4-6-4/13.5 of the ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 62.05-1).

\* \* \* \* \*

(k) Continuity of electrical power. The electrical plant must meet sections 4-8-

2/3.11 and 4.8.2/9.9 of the ABS Steel Vessel Rules, and must:

\* \* \* \* \*

PART 63—AUTOMATIC AUXILIARY BOILERS

■ 188. The authority citation for part 63 continues to read as follows:

Authority: 46 U.S.C. 3306, 3703; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

■ 189. Revise § 63.05-1 to read as follows:

§ 63.05-1 Incorporation by reference.

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Coast Guard must publish notice of change in the Federal Register and the material must be available to the public. All approved material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030 or go to [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html). The material is also available for inspection at the U.S. Coast Guard, Office of Design and Engineering Standards (CG-521), 2100 Second Street, SW., Washington, DC 20593-0001, and is available from the sources listed below.

(b) American Gas Association, 1515 Wilson Boulevard, Arlington, VA 22209:

(1) ANSI/AGA Z21.22-86 Relief Valves and Automatic Shutoff Devices for Hot Water Supply Systems, March 28, 1986 ("ANSI/AGA Z21.22"), 63.25-3; and

(2) [Reserved]

(c) American Society of Mechanical Engineers (ASME) International, Three Park Avenue, New York, NY 10016-5990:

(1) ASME CSD-1-2004, Controls and Safety Devices for Automatically Fired Boilers (2004) ("ASME CSD-1"), 63.10-1; 63.15-1; 63.20-1; and

(2) [Reserved]

(d) ASTM International (formerly American Society for Testing and Materials) (ASTM), 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959:

(1) ASTM F 1323-2001, Standard Specification for Shipboard Incinerators (2001) ("ASTM F 1323"), 63.25-9; and

(2) [Reserved]

(e) International Maritime Organization (IMO), Publications

Section, 4 Albert Embankment, London, SE1 7SR United Kingdom:

(1) Resolution MEPC.76(40), Standard Specification for Shipboard Incinerators (Sep. 25, 1997) ("IMO MEPC.76(40)"), 63.25-9; and

(2) The International Convention for the Prevention of Pollution from Ships (MARPOL 73/78), Annexes I, II, III, and V (1978) ("IMO MARPOL 73/78"), 63.25-9

(f) International Organization for Standardization (ISO), Case postale 56, CH-1211 Geneva 20, Switzerland:

(1) ISO 9096, Stationary source emissions—Manual determination of mass concentration of particulate matter, Second edition (Feb. 1, 2003) ("ISO 9096"), 63.25-9;

(2) ISO 10396, Stationary source emissions—Sampling for the automated determination of gas emission concentrations for permanently-installed monitoring systems, Second edition (Feb. 1, 2007) ("ISO 10396"), 63.25-9; and

(3) ISO 13617, Shipbuilding—Shipboard Incinerators—Requirements, Second Edition (Nov. 15, 2001) ("ISO 13617"), 63.25-9.

(g) Underwriters' Laboratories, Inc. (UL), 12 Laboratory Drive, Research Triangle Park, NC 27709-3995:

(1) UL 174, Standard for Household Electric Storage Tank Water Heaters, Tenth Edition, Feb. 28, 1996 (Revisions through and including Nov. 10, 1997) ("UL 174"), 63.25-3;

(2) UL 296, Oil Burners (1993) ("UL 296"), 63.15-5;

(3) UL 343, Pumps for Oil-Burning Appliances, Eighth Edition (May 27, 1997) ("UL 343"), 63.15-3; and

(4) UL 1453, Standard for Electric Booster and Commercial Storage Tank Water Heaters, Fourth Edition (Sep. 1, 1995) ("UL 1453"), 63.25-3.

■ 190. Amend § 63.10-1 by revising the introductory text and paragraphs (a), (b) introductory text, and (b)(1) to read as follows:

§ 63.10-1 Test procedures and certification report.

Two copies of the following items must be submitted. Visitors may deliver them to the Commanding Officer, U.S. Coast Guard Marine Safety Center, 1900 Half Street, SW., Suite 1000, Room 525, Washington, DC 20024, or they may be transmitted by mail to Commanding Officer, U.S. Coast Guard Marine Safety Center, JR10-0525, 2100 2nd Street, SW., Washington, DC 20593, in a written or electronic format. Information for submitting the VSP electronically can be found at <http://www.uscg.mil/HQ/MS>.

(a) Detailed instructions for operationally testing each automatic auxiliary boiler, its controls, and safety devices.

(b) A certification report for each automatic auxiliary boiler that:

(1) Meets paragraph CG-510 of ASME CSD-1 (incorporated by reference, see 46 CFR 63.05-1); and

\* \* \* \* \*

■ 191. Revise § 63.15-1(b) to read as follows:

**§ 63.15-1 General.**

\* \* \* \* \*

(b) Controls and safety devices for automatic auxiliary boilers must meet the applicable requirements of ASME CSD-1 (incorporated by reference, see 46 CFR 63.05-1), except Paragraph CG-310.

\* \* \* \* \*

■ 192. Revise § 63.15-3(e) to read as follows:

**§ 63.15-3 Fuel system.**

\* \* \* \* \*

(e) When properly selected for the intended service, fuel pumps meeting the performance and test requirements of UL 343 (incorporated by reference, see 46 CFR 63.05-1) meet the requirements of this section.

■ 193. Revise § 63.15-5(c) to read as follows:

**§ 63.15-5 Strainers.**

\* \* \* \* \*

(c) The strainer must meet the requirements for strainers found in UL 296 (incorporated by reference, see 46 CFR 63.05-1) and the requirements for fluid conditioner fittings found in 46 CFR 56.15-5.

■ 194. Revise § 63.20-1 introductory paragraph to read as follows:

**§ 63.20-1 Specific control system requirements.**

In addition to the requirements found in ASME CSD-1 (incorporated by reference; see 46 CFR 63.05-1), the following requirements apply for specific control systems:

\* \* \* \* \*

■ 195. Amend § 63.25-1 introductory paragraph to read as follows:

**§ 63.25-1 Small automatic auxiliary boilers.**

Small automatic auxiliary boilers defined as having heat-input ratings of 400,000 Btu/hr. or less (117 kilowatts or less) must also meet the following requirements.

\* \* \* \* \*

■ 196. Revise § 63.25-3 paragraphs (a) and (j) to read as follows:

**§ 63.25-3 Electric hot water supply boilers.**

(a) Electric hot water supply boilers that have a capacity not greater than 454 liters (120 U.S. gallons), a heat input rate not greater than 200,000 Btu/hr. (58.6 kilowatts), meet the requirements of UL 174 or UL 1453 (both incorporated by reference, see 46 CFR 63.05-1), and are protected by the relief device(s) required in 46 CFR 53.05-2 do not have to meet any other requirements of this section except the periodic testing required by paragraph (j) of this section. Electric hot water supply boilers that meet the requirements of UL 174 may have temperature-pressure relief valves that meet the requirements of ANSI/AGA Z21.22 (incorporated by reference, see 46 CFR 63.05-1) in lieu of 46 CFR subpart 53.05.

\* \* \* \* \*

(j) All electric hot water supply boilers must have their pressure relief devices tested as required by 46 CFR part 52 or part 53, as applicable. Electric hot water supply boilers that meet the requirements of UL 174 or UL 1453 and have heating elements, temperature regulating controls, and temperature limiting controls are satisfactory for installation and service without further installation testing. All electric hot water supply boilers not meeting the requirements of UL 174 or UL 1453 must have their heating elements, temperature regulating controls, and temperature limiting controls tested by the marine inspector at the time of installation.

■ 197. Revise § 63.25-9 to read as follows:

**§ 63.25-9 Incinerators.**

(a) *General.* Incinerators installed on or after March 26, 1998, must meet the requirements of IMO MEPC.76(40) (incorporated by reference; see 46 CFR 63.05-1). Incinerators in compliance with ISO 13617 (incorporated by reference; see 46 CFR 63.05-1), are considered to meet IMO MEPC.76(40). Incinerators in compliance with both ASTM F 1323 (incorporated by reference; see 46 CFR 63.05-1) and Annexes A1-A3 of IMO MEPC.76(40) are considered to meet IMO MEPC.76(40). An application for type approval of shipboard incinerators must be sent to the Commanding Officer (MSC), USCG Marine Safety Center, 1900 Half Street, SW., Suite 1000, Room 525, Washington, DC 20593.

(b) *Testing.* Before type approval is granted, the manufacturer must have tests conducted, or submit evidence that such tests have been conducted by an independent laboratory acceptable to

the Commandant (CG-521). The laboratory must:

(1) Have the equipment and facilities for conducting the inspections and tests required by this section;

(2) Have experienced and qualified personnel to conduct the inspections and tests required by this section;

(3) Have documentary proof of the laboratory's qualifications to perform the inspections and tests required by this section; and

(4) Not be owned or controlled by a manufacturer, supplier, or vendor of shipboard incinerators.

(c) *Prohibited substances.* Shipboard incineration of the following substances is prohibited:

(1) Annex I, II, and III cargo residues of IMO MARPOL 73/78 (incorporated by reference; see 46 CFR 63.05-1) and related contaminated packing materials.

(2) Polychlorinated biphenyls (PCBs).

(3) Garbage, as defined in Annex V of IMO MARPOL 73/78, containing more than traces of heavy metals.

(4) Refined petroleum products containing halogen compounds.

(d) *Operating manual.* Each ship with an incinerator subject to this rule must possess a manufacturer's operating manual, which must specify how to operate the incinerator within the limits described in Annex A1.5 of IMO MEPC.76(40).

(e) *Training.* Each person responsible for operating any incinerator must be trained and be capable of implementing the guidance provided in the manufacturer's operating manual.

(f) *Acceptable methods and standards for testing emissions.* The methods and standards for testing emissions that the laboratory may use in determining emissions-related information described in Annex A1.5 of IMO MEPC.76(40) are:

(1) 40 CFR part 60 Appendix A, Method 1—Sample and velocity traverses for stationary sources;

(2) 40 CFR part 60 Appendix A, Method 3A—Determination of oxygen and carbon dioxide concentrations in emissions from stationary sources (instrumental-analyzer procedure);

(3) 40 CFR part 60 Appendix A, Method 5—Determination of particulate emissions from stationary sources;

(4) 40 CFR part 60 Appendix A, Method 9—Visual determination of the opacity of emissions from stationary sources;

(5) 40 CFR part 60 Appendix A, Method 10—Determination of carbon-monoxide emissions from stationary sources;

(6) ISO 9096 (incorporated by reference; see 46 CFR 63.05-1); and

(7) ISO 10396 (incorporated by reference; see 46 CFR 63.05-1).

**PART 76—FIRE PROTECTION EQUIPMENT**

■ 198. The authority citation for part 76 continues to read as follows:

**Authority:** 46 U.S.C. 3306; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

■ 199. Revise § 76.01–2 to read as follows:

**§ 76.01–2 Incorporation by reference.**

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Coast Guard must publish notice of change in the **Federal Register** and the material must be available to the public. All approved material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030 or go to [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html). The material is also available for inspection at the U.S. Coast Guard, Office of Design and Engineering Standards (CG–521), 2100 Second Street

SW., Washington, DC 20593–0001, and is available from the sources listed below.

(b) *ASTM International (formerly American Society for Testing and Materials) (ASTM)*, 100 Barr Harbor Drive, West Conshohocken, PA 19428–2959. ASTM F 1121–87 (1993), Standard Specification for International Shore Connections for Marine Fire Applications (“ASTM F 1121”)—76.10–10.

(c) National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02269–9101. NFPA 13–1996, Standard for the Installation of Sprinkler Systems (“NFPA 13”)—76.25–1, 76.25–90.

(d) *Underwriters Laboratories Inc. (UL)*, 12 Laboratory Drive, Research Triangle Park, NC 27709–3995. UL 19 Standard for Safety, Lined Fire Hose and Hose Assemblies (2001) (“UL 19”), § 76.10–10.

■ 200. Revise § 76.10–10(n)(2) to read as follows:

**§ 76.10–10 Fire station hydrants, hose and nozzles-T/ALL.**

\* \* \* \* \*

(n) \* \* \*

(2) Each section of firehose must be lined commercial firehose that conforms to UL 19 (incorporated by reference; see

46 CFR 76.01–2). Hose that bears the label of Underwriters’ Laboratories, Inc. as lined firehose is accepted as conforming to this requirement.

■ 201. Revise § 76.25–1 to read as follows:

**§ 76.25–1 Application.**

Where an automatic sprinkling system is installed, the systems must comply with NFPA 13 (incorporated by reference; see 46 CFR 76.01–2).

■ 202. Revise § 76.25–90(b) to read as follows:

**§ 76.25–90 Installations contracted for prior to September 30, 1997.**

\* \* \* \* \*

(b) The details of the system must be in general agreement with NFPA 13 (incorporated by reference, see 46 CFR 76.01–2) insofar as is reasonable and practicable. Existing piping, pumping facilities, sprinkler heads, and operating devices may be retained provided a reasonable coverage of the spaces protected is assured.

■ 203. Amend § 76.50–5 by revising table 76.50–5(c) to read as follows:

**§ 76.50–5 Classification.**

\* \* \* \* \*

(c) \* \* \*

TABLE 76.50–5(c)

Classification		Soda acid and water, liters (gallons)	Foam, liters (gallons)	Carbon dioxide, kilograms (pounds)	Dry chemical, kilograms (pounds)
Type	Size				
A .....	II	9.5 (2.5)	9.5 (2.5)	.....	.....
B .....	I	.....	4.75 (1.25)	1.8 (4)	.....
B .....	II	.....	9.5 (2.5)	6.8 (15)	4.5 (10)
B .....	III	.....	45.5 (12)	15.9 (35)	9.0 (20)
B .....	IV	.....	76 (20)	22.7 (50)	13.6 (30)
B .....	V	.....	151 (40)	45.3 (100)	22.7 (50)
C .....	I	.....	.....	1.8 (4)	1 (2)
C .....	II	.....	.....	6.8 (15)	4.5 (10)

\* \* \* \* \*

**PART 92—CONSTRUCTION AND ARRANGEMENT**

■ 204. The authority citation for part 92 continues to read as follows:

**Authority:** 46 U.S.C. 3306; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

■ 205. Add § 92–01–2 to read as follows:

**§ 92.01–2 Incorporation by reference.**

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition

other than that specified in this section, the Coast Guard must publish notice of change in the **Federal Register** and the material must be available to the public. All approved material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030 or go to [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html). The material is also available for inspection at the U.S. Coast Guard, Office of Design and Engineering Standards (CG–521), 2100 Second Street, SW., Washington, DC 20593–0001, and is available from the sources listed below.

(b) *International Maritime Organization (IMO)*, Publications Section, 4 Albert Embankment, London SE1 7SR, United Kingdom: International Convention for the Safety of Life at Sea (SOLAS), Consolidated Text of the International Convention for the Safety of Life at Sea, 1974, and its Protocol of 1988: Article, Annexes and Certificates. (Incorporating all Amendments in Effect from January 2001) (2001) (“IMO SOLAS 74”), 92.07–1.

■ 206. Revise § 92.07–1(c) to read as follows:

**§ 92.07–1 Application.**

\* \* \* \* \*

(c) SOLAS-certificated vessels complying with method IC, as described

in IMO SOLAS 74 (incorporated by reference; see 46 CFR 92.01–2), regulation II–2/42, may be considered equivalent to the provisions of this subpart.

■ 207. Revise paragraph (d) to read as follows:

**§ 92.15–10 Ventilation for closed spaces.**

\* \* \* \* \*

(d) The ventilation of spaces that are “specially suitable for vehicles” shall be in accordance with §§ 97.80–1, 111.105–39 and 111.105–40 of this chapter, as applicable.

\* \* \* \* \*

**PART 110—GENERAL PROVISIONS**

■ 208. The authority citation for part 110 continues to read as follows:

**Authority:** 33 U.S.C. 1509; 43 U.S.C. 1333; 46 U.S.C. 3306, 3307, 3703; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1; § 110.01–2 also issued under 44 U.S.C. 3507.

■ 209. Revise § 110.10–1 to read as follows:

**§ 110.10–1 Incorporation by reference.**

(a) Certain material is incorporated by reference into this subchapter with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Coast Guard must publish notice of change in the **Federal Register** and the material must be available to the public. The word “should,” when used in material incorporated by reference, is to be construed the same as the words “must” or “shall” for the purposes of this subchapter. All approved material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030 or go to [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html). The material is also available for inspection at the U.S. Coast Guard, Office of Design and Engineering Standards (CG–521), 2100 Second Street, SW., Washington, DC 20593–0001, and is available from the sources listed below.

(b) *American Bureau of Shipping (ABS)*, ABS Plaza, 16855 Northchase Drive, Houston, TX 77060:

(1) Rules for Building and Classing Steel Vessels, Part 4 Vessel Systems and Machinery (2003) (“ABS Steel Vessel Rules”), 110.15–1; 111.01–9; 111.12–3; 111.12–5; 111.12–7; 111.33–11; 111.35–1; 111.70–1; 111.105–31; 111.105–39; 111.105–40; 113.05–7; and

(2) Rules for Building and Classing Mobile Offshore Drilling Units, Part 4 Machinery and Systems (2001) (“ABS MODU Rules”), 111.12–1; 111.12–3; 111.12–5; 111.12–7; 111.33–11; 111.35–1; 111.70–1.

(c) *American National Standards Institute (ANSI)*, 25 West 43rd Street, New York, NY 10036:

(1) ANSI/IEEE C37.12–1991, American National Standard for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis—Specifications Guide (1991) (“ANSI/IEEE C37.12”), 111.54–1; and

(2) ANSI/IEEE C37.27–1987 (IEEE Std 331) Application Guide for Low-Voltage AC Nonintegrally Fused Power Circuitbreakers (Using Separately Mounted Current-Limiting Fuses) (1987) (“ANSI/IEEE C37.27”), 111.54–1;

(d) *American Society of Mechanical Engineers (ASME) International*, Three Park Avenue, New York, NY 10016–5990:

(1) ASME A17.1–2000 Part 2 Electric Elevators (2000) (“ASME A17.1”), 111.91–1; and

(2) [Reserved]

(e) *ASTM International (formerly American Society for Testing and Materials) (ASTM)*, 100 Barr Harbor Drive, West Conshohocken, PA 19428–2959:

(1) ASTM B 117–97, Standard Practice for Operating Salt Spray (Fog) Apparatus (“ASTM B 117”), 110.15–1; and

(2) [Reserved]

(f) *Institute of Electrical and Electronic Engineers (IEEE)*, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854:

(1) IEEE Std C37.04–1999, IEEE Standard Rating Structure for AC High-Voltage Circuit Breakers (1999) (“IEEE C37.04”), 111.54–1;

(2) IEEE Std C37.010–1999 IEEE Application Guide for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis (1999) (“IEEE C37.010”), 111.54–1;

(3) IEEE Std C37.13–1990 IEEE Standard for Low-Voltage AC Power Circuit Breakers Used in Enclosures (Oct. 22, 1990) (“IEEE C37.13”), 111.54–1;

(4) IEEE Std C37.14–2002 IEEE Standard for Low-Voltage DC Power Circuit Breakers Used in Enclosures (Apr. 25, 2003) (“IEEE C37.14”), 111.54–1;

(5) IEEE Std 45–1998 IEEE Recommended Practice for Electric Installations on Shipboard—1998 (Oct. 19, 1998) (“IEEE 45–1998”), 111.30–19; 111.105–3; 111.105–31; 111.105–41;

(6) IEEE Std 45–2002 IEEE Recommended Practice for Electrical

Installations On Shipboard—2002 (Oct. 11, 2002) (“IEEE 45–2002”), 111.05–7; 111.15–2; 111.30–1; 111.30–5; 111.33–3; 111.33–5; 111.40–1; 111.60–1; 111.60–3; 111.60–5; 111.60–11; 111.60–13; 111.60–19; 111.60–21; 111.60–23; 111.75–5; 113.65–5;

(7) IEEE 100, The Authoritative Dictionary of IEEE Standards Terms, Seventh Edition (2000) (“IEEE 100”), 110.15–1;

(8) [Reserved]

(9) IEEE Std 1202–1991, IEEE Standard for Flame Testing of Cables for Use in Cable Tray in Industrial and Commercial Occupancies (May 29, 1991) (“IEEE 1202”), 111.60–6; 111.107–1; and

(10) IEEE Std 1580–2001, IEEE Recommended Practice for Marine Cable for Use on Shipboard and Fixed or Floating Platforms (Dec. 17, 2001) (“IEEE 1580”), 111.60–1; 111.60–2; 111.60–3.

(g) *International Electrotechnical Commission (IEC)*, 3 Rue de Varembe, Geneva, Switzerland:

(1) IEC 68–2–52, Environmental Testing Part 2: Tests—Test Kb: Salt Mist, Cyclic (Sodium Chloride Solution), Second Edition (1996) (“IEC 68–2–52”), 110.15–1;

(2) IEC 60331–11 Tests for electric cables under fire conditions—Circuit integrity—Part 11: Apparatus—Fire alone at a flame temperature of at least 750 °C, First Edition (1999) (“IEC 60331–11”), 113.30–25;

(3) IEC 60331–21 Tests for Electric Cables Under Fire Conditions—Circuit Integrity—Part 21: Procedures and Requirements—Cables of Rated Voltage up to and Including 0.6/1.0kV, First Edition (1999) (“IEC 60331–21”), 113.30–25;

(4) IEC 332–1 Tests on Electric Cables Under Fire Conditions, Part 1: Test on a Single Vertical Insulated Wire or Cable, Third Edition (1993) (“IEC 332–1”), 111.30–19;

(5) IEC 60332–3–22 Tests on Electric Cables Under Fire Conditions—Part 3–22: Test for Vertical Flame Spread of Vertically-Mounted Bunched Wires or Cables—Category A, First Edition (2000) (“IEC 60332–3–22”), 111.60–1; 111.60–2; 111.60–6; 111.107–1;

(6) IEC 60079–0 Electrical apparatus for Explosive Gas Atmospheres—Part 0: General Requirements (Edition 3.1) (2000) (“IEC 60079–0”), 111.105–1; 111.105–3; 111.105–5; 111.105–7; 111.105–17;

(7) IEC 60079–1 Electrical Apparatus for Explosive Gas Atmospheres—Part 1: Flameproof Enclosures “d” including corr.1, Fourth Edition (June 2001) (“IEC 60079–1”), 111.105–1; 111.105–3;

111.105-5; 111.105-7; 111.105-9;  
111.105-17;

(8) IEC 60079-2 Electrical Apparatus for Explosive Gas Atmospheres—Part 2: Pressurized Enclosures “p”, Fourth Edition (2001) (“IEC 60079-2”), 111.105-1; 111.105-3; 111.105-5; 111.105-7; 111.105-17;

(9) IEC 60079-5 Electrical Apparatus for Explosive Gas Atmospheres—Part 5: Powder Filling “q”, Second Edition (1997) (“IEC 60079-5”), 111.105-1; 111.105-3; 111.105-5; 111.105-7; 111.105-15; 111.105-17;

(10) IEC 79-6 Electrical Apparatus for Explosive Gas Atmospheres—Part 6: Oil Immersion “o”, Second Edition (1995) (“IEC 79-6”), 111.105-1; 111.105-3; 111.105-5; 111.105-7; 111.105-15; 111.105-17;

(11) IEC 60079-7 Electrical Apparatus for Explosive Gas Atmospheres—Part 7: Increased Safety “e”, Third Edition (2001) (“IEC 60079-7”), 111.105-1; 111.105-3; 111.105-5; 111.105-7; 111.105-15; 111.105-17;

(12) IEC 60079-11 Electrical Apparatus for Explosive Gas Atmospheres—Part 11: Intrinsic Safety “i”, Fourth Edition (1999) (“IEC 60079-11”), 111.105-1; 111.105-3; 111.105-5; 111.105-7; 111.105-11; 111.105-17;

(13) IEC 60079-15 Electrical Apparatus for Explosive Gas Atmospheres—Part 15: Type of Protection “n”, Second Edition (2001) (“IEC 60079-15”), 111.105-1; 111.105-3; 111.105-5; 111.105-7; 111.105-15; 111.105-17;

(14) IEC 79-18 Electrical Apparatus for Explosive Gas Atmospheres—Part 18: Encapsulation “m”, First Edition (1992) (“IEC 79-18”), 111.105-1; 111.105-3; 111.105-5; 111.105-7; 111.105-15; 111.105-17;

(15) IEC 60092-101 Electrical Installation in Ships, Part 101: Definitions and General Requirements, Edition 4.1 (2002) (“IEC 60092-101”), 110.15-1; 111.81-1;

(16) IEC 92-201 Electrical Installation in Ships, Part 201: System Design-General, Fourth Edition (1994) (“IEC 92-201”), 111.70-3; 111.81-1;

(17) IEC 92-202 Amendment 1 Electrical Installation in Ships, Part 202: System Design-Protection (1996) (“IEC 92-202”), 111.12-7; 111.50-3; 111.53-1; 111.54-1;

(18) IEC 92-301 Amendment 2 Electrical Installation in Ships, Part 301: Equipment-Generators and Motors, (1995) (“IEC 92-301”), 111.12-7; 111.25-5; 111.70-1;

(19) IEC 60092-302 Electrical Installation in Ships, Part 302: Low-Voltage Switchgear and Control Gear Assemblies, Fourth Edition (1997) (“IEC

60092-302”), 111.30-1; 111.30-5; 111.30-19;

(20) IEC 92-303 Electrical Installation in Ships, Part 303: Equipment-Transformers for Power and Lighting, Third Edition (1980) (“IEC 92-303”), 111.20-15;

(21) IEC 92-304 Amendment 1 Electrical Installation in Ships, Part 304: Equipment-Semiconductor Convertors (1995) (“IEC 92-304”), 111.33-3; 111.33-5;

(22) IEC 92-306 Electrical Installation in Ships, Part 306: Equipment-Luminaries and accessories, Third Edition (1980) (“IEC 92-306”), 111.75-20; 111.81-1;

(23) IEC 60092-352 Electrical Installation in Ships—Choice and Installation of Cables for Low-Voltage Power Systems, Second Edition (1997) (“IEC 60092-352”), 111.60-3; 111.60-5; 111.81-1;

(24) IEC 92-353 Electrical Installations in Ships—Part 353: Single and Multicore Non-Radial Field Power Cables with Extruded Solid Insulation for Rated Voltages 1kV and 3kV, Second Edition (1995) (“IEC 92-353”), 111.60-1; 111.60-3; 111.60-5;

(25) IEC 92-401 Electrical Installations in Ships, Part 401: Installation and Test of completed Installation with amendment 1 (1987) and amendment 2 (1997), Third Edition (1980) (“IEC 92-401”), 111.05-9; 111.81-1;

(26) IEC 60092-502 Electrical Installation in Ships, Part 502: Tankers—Special Features (1999) (“IEC 60092-502”), 111.81-1; 111.105-31;

(27) IEC 92-503 Electrical installations in ships, Part 503: Special features: A.C. supply systems with voltages in the range of above 1kV up to and including 11kV, First Edition (1975) (“IEC 92-503”), 111.30-5;

(28) IEC 60529 Degrees of Protection Provided by Enclosures (IP Code), Edition 2.1 (2001) (“IEC 60529”), 110.15-1; 111.01-9; 113.10-7; 113.20-3; 113.25-11; 113.30-25; 113.37-10; 113.40-10; 113.50-5;

(29) IEC 60533 Electronic and Electronic Installations in Ships—Electromagnetic Compatibility, Second Edition (1999) (“IEC 60533”), 113.05-7;

(30) IEC 60947-2 Low-Voltage Switchgear and Controlgear Part 2: Circuit-Breakers, Third Edition (2003) (“IEC 60947-2”), 111.54-1;

(31) IEC 61363-1 Electrical Installations of Ships and Mobile and Fixed Offshore Units—Part 1: Procedures for Calculating Short-Circuit Currents in Three-Phase a.c., First Edition (1998) (“IEC 61363-1”), 111.52-5; and

(32) IEC 62271-100, High-voltage switchgear and controlgear—part 100: High-voltage alternating current circuitbreakers, Edition 1.1 (2003) (“IEC 62271-100”), 111.54-1.

(h) *International Maritime Organization (IMO)*, Publications Section, 4 Albert Embankment, London SE1 7SR, United Kingdom:

(1) International Convention for the Safety of Life at Sea (SOLAS), Consolidated Text of the International Convention for the Safety of Life at Sea, 1974, and its Protocol of 1988: Article, Annexes and Certificates. (Incorporating all Amendments in Effect from January 2001) (2001) (“IMO SOLAS 74”), 111.99-5; 111.105-31; 112.15-1; 113.25-6.

(i) *International Society for Measurement and Control (ISA)*, 67 Alexander Drive, P.O. Box 12277, Research Triangle Park, NC 27709:

(1) RP 12.6, Wiring Practices for Hazardous (Classified) Locations Instrumentation Part I: Intrinsic Safety, 1995 (“ISA RP 12.6”), 111.105-11; and

(2) [Reserved]

(j) *Lloyd’s Register*, 71 Fenchurch Street, London EC3M 4BS, Type Approval System-Test Specification Number 1 (2002), 113.05-7.

(k) *National Electrical Manufacturers Association (NEMA)*, 1300 North 17th Street, Arlington, VA 22209:

(1) NEMA Standards Publication ICS 2-2000, Industrial Control and Systems Controllers, Contactors, and Overload Relays, Rated 600 Volts (2000) (“NEMA ICS 2”), 111.70-3;

(2) NEMA Standards Publication ICS 2.3-1995, Instructions for the Handling, Installation, Operation, and Maintenance of Motor Control Centers Rated not More Than 600 Volts (1995) (“NEMA ICS 2.3”), 111.70-3;

(3) NEMA Standards Publication No. ICS 2.4-2003, NEMA and IEC Devices for Motor Service—a Guide for Understanding the Differences (2003) (“NEMA ICS 2.4”), 111.70-3;

(4) NEMA Standards Publication No. ANSI/NEMA 250-1997, Enclosures for Electrical Equipment (1000 Volts Maximum) (Aug. 30, 2001) (“NEMA 250”), 110.15-1; 111.01-9; 110.15-1; 113.10-7; 113.20-3; 113.25-11; 113.30-25; 113.37-10; 113.40-10; 113.50-5;

(5) NEMA Standards Publication No. WC-3-1992, Rubber Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy, Revision 1, February 1994 (“NEMA WC-3”), 111.60-13; and

(6) NEMA WC-70/ICEA S-95-658-1999 Standard for Non-Shielded Power Rated Cable 2000V or Less for the Distribution of Electrical Energy (1999) (“NEMA WC-70”), 111.60-13.



(l) *National Fire Protection Association (NFPA)*, 1 Batterymarch Park, Quincy, MA 02169:

(1) NEC 2002 (NFPA 70), National Electrical Code Handbook, Ninth Edition (2002) (“NFPA NEC 2002”), 111.05–33; 111.20–15; 111.25–5; 111.50–3; 111.50–7; 111.50–9; 111.53–1; 111.54–1; 111.55–1; 111.59–1; 111.60–7; 111.60–13; 111.60–23; 111.81–1; 111.105–1; 111.105–3; 111.105–5; 111.105–7; 111.105–9; 111.105–15; 111.105–17; 111.107–1;

(2) NFPA 77, Recommended Practice on Static Electricity (2000) (“NFPA 77”), 111.105–27;

(3) NFPA 99, Standard for Health Care Facilities (2005) (“NFPA 99”), 111.105–37; and

(4) NFPA 496, Standard for Purged and Pressurized Enclosures for Electrical Equipment (2003) (“NFPA 496”), 111.105–7.

(m) *Naval Publications and Forms Center (NPFC)*, Department of Defense, Single Stock Point, 700 Robins Avenue, Philadelphia, PA 19111:

(1) MIL–C–24640A, Military Specification Cables, Light Weight, Electric, Low Smoke, for Shipboard Use, General Specification for (1995) Supplement 1 (June 26, 1995) (“NPFC MIL–C–24640A”), 111.60–1; 111.60–3;

(2) MIL–C–24643A, Military Specification Cables and Cords, Electric, Low Smoke, for Shipboard Use, General Specification for (1996) Amendment 2 (Mar. 13, 1996) (“NPFC MIL–C–24643A”), 111.60–1; 111.60–3; and

(3) MIL–W–76D, Military Specification Wire and Cable, Hook-Up, Electrical, Insulated, General Specification for (2003) (Revision of MIL–W–76D–1992) Amendment 1–2003 (Feb. 6, 2003) (“NPFC MIL–W–76D”), 111.60–11.

(n) *Naval Sea Systems Command (NAVSEA)*, Code 55Z, Department of the Navy, Washington, DC 20362:

(1) DDS 300–2, A.C. Fault Current Calculations, 1988 (“NAVSEA DDS 300–2”), 111.52–5; and

(2) MIL–HDBK–299(SH), Military Handbook Cable Comparison Handbook Data Pertaining to Electric Shipboard Cable Notice 1–1991 (Revision of MIL–HDBK–299(SH) (1989)) (Oct. 15, 1991) (“NAVSEA MIL–HDBK–299(SH)”), 111.60–3; and

(3) [Reserved]

(o) *Underwriters Laboratories Inc. (UL)*, 12 Laboratory Drive, Research Triangle Park, NC 27709–3995:

(1) UL 44, Standard for Thermoset-Insulated Wire and Cable, Fifteenth Edition, Mar. 22, 1999 (Revisions through and including May 13, 2002) (“UL 44”), 111.60–11;

(2) UL 50, Standard for Safety Enclosures for Electrical Equipment, Eleventh Edition (Oct. 19, 1995) (“UL 50”), 111.81–1;

(3) UL 62, Standard for Flexible Cord and Fixture Wire, Sixteenth Edition (Oct. 15, 1997) (“UL 62”), 111.60–13;

(4) UL 83, Standard for Thermoplastic-Insulated Wires and Cables, Twelfth Edition (Sep. 29, 1998) (“UL 83”), 111.60–11;

(5) UL 484, Standard for Room Air Conditioners, Seventh Edition, Apr. 27, 1993 (Revisions through and including Sep. 3, 2002) (“UL 484”), 111.87–3;

(6) UL 489, Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures, Ninth Edition, Oct. 31, 1996 (Revisions through and including Mar. 22, 2000) (“UL 489”), 111.01–15; 111.54–1;

(7) UL 514A, Metallic Outlet Boxes, Ninth Edition (Dec. 27, 1996) (“UL 514A”), 111.81–1;

(8) UL 514B, Conduit, Tubing, and Cable Fittings, Fourth Edition (Nov. 3, 1997) (“UL 514B”), 111.81–1;

(9) UL 514C, Standard for Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers, Second Edition (Oct. 31, 1988) (“UL 514C”), 111.81–1;

(10) UL 913, Standard for Intrinsically Safe Apparatus and Associated Apparatus for Use in Class i, ii, and iii, Division 1, Hazardous (Classified) Locations, Sixth Edition, Aug. 8, 2002 (Revisions through and including Dec. 15, 2003) (“UL 913”), 111.105–11;

(11) UL 1042, Standard for Electric Baseboard Heating Equipment (Apr. 11, 1994) (“UL 1042”), 111.87–3;

(12) UL 1072, Standard for Medium-Voltage Power Cables, Third Edition, Dec. 28, 2001 (Revisions through and including Apr. 14, 2003) (“UL 1072”), 111.60–1;

(13) UL 1104, Standard for Marine Navigation Lights, 1998 (“UL 1104”), 111.75–17;

(14) UL 1203, Standard for Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations, Third Edition, Sep. 7, 2000 (Revisions through and including Apr. 30, 2004) (“UL 1203”), 111.105–9;

(15) UL 1309, Marine Shipboard Cables, First Edition (July 14, 1995) (“UL 1309”), 111.60–1; 111.60–3;

(16) UL 1581 (May 6, 2003) (“UL 1581”), 111.30–19; 111.60–2; 111.60–6;

(17) UL 1598, Luminaires, First Edition (Jan. 31, 2000) (“UL 1598”): 111.75–20; and

(18) UL 1598A, Standard for Supplemental Requirements for Luminaires for Installation on Marine Vessels, First Edition (Dec. 4, 2000) (“UL 1598A”), 111.75–20.

■ 210. In § 110.15–1, revise paragraph (a) and, in paragraph (b), the definitions of “Corrosion resistant material or finish”, “Drip-proof”, “Nonsparking fan”, and “Watertight” to read as set out below:

**§ 110.15–1 Definitions.**

\* \* \* \* \*

(a) The electrical and electronic terms are defined in IEEE 100 or IEC 60092–101 (both incorporated by reference; see 46 CFR 110.10–1).

(b) \* \* \*

*Corrosion resistant material or finish* means any material or finish that meets the testing requirements of ASTM B 117 (incorporated by reference; see 46 CFR 110.10–1) or test Kb in IEC 68–2–52 (incorporated by reference, see 46 CFR 110.10–1) for 200 hours and does not show pitting, cracking, or other deterioration more severe than that resulting from a similar test on passivated AISI Type 304 stainless steel.

\* \* \* \* \*

*Drip-proof* means enclosed so that equipment meets at least a NEMA 250 (incorporated by reference; see 46 CFR 110.10–1) Type 1 with dripshield, Type 2, or Type 12; or IEC 60529 (incorporated by reference; see 46 CFR 110.10–1) IP 22 rating.

\* \* \* \* \*

*Nonsparking fan* means nonsparking fan as defined in ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 110.10–1), section 4–8–3/11.

\* \* \* \* \*

*Watertight* means enclosed so that equipment meets at least a NEMA 250 Type 4 or 4X or an IEC 60529 IP 56 rating.

\* \* \* \* \*

**PART 111—GENERAL PROVISIONS**

■ 211. The authority citation for part 111 continues to read as follows:

**Authority:** 46 U.S.C. 3306, 3703; Department of Homeland Security Delegation No. 0170.1.

■ 212. Revise § 111.01–9 to read as follows:

**§ 111.01–9 Degrees of protection.**

(a) Interior electrical equipment exposed to dripping liquids or falling solid particles must be manufactured to at least NEMA 250 or IEC 60529 (both incorporated by reference; see 46 CFR 110.10–1) IP 22 degree of protection as appropriate for the service intended.

(b) Electrical equipment in locations requiring exceptional degrees of protection as defined in 46 CFR 110.15–1 must be enclosed to meet at least the minimum degrees of protection in ABS

Steel Vessel Rules (incorporated by reference; see 46 CFR 110.10-1), section 4-8-3, Table 2, or appropriate NEMA 250 type for the service intended. Each enclosure must be designed so that the total rated temperature of the equipment inside the enclosure is not exceeded.

(c) Central control consoles and similar control enclosures must be manufactured to at least NEMA 250 Type 2 or IEC 60529 IP 22 degree of protection regardless of location.

(d) Equipment for interior locations not requiring exceptional degrees of protection must be manufactured to at least NEMA 250 Type 1 with dripshield or IEC 60529 IP 11 as specified in IEC 60529.

■ 213. Revise § 111.01-15(c) to read as follows:

§ 111.01-15 Temperature ratings.

\* \* \* \* \*

(c) A 45 °C (113 °F) ambient temperature is assumed for cable and all other non-rotating electrical equipment in boiler rooms, in engine rooms, in auxiliary machinery rooms, and on weather decks. For installations using UL 489 (incorporated by reference; see 46 CFR 110.10-1) SA marine type circuit breakers, the ambient temperature for that component is assumed to be 40 °C (104 °F). For installations using Navy type circuit breakers, the ambient temperature for that component is assumed to be 50 °C (122 °F).

\* \* \* \* \*

■ 214. Revise § 111.05-7 to read as follows:

§ 111.05-7 Armored and metallic sheathed cable.

When installed, the metallic armor or sheath must meet the installation requirements of Section 25 of IEEE 45-2002 (incorporated by reference; see 46 CFR 110.10-1).

■ 215. Revise § 111.05-9 to read as follows:

§ 111.05-9 Masts.

Each nonmetallic mast and topmast must have a lightning-ground conductor in accordance with section 10 of IEC 92-401 (incorporated by reference; see 46 CFR 110.10-1).

■ 216. Revise § 111.05-33 to read as follows:

§ 111.05-33 Equipment safety grounding (bonding) conductors.

(a) Each equipment-grounding conductor must be sized in accordance with Section 250.122 of NFPA NEC 2002 (incorporated by reference; see 46 CFR 110.10-1).

(b) Each equipment-grounding conductor (other than a system-grounding conductor) of a cable must be permanently identified as a grounding conductor in accordance with the requirements of Section 250.119 of NFPA NEC 2002.

■ 217. Revise § 111.12-1(a) to read as follows:

§ 111.12-1 Prime movers.

(a) Prime movers must meet section 58.01-5 and 46 CFR subpart 58.10 except that those for mobile offshore drilling units must meet Part 4, Chapter 3, sections 4/3.17 and 4/3.19 of the ABS MODU Rules (incorporated by reference; see 46 CFR 110.10-1). Further requirements for emergency generator prime movers are in 46 CFR subpart 112.50.

\* \* \* \* \*

■ 218. Revise § 111.12-3 to read as follows:

§ 111.12-3 Excitation.

In general, excitation must meet sections 4-8-3/13.2(a), 4-8-5/5.5.1, 4-8-5/5.5.2, and 4-8-5/5.17.6 of the ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 110.10-1), except that those for mobile offshore drilling units must meet Part 4, Chapter 3, sections 4/3.21.1 and 4/3.23.1 of the ABS MODU Rules (incorporated by reference; see 46 CFR 110.10-1). In particular, no static exciter may be used for excitation of an emergency generator unless it is provided with a permanent magnet or a residual-magnetism-type exciter that has the capability of voltage build-up after two months of no operation.

■ 219. Revise § 111.12-5 to read as follows:

§ 111.12-5 Construction and testing of generators.

Each generator must meet the applicable requirements for construction and testing in section 4-8-3 of the ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 110.10-1) except that each one for a mobile offshore drilling unit must meet the requirements in part 4, chapter 3, section 4 of the ABS MODU Rules (incorporated by reference; see 46 CFR 110.10-1).

■ 220. Revise § 111.12-7 to read as follows:

§ 111.12-7 Voltage regulation and parallel operation.

Voltage regulation and parallel operation must meet:

(a) For AC systems: sections 4-2-3/7.5.2, 4-2-4/7.5.2, 4-8-3/3.13.2, and 4-8-3/3.13.3 of the ABS Steel Vessel Rules

(incorporated by reference; see 46 CFR 110.10-1);

(b) For DC systems: section 4-8-3/3.13.3(c) of the ABS Steel Vessel Rules, and IEC 92-202 and IEC 92-301 (both incorporated by reference; see 46 CFR 110.10-1); and

(c) For mobile offshore drilling units: Part 4, Chapter 3, section 4/3.21.2, 4/3.21.3, 4/3.23.2, and 4/3.23.3 of the ABS MODU Rules (incorporated by reference; see 46 CFR 110.10-1).

■ 221. Revise § 111.15-2(b) to read as follows:

§ 111.15-2 Battery construction.

\* \* \* \* \*

(b) Each fully charged lead-acid battery must have a specific gravity that meets section 22 of IEEE 45-2002 (incorporated by reference; see 46 CFR 110.10-1).

\* \* \* \* \*

■ 222. Revise § 111.20-15 to read as follows:

§ 111.20-15 Protection of transformers against overcurrent.

Each transformer must have protection against overcurrent that meets Article 450 of NFPA NEC 2002 or IEC 92-303 (both incorporated by reference; see 46 CFR 110.10-1).

■ 223. Revise § 111.25-5(a) to read as follows:

§ 111.25-5 Marking.

(a) Each motor must have a marking or nameplate that meets either Section 430.7 of NFPA NEC 2002 or clause 16 of IEC 92-301 (both incorporated by reference; see 46 CFR 110.10-1).

\* \* \* \* \*

■ 224. Revise § 111.30-1 to read as follows:

§ 111.30-1 Location and installation.

Each switchboard must meet the location and installation requirements in section 8.2 of IEEE 45-2002 or IEC 60092-302 (both incorporated by reference; see 46 CFR 110.10-1), as applicable.

■ 225. Amend § 111.30-5 by revising paragraphs (a)(1) and (2) to read as follows:

§ 111.30-5 Construction.

(a) \* \* \*

(1) For low voltages, either section 8.3 of IEEE 45-2002 or IEC 60092-302 (both incorporated by reference; see 46 CFR 110.10-1), as appropriate.

(2) For medium voltages, either section 8.4 of IEEE 45-2002 or IEC 92-503 (incorporated by reference; see 46 CFR 110.10-1), as appropriate.

\* \* \* \* \*

■ 226. Amend § 111.30–19 by revising paragraphs (a)(1), (a)(2) and (b)(4) to read as follows:

**§ 111.30–19 Buses and wiring.**

(a) \* \* \*

(1) Section 7.10 of IEEE 45–1998 (incorporated by reference; see 46 CFR 110.10–1); or

(2) IEC 60092–302 (clause 7) (incorporated by reference; see 46 CFR 110.10–1).

\* \* \* \* \*

(b) \* \* \*

(4) Flame-retardant meeting test VW–1 of UL 1581 or IEC 332–1 (both incorporated by reference; see 46 CFR 110.10–1); and

\* \* \* \* \*

■ 227. Amend § 111.33–3 by revising paragraphs (a)(1) and (2) to read as follows:

**§ 111.33–3 Nameplate data.**

(a) \* \* \*

(1) Section 10.20.12 of IEEE 45–2002 (incorporated by reference; see 46 CFR 110.10–1); or

(2) Clause 8 of IEC 92–304 (incorporated by reference; see 46 CFR 110.10–1).

\* \* \* \* \*

■ 228. Amend § 111.33–5 by revising paragraphs (a) and (b) to read as follows:

**§ 111.33–5 Installations.**

\* \* \* \* \*

(a) Sections 10.20.2, 10.20.7, and 10.20.8 of IEEE 45–2002 (incorporated by reference; see 46 CFR 110.10–1); or

(b) IEC 92–304 (incorporated by reference; see 46 CFR 110.10–1).

■ 229. Revise § 111.33–11 to read as follows:

**§ 111.33–11 Propulsion systems.**

Each power semiconductor rectifier system in a propulsion system must meet sections 4–8–5/5.17.9 and 4–8–5/5.17.10 of ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 110.10–1), except that each one for mobile offshore drilling units must meet the requirements in Part 4, Chapter 3, section 4/3.5.3 of ABS MODU Rules (incorporated by reference; see 46 CFR 110.10–1).

■ 230. Revise § 111.35–1 to read as follows:

**§ 111.35–1 Electrical propulsion installations.**

Each electric propulsion installation must meet sections 4–8–5/5.5, 4–8–5/5.11, 4–8–5/5.13, 4–8–5/5.17.8(e), 4–8–5/5.17.9, and 4–8–5/5.17.10 of ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 110.10–1), except

that each one for mobile offshore drilling units must meet the requirements in part 4, chapter 3, section 4/3.5.3 of ABS MODU Rules (incorporated by reference; see 46 CFR 110.10–1).

■ 231. Revise § 111.40–1 to read as follows:

**§ 111.40–1 Panelboard standard.**

Each panelboard must meet section 17.1 of IEEE 45–2002 (incorporated by reference; see 46 CFR 110.10–1).

■ 232. Amend § 111.50–3 by revising paragraphs (c), (e), and (g)(2) to read as follows:

**§ 111.50–3 Protection of conductors.**

\* \* \* \* \*

(c) *Fuses and circuitbreakers.* If the allowable current-carrying capacity of the conductor does not correspond to a standard rating for fuses or circuitbreakers that meets Section 240.6 of NFPA NEC 2002 or IEC 92–202 (both incorporated by reference; see 46 CFR 110.10–1), then the next larger such rating is acceptable, except that:

(1) This rating must not be larger than 150 percent of the current-carrying capacity of the conductor; and

(2) The effect of temperature on the operation of fuses and thermally controlled circuitbreakers must be taken into consideration.

\* \* \* \* \*

(e) *Thermal devices.* No thermal cutout, thermal relay, or other device not designed to open a short circuit may be used for protection of a conductor against overcurrent due to a short circuit or ground, except in a motor circuit as described in Article 430 of NFPA NEC 2002 or in IEC 92–202.

\* \* \* \* \*

(g) \* \* \*

(2) For motor-running protection described in Article 430 of NFPA NEC 2002 or in IEC 92–202.

■ 233. Revise § 111.50–7(a) to read as follows:

**§ 111.50–7 Enclosures.**

(a) Each enclosure of an overcurrent protective device must meet Sections 240–30 and 240–33 of NFPA NEC 2002 (incorporated by reference; see 46 CFR 110.10–1).

\* \* \* \* \*

■ 234. Revise § 111.50–9 to read as follows:

**§ 111.50–9 Disconnecting and guarding.**

Disconnecting and guarding of overcurrent protective devices must meet Part IV of Article 240 of NFPA NEC 2002 (incorporated by reference; see 46 CFR 110.10–1).

■ 235. Revise § 111.52–5(b) and (c) to read as follows:

**§ 111.52–5 Systems 1,500 kilowatts or above.**

\* \* \* \* \*

(b) Estimated calculations using NAVSEA DDS 300–2 (incorporated by reference; see 46 CFR 110.10–1).

(c) Estimated calculations using IEC 61363–1 (incorporated by reference; see 46 CFR 110.10–1).

\* \* \* \* \*

■ 236. Revise § 111.53–1(a)(1) to read as follows:

**§ 111.53–1 General.**

(a) \* \* \*

(1) Meet the general provisions of Article 240 of NFPA NEC 2002 or IEC 92–202 (both incorporated by reference; see 46 CFR 110.10–1) as appropriate.

\* \* \* \* \*

■ 237. Revise § 111.54–1, paragraphs (a)(1), (b), and (c) to read as follows:

**§ 111.54–1 Circuitbreakers.**

(a) \* \* \*

(1) Meet the general provision of Article 240 of NFPA NEC 2002 or IEC 92–202 (both incorporated by reference; see 46 CFR 110.10–1) as appropriate;

\* \* \* \* \*

(b) No molded-case circuitbreaker may be used in any circuit having a nominal voltage of more than 600 volts (1,000 volts for a circuit containing a circuitbreaker manufactured to the standards of the IEC). Each molded-case circuitbreaker must meet section 9 and marine supplement SA of UL 489 (incorporated by reference; see 46 CFR 110.10–1) or part 2 of IEC 60947–2 (incorporated by reference; see § 110.10–1), except as noted in paragraph (e) of this section.

(c) Each circuitbreaker, other than a molded-case one, that is for use in any of the following systems must meet the following requirements:

(1) An alternating-current system having a nominal voltage of 600 volts or less (1,000 volts for such a system with circuitbreakers manufactured to the standards of the IEC) must meet:

(i) IEEE C37.13 (incorporated by reference; see 46 CFR 110.10–1);

(ii) ANSI/IEEE C37.27 (incorporated by reference; see 46 CFR 110.10–1); or

(iii) IEC 60947–2.

(2) A direct-current system of 3,000 volts or less must meet IEEE C37.14 (incorporated by reference; see 46 CFR 110.10–1) or IEC 60947–2.

(3) An alternating-current system having a nominal voltage greater than 600 volts (or greater than 1,000 volts for IEC standard circuitbreakers) must meet:

(i) IEEE C37.04, IEEE C37.010, and ANSI/IEEE C37.12 (all three standards incorporated by reference; see 46 CFR 110.10-1); or

(ii) IEC 62271-100 (incorporated by reference; see 46 CFR 110.10-1).

\* \* \* \* \*

■ 238. Revise § 111.55-1(a) to read as follows:

§ 111.55-1 General.

(a) Each switch must meet Article 404 of NFPA NEC 2002 (incorporated by reference; see 46 CFR 110.10-1).

\* \* \* \* \*

■ 239. Revise § 111.59-1 to read as follows:

§ 111.59-1 General.

Each busway must meet Article 368 of NFPA NEC 2002 (incorporated by reference; see 46 CFR 110.10-1).

■ 240. Revise § 111.60-1 to read as follows:

§ 111.60-1 Construction and testing of cable.

(a) Each marine shipboard cable must meet all the requirements for construction and identification of either IEEE 1580, UL 1309, IEC 92-353, or NPFC MIL-C-24640A or NPFC MIL-C-24643A (all five standards incorporated by reference; see 46 CFR 110.10-1), including the respective flammability tests contained therein, and must be of a copper-stranded type.

(b) Each cable constructed to IEC 92-353 must meet the flammability requirements of Category A of IEC 60332-3-22 (incorporated by reference; see 46 CFR 110.10-1).

(c) Medium-voltage electric cable must meet the requirements of IEEE 1580 and UL 1072 (incorporated by reference; see 46 CFR 110.10-1), where applicable, for cables rated above 5,000 volts.

(d) Electrical cable that has a polyvinyl-chloride insulation with a nylon jacket (Type T/N) must meet either UL 1309, IEEE 1580, or section 8 of IEEE 45-2002 (incorporated by reference; see 46 CFR 110.10-1).

(e) Electrical cable regardless of construction must meet, at a minimum, all of the performance and marking requirements of section 5.13 of IEEE 1580.

■ 241. Revise § 111.60-2 introductory text to read as follows:

§ 111.60-2 Specialty cable for communication and RF applications.

Specialty cable such as certain coaxial cable that cannot pass the flammability test contained in IEEE 1580, test VW-1 of UL 1581, or Category A of IEC 60332-

3-22 (all three standards incorporated by reference; see 46 CFR 110.10-1) because of unique properties of construction, must:

\* \* \* \* \*

■ 242. Revise § 111.60-3 to read as follows:

§ 111.60-3 Cable application.

(a)(1) Cable constructed according to IEEE 1580 must meet the provisions for cable application of section 24 of IEEE 45-2002 (both incorporated by reference; see 46 CFR 110.10-1).

(2) Cable constructed according to IEC 92-353 or UL 1309 (both incorporated by reference; see 46 CFR 110.10-1) must meet section 24 of IEEE 45-2002, except 24.6.1, 24.6.7, and 24.8.

(3) Cable constructed according to IEC 92-353 must be applied in accordance with IEC 60092-352 (incorporated by reference; see 46 CFR 110.10-1), Table 1, for ampacity values.

(b)(1) Cable constructed according to IEEE 1580 must be applied in accordance with Table 25, Note 6, of IEEE 45-2002.

(2) Cable constructed according to IEC 92-353 must be derated according to IEC 60092-352, clause 8.

(3) Cable constructed according to NPFC MIL-C-24640A or NPFC MIL-C-24643A must be derated according to NAVSEA MIL-HDBK-299 (SH) (all three standards incorporated by reference; see 46 CFR 110.10-1).

(c) Cable for special applications defined in section 24 of IEEE 45-2002 must meet the provisions of that section.

■ 243. In § 111.60-5, paragraphs (a)(1), (a)(2), (b), and (c) are revised to read as follows:

§ 111.60-5 Cable installation.

(a) \* \* \*

(1) Sections 25, except 25.11, of IEEE 45-2002 (incorporated by reference; see 46 CFR 110.10-1); or

(2) Cables manufactured to IEC 92-353 must be installed in accordance with IEC 60092-352 (both incorporated by reference; see 46 CFR 110.10-1), including clause 8.

(b) Each cable installation made in accordance with clause 8 of IEC 60092-352 must utilize the conductor ampacity values of Table I of IEC 60092-352.

(c) No cable may be located in any tank unless—

(1) The purpose of the cable is to supply equipment or instruments especially designed for and compatible with service in the tank and whose function requires the installation of the cable in the tank;

(2) The cable is either compatible with the liquid or gas in the tank or protected by an enclosure; and

(3) Neither braided cable armor nor cable metallic sheath is used as the grounding conductor.

\* \* \* \* \*

■ 244. Revise § 111.60-6(a) to read as follows:

§ 111.60-6 Fiber optic cable.

\* \* \* \* \*

(a) Be constructed to pass the flammability test contained in IEEE 1202, test VW-1 of UL 1581, or Category A of IEC 60332-3-22 (all three standards incorporated by reference; see 46 CFR 110.10-1); or

\* \* \* \* \*

§ 111.60-7 [Amended]

■ 245. In Table 111.60-7, remove the words “National Electrical Code” and add, in their place, the words “NFPA NEC 2002 (incorporated by reference; see 46 CFR 110.10-1)”.

■ 246. Revise § 111.60-11(c) to read as follows:

§ 111.60-11 Wire.

\* \* \* \* \*

(c) Wire, other than in switchboards, must meet the requirements in sections 24.6.7 and 24.8 of IEEE 45-2002, NPFC MIL-W-76D, UL 44, UL 83 (all four standards incorporated by reference; see 46 CFR 110.10-1), or equivalent standard.

\* \* \* \* \*

■ 247. Revise § 111.60-13, paragraphs (a), (b), and (c), to read as follows:

§ 111.60-13 Flexible electric cord and cables.

(a) Construction and testing. Each flexible cord and cable must meet the requirements in section 24.6.1 of IEEE 45-2002, Article 400 of NFPA NEC 2002, NEMA WC-3, NEMA WC-70, or UL 62 (all five standards incorporated by reference; see 46 CFR 110.10-1).

(b) Application. No flexible cord may be used except:

(1) As allowed under Sections 400-7 and 400-8 of NFPA NEC 2002; and

(2) In accordance with Table 400-4 in NFPA NEC 2002.

(c) Allowable current-carrying capacity. No flexible cord may carry more current than allowed under Table 400-5 in NFPA NEC 2002, NEMA WC-3, or NEMA WC-70.

\* \* \* \* \*

■ 248. Revise § 111.60-19(b) to read as follows:

§ 111.60-19 Cable splices.

\* \* \* \* \*

(b) Each cable splice must be made in accordance with section 25.11 of IEEE 45-2002 (incorporated by reference; see 46 CFR 110.10-1).

■ 249. Revise § 111.60–21 to read as follows:

**§ 111.60–21 Cable insulation tests.**

All cable for electric power and lighting and associated equipment must be checked for proper insulation resistance to ground and between conductors. The insulation resistance must not be less than that in section 34.2.1 of IEEE 45–2002 (incorporated by reference; see 46 CFR 110.10–1).

■ 250. Revise § 111.60–23(b), (d), and (f) to read as follows:

**§ 111.60–23 Metal-clad (Type MC) cable.**

\* \* \* \* \*

(b) The cable must have a corrugated gas-tight, vapor-tight, and watertight sheath of aluminum or other suitable metal that is close-fitting around the conductors and fillers and that has an overall jacket of an impervious PVC or thermoset material.

\* \* \* \* \*

(d) The cable must be installed in accordance with Article 326 of NFPA NEC 2002 (incorporated by reference; see 46 CFR 110.10–1). The ampacity values found in table 25 of IEEE 45–2002 (incorporated by reference; see 46 CFR 110.10–1) may not be used.

\* \* \* \* \*

(f) Equipment grounding conductors in the cable must be sized in accordance with Section 250.122 of NFPA NEC 2002. System grounding conductors must be of a cross-sectional area not less than that of the normal current carrying conductors of the cable. The metal sheath must be grounded but must not be used as a required grounding conductor.

\* \* \* \* \*

■ 251. Revise § 111.70–1(a) introductory text to read as follows:

**§ 111.70–1 General.**

(a) Each motor circuit, controller, and protection must meet the requirements of ABS Steel Vessel Rules, sections 4–8–2/9.17, 4–8–3/5.7.3, 4–8–4/9.5, and 4–8–3/5; ABS MODU Rules, Part 4, Chapter 3, sections 4/7.11 and 4/7.17; or IEC 92–301 (all three standards incorporated by reference; see 46 CFR 110.10–1), as appropriate, except for the following circuits:

\* \* \* \* \*

■ 252. Revise § 111.70–3 section heading and paragraph (a) to read as follows:

**§ 111.70–3 Motor controllers and motor-control centers.**

(a) *General.* The enclosure for each motor controller or motor-control center must meet either NEMA ICS 2 and

NEMA ICS 2.3, or Table 5 of IEC 92–201 (all three standards incorporated by reference; see 46 CFR 110.10–1), as appropriate, for the location where it is installed. In addition, each such enclosure in a hazardous location must meet subpart 111.105 of this part. NEMA ICS 2.4 (incorporated by reference; see 46 CFR 110.10–1) provides guidance on the differences between devices meeting NEMA and those meeting IEC for motor service.

\* \* \* \* \*

■ 253. Revise § 111.75–5(b) to read as follows:

**§ 111.75–5 Lighting branch circuits.**

\* \* \* \* \*

(b) *Connected Load.* The connected loads on a lighting branch circuit must not be more than 80 percent of the rating of the overcurrent protective device, computed on the basis of the fixture ratings and in accordance with IEEE 45–2002 (incorporated by reference; see 46 CFR 110.10–1), section 5.4.2.

\* \* \* \* \*

■ 254. Revise § 111.75–17(d)(2) to read as follows:

**§ 111.75–17 Navigation lights.**

\* \* \* \* \*

(d) \* \* \*

(2) Be certified by an independent laboratory to the requirements of UL 1104 (incorporated by reference; see 46 CFR 110.10–1) or an equivalent standard under 46 CFR 110.20–1. Portable battery powered lights need meet only the requirements of the standard applicable to those lights.

\* \* \* \* \*

■ 255. Revise § 111.75–20(a) and (e) to read as follows:

**§ 111.75–20 Lighting fixtures.**

(a) The construction of each lighting fixture for a non-hazardous location must meet UL 1598A or IEC 92–306 (both incorporated by reference; see 46 CFR 110.10–1).

\* \* \* \* \*

(e) Nonemergency and decorative interior-lighting fixtures in environmentally protected, nonhazardous locations need meet only the applicable UL type-fixture standards in UL 1598 (incorporated by reference; see 46 CFR 110.10–1) and UL 1598A marine supplement or the standards in IEC 92–306. These fixtures must have vibration clamps on fluorescent tubes longer than 102 cm (40 inches), secure mounting of glassware, and rigid mounting.

■ 256. Revise § 111.81–1(d) to read as follows:

**§ 111.81–1 Outlet boxes and junction boxes; general.**

\* \* \* \* \*

(d) As appropriate, each outlet-box or junction-box installation must meet the following standards, all of which are incorporated by reference (see 46 CFR 110.10–1): Article 314 of NFPA NEC 2002; UL 50; UL 514A, UL 514B, and UL 514C; IEC 60092–101; IEC 92–201; IEC 92–306; IEC 60092–352; IEC 92–401; and IEC 60092–502.

\* \* \* \* \*

■ 257. Revise § 111.87–3(a) to read as follows:

**§ 111.87–3 General requirements.**

(a) Each electric heater must meet applicable UL 484 or UL 1042 construction standards (both incorporated by reference; see 46 CFR 110.10–1) or equivalent standards under § 110.20–1 of this chapter.

\* \* \* \* \*

■ 258. Revise § 111.91–1 to read as follows:

**§ 111.91–1 Power, control, and interlock circuits.**

Each electric power, control, and interlock circuit of an elevator or dumbwaiter must meet ASME A17.1 (incorporated by reference; see 46 CFR 110.10–1).

■ 259. Revise § 111.95–5 to read as follows:

**§ 111.99–5 General.**

Fire door release systems, if installed, must meet regulation II–2/30.4.3 of IMO SOLAS 74 (incorporated by reference; see 46 CFR 110.10–1).

■ 260. Revise § 111.101–1 to read as follows:

**§ 111.101–1 Applicability.**

This subpart applies to each submersible motor-driven bilge pump required on certain vessels under 46 CFR 56.50–55.

■ 261. Revise § 111.105–1 to read as follows:

**§ 111.105–1 Applicability; definition.**

This subpart applies to installations in hazardous locations as defined in NFPA NEC 2002 and in IEC 60079–0 (both incorporated by reference; see 46 CFR 110.10–1). As used in this subpart, “IEC 60079 series” means IEC 60079–0, IEC 60079–1, IEC 60079–2, IEC 60079–5, IEC 79–6, IEC 60079–7, IEC 60079–11, IEC 60079–15, and IEC 79–18 (all incorporated by reference; see 46 CFR 110.10–1).

■ 262. Revise § 111.105–3 to read as follows:

**§ 111.105-3 General requirements.**

All electrical installations in hazardous locations must comply with the general requirements of section 33 of IEEE 45-1998 (incorporated by reference; see 46 CFR 110.10-1), and with either Articles 500 through 505 of NFPA NEC 2002 (incorporated by reference; see 46 CFR 110.10-1) or with the IEC 60079 series (as defined in 46 CFR 111.105-1 and incorporated by reference; see 46 CFR 110.10-1). When installations are made in accordance with NFPA NEC 2002 articles, and when installed fittings are approved for the specific hazardous location and the cable type, marine shipboard cable that complies with 46 CFR subpart 111.60 may be used instead of rigid metal conduit.

■ 263. Revise § 111.105-5 to read as follows:

**§ 111.105-5 System integrity.**

In order to maintain system integrity, each individual electrical installation in a hazardous location must comply specifically with Articles 500-505 of NFPA NEC 2002 (incorporated by reference; see 46 CFR 110.10-1), but not in combination in a manner that will compromise system integrity or safety. Hazardous location equipment must be approved as suitable for use in the specific hazardous atmosphere in which it is installed. The use of nonapproved equipment is prohibited.

■ 264. Revise § 111.105-7 introductory text and paragraph (b) to read as follows:

**§ 111.105-7 Approved equipment.**

When this subpart or NFPA NEC 2002 (incorporated by reference; see 46 CFR 110.10-1) states that an item of electrical equipment must be approved, or when IEC 60079-0 (incorporated by reference; see 46 CFR 110.10-1) states that an item of electrical equipment must be tested or approved in order to comply with the IEC 60079 series (as defined in § 111.105-1 and incorporated by reference; see 46 CFR 110.10-1), that item must be—

\* \* \* \* \*

(b) Purged and pressurized equipment that meets NFPA 496 (incorporated by reference; see 46 CFR 110.10-1) or IEC 60079-2.

■ 265. Revise § 111.105-9 to read as follows:

**§ 111.105-9 Explosion-proof and flameproof equipment.**

Each item of electrical equipment required by this subpart to be explosion-proof under the classification system of NFPA NEC 2002 (incorporated by reference; see 46 CFR 110.10-1) must be approved as meeting UL 1203 (incorporated by reference; see 46 CFR 110.10-1). Each item of electrical equipment required by this subpart to be flameproof must be approved as meeting IEC 60079-1 (incorporated by reference; see 46 CFR 110.10-1).

■ 266. Revise § 111.105-11(a) and (d) to read as follows:

**§ 111.105-11 Intrinsically safe systems.**

(a) Each system required by this subpart to be intrinsically safe must use approved components meeting UL 913 or IEC 60079-11 (both incorporated by reference; see 46 CFR 110.10-1).

\* \* \* \* \*

(d) Each intrinsically safe system must meet ISA RP 12.6 (incorporated by reference, see 46 CFR 110.10-1), except Appendix A.1.

■ 267. Revise § 111.105-15 to read as follows:

**§ 111.105-15 Additional methods of protection.**

Each item of electrical equipment that is—

(a) A powder-filled apparatus must meet IEC 60079-5 (incorporated by reference; see 46 CFR 110.10-1);

(b) An oil-immersed apparatus must meet either IEC 79-6 (incorporated by reference; see 46 CFR 110.10-1) or Article 500.7(I) of NFPA NEC 2002 (incorporated by reference; see 46 CFR 110.10-1);

(c) Type of protection “e” must meet IEC 60079-7 (incorporated by reference; see 46 CFR 110.10-1);

(d) Type of protection “n” must meet IEC 60079-15 (incorporated by reference; see 46 CFR 110.10-1); and

(e) Type of protection “m” must meet IEC 79-18 (incorporated by reference; see 46 CFR 110.10-1).

■ 268. Revise § 111.105-17(b) to read as follows:

**§ 111.105-17 Wiring methods for hazardous locations.**

\* \* \* \* \*

(b) Where conduit is installed, the applicable requirements of either NFPA NEC 2002 (incorporated by reference; see 46 CFR 110.10-1) or the IEC 60079 series (as defined in § 111.105-1 and incorporated by reference; see 46 CFR 110.10-1) must be followed.

\* \* \* \* \*

■ 269. Revise § 111.105-27(b) to read as follows:

**§ 111.105-27 Belt drives.**

\* \* \* \* \*

(b) Pulleys, shafts, and driving equipment grounded to meet NFPA 77 (incorporated by reference, see 46 CFR 110.10-1).

■ 270. Revise § 111.105-31 section heading and paragraphs (e) and (n) to read as follows:

**§ 111.105-31 Flammable or combustible cargo with a flashpoint below 60°C (140°F), carriers of liquid-sulphur or inorganic acid.**

\* \* \* \* \*

(e) *Cargo Tanks.* A cargo tank is a Class I, Division 1 (IEC Zone 0) location that has additional electrical equipment restrictions outlined in section 33 of IEEE 45-1998 and IEC 60092-502 (both incorporated by reference; see 46 CFR 110.10-1). Cargo tanks must not contain any electrical equipment except the following:

- (1) Intrinsically safe equipment; and
- (2) Submerged cargo pump motors and their associated cable.

\* \* \* \* \*

(n) *Duct keel ventilation or lighting.*

(1) The lighting and ventilation system for each pipe tunnel must meet ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 110.10-1), section 5-1-7/31.17.

(2) If a fixed gas detection system is installed, it must meet the requirements of IMO SOLAS 74 (incorporated by reference; see 46 CFR 110.10-1) and Part 4, Chapter 3 of ABS Steel Vessel Rules.

■ 271. Revise § 111.105-37 to read as follows:

**§ 111.105-37 Flammable anesthetics.**

Each electric installation where a flammable anesthetic is used or stored must meet NFPA 99 (incorporated by reference, see 46 CFR 110.10-1).

■ 272. Revise § 111.105-39 introductory text and paragraph (a) to read as follows:

**§ 111.105-39 Additional requirements for vessels carrying vehicles with fuel in their tanks.**

Each vessel that carries a vehicle with fuel in its tank must meet the requirements of ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 110.10-1), section 5-10-4/3, except as follows:

(a) If the ventilation requirements of ABS Steel Vessel Rules section 5-10-4/3 are not met, all installed electrical equipment must be suitable for a Class I, Division 1; Zone 0; or Zone 1 hazardous location.

\* \* \* \* \*

■ 273. Revise § 111.105-40(a) and the introductory text in paragraph (c) to read as follows:

**§ 111.105-40 Additional requirements for RO/RO vessels.**

(a) Each RO/RO vessel must meet ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 110.10-1), section 4-8-4/27.3.2.

\* \* \* \* \*

(c) Where the ventilation requirement of ABS Steel Vessel Rules section 4-8-4/27.3.2 is not met—

\* \* \* \* \*

■ 274. Revise § 111.105-41 to read as follows:

**§ 111.105-41 Battery rooms.**

Each electrical installation in a battery room must meet 46 CFR subpart 111.15 and IEEE 45-1998 (incorporated by reference; see 46 CFR 110.10-1).

■ 275. Revise § 111.107-1, paragraph (b) introductory text and paragraph (c)(1) to read as follows:

**§ 111.107-1 Industrial systems.**

\* \* \* \* \*

(b) An industrial system that meets the applicable requirements of NFPA NEC 2002 (incorporated by reference, see 46 CFR 110.10-1) must meet only the following:

\* \* \* \* \*

(c) \* \* \*

(1) Be installed in accordance with 46 CFR 111.60-5 and meet the flammability-test requirements of either IEEE 1202 or Category A of IEC 60332-3-22 (both incorporated by reference; see 46 CFR 110.10-1); or

\* \* \* \* \*

**PART 112—EMERGENCY LIGHTING AND POWER SYSTEMS**

■ 276. The authority citation for part 112 continues to read as follows:

**Authority:** 46 U.S.C. 3306, 3703; Department of Homeland Security Delegation No. 0170.1.

■ 277. Revise § 112.15-1(r) to read as follows:

**§ 112.15-1 Temporary emergency loads.**

\* \* \* \* \*

(r) Each general emergency alarm system required by IMO SOLAS 74 (incorporated by reference; see 46 CFR 110.10-1).

**PART 113—COMMUNICATION AND ALARM SYSTEMS AND EQUIPMENT**

■ 278. The authority citation for part 113 continues to read as follows:

**Authority:** 46 U.S.C. 3306, 3703; Department of Homeland Security Delegation No. 0170.1.

■ 279. Revise § 113.05-7(a) and (b) to read as follows:

**§ 113.05-7 Environmental tests.**

\* \* \* \* \*

(a) Section 4-9-7, Table 9, of ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 110.10-1) or the applicable ENV category of Lloyd's Register Type Approval System—Test Specification Number 1 (incorporated by reference; see 46 CFR 110.10-1); and

(b) IEC 60533 (incorporated by reference; see 46 CFR 110.10-1) as appropriate.

■ 280. Revise § 113.10-7 to read as follows:

**§ 113.10-7 Connection boxes.**

Each connection box must be constructed in accordance with Type 4 or 4X of NEMA 250 or IP 56 of IEC 60529 (both incorporated by reference; see 46 CFR 110.10-1) requirements.

■ 281. Revise § 113.20-3 to read as follows:

**§ 113.20-3 Connection boxes.**

Each connection box and each switch enclosure in an automatic sprinkler system must be constructed in accordance with Type 4 or 4X of NEMA 250 or IP 56 of IEC 60529 (both incorporated by reference; see 46 CFR 110.10-1) requirements.

■ 282. Revise § 113.25-6 to read as follows:

**§ 113.25-6 Power supply.**

The emergency power source for the general emergency alarm system must meet the requirements of IMO SOLAS 74 (incorporated by reference; see 46 CFR 110.10-1), Regulation II-1/42 or II-1/43, as applicable.

■ 283. Revise § 113.25-11(a) to read as follows:

**§ 113.25-11 Contact makers.**

\* \* \* \* \*

(a) Have normally open contacts and be constructed in accordance with Type 4 or 4X of NEMA 250 or IP 56 of IEC 60529 (both incorporated by reference; see 46 CFR 110.10-1) requirements;

\* \* \* \* \*

■ 284. Amend § 113.25-12 by revising paragraph (c) and adding paragraph (d) to read as follows:

**§ 113.25-12 Alarm signals.**

\* \* \* \* \*

(c)(1) The minimum sound-pressure levels for the emergency-alarm tone in interior and exterior spaces must be a sound level of not less than 80 dB(A) measured at 10 feet on the axis; and

(2) At least 10 dB(A) measured at 10 feet on the axis, above the background noise level when the vessel is underway in moderate weather unless flashing red

lights are used in accordance with 46 CFR 113.25-10(b).

(d) Alarm signals intended for use in sleeping compartments may have a minimum sound level of 75 dB(A) measured 3 feet (1 meter) on axis, and at least 10 dB(A) measured 3 feet (1 meter) on axis, above ambient noise levels with the ship under way in moderate weather.

■ 285. Revise § 113.30-3(b) to read as follows:

**§ 113.30-3 Means of communications.**

\* \* \* \* \*

(b) The means of communication and calling must be a reliable means of voice communication and must be independent of the vessel's electrical system.

■ 286. Revise § 113.30-20(c) to read as follows:

**§ 113.30-20 General requirements.**

\* \* \* \* \*

(c) No jack-box or headset may be on a communication system that includes any station required by this subpart, except for a station installed to meet 46 CFR 113.30-5(h) or 46 CFR 113.30-25(f).

■ 287. Revise § 113.30-25 to read as follows:

**§ 113.30-25 Detailed requirements.**

(a) Multiple stations must be able to communicate at the same time.

(b) The loss of one component of the system must not disable the rest of the system.

(c) The system must be able to operate under full load for the same period of operation as required for the emergency generator. See 46 CFR 112.05-5, Table 112.05-5(a).

(d) Each voice-communication station device in the weather must be in a proper enclosure as required in 46 CFR 111.01-9. The audible-signal device must be outside the station enclosure.

(e) Each station in a navigating bridge or a machinery space must be in an enclosure meeting at least Type 2 of NEMA 250 or IP 22 of IEC 60529 (both incorporated by reference; see 46 CFR 110.10-1).

(f) In a noisy location, such as an engine room, there must be a booth or other equipment to permit reliable voice communication while the vessel is operating.

(g) In a space throughout which the voice communication station audible-signal device cannot be heard, there must be another audible-signal device or a visual-device, such as a light, either of which is energized from the final emergency bus.

(h) If two or more voice communication stations are near each other, there must be a means that indicates the station called.

(i) Each connection box must meet at least Type 4 or 4X of NEMA 250 or IP 56 of IEC 60529.

(j) Voice communication cables must run as close to the fore-and-aft centerline of the vessel as practicable.

(l) No cable for voice communication may run through any space at high risk of fire such as machinery rooms and galleys, unless it is technically impracticable to route it otherwise or it must serve circuits within those spaces.

(2) Each cable running through any space at high risk of fire must meet IEC 60331-11 and IEC 60331-21 (both incorporated by reference; see 46 CFR 110.10-1).

(k) If the communications system uses a sound-powered telephone, the following requirements also apply:

(1) Each station except one regulated by paragraph (d) of this section must include a permanently wired handset with a push-to-talk button and a hanger for the handset.

(2) The hanger must be constructed so that it holds the handset away from the bulkhead and so that the motion of the vessel will not dislodge the handset.

(3) Each talking circuit must be electrically independent of each calling circuit.

(4) No short circuit, open circuit, or ground on either side of a calling circuit may affect a talking circuit.

(5) Each circuit must be insulated from ground.

■ 288. Revise § 113.37-10(b) to read as follows:

§ 113.37-10 Detailed requirements.

\* \* \* \* \*

(b) Each electric component or its enclosure must meet Type 4 or 4X of NEMA 250 or IP 56 of IEC 60529 (both incorporated by reference; see 46 CFR 110.10-1) requirements.

■ 289. Revise § 113.40-10(b) to read as follows:

§ 113.40-10 Detailed requirements.

\* \* \* \* \*

(b) Each electric component or its enclosure must meet Type 4 or 4X of NEMA 250 or IP 56 of IEC 60529 (both incorporated by reference; see 46 CFR 110.10-1) requirements.

■ 290. Revise § 113.50-5(g) to read as follows:

§ 113.50-5 General requirements.

\* \* \* \* \*

(g) Each electrical subsystem in a weather location must be watertight or in a watertight enclosure and must meet

Type 4 or 4X of NEMA 250 or IP 56 of IEC 60529 (both incorporated by reference; see 46 CFR 110.10-1) requirements.

■ 291. Revise § 113.65-5 to read as follows:

§ 113.65-5 General requirements.

Each whistle operator must meet section 21.5 of IEEE Std 45-2002 (incorporated by reference; see 46 CFR 110.10-1).

PART 162—ENGINEERING EQUIPMENT

■ 292. Revise the authority citation for part 162 to read as follows:

Authority: 33 U.S.C. 1321(j), 1903; 46 U.S.C. 3306, 3703, 4104, 4302; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; E.O. 11735, 38 FR 21243, 3 CFR, 1971-1975 Comp., p. 793; E.O. 12777, 56 FR 54757, 3 CFR, 1991 Comp., p. 351; Department of Homeland Security Delegation No. 0170.1.

■ 293. Revise § 162.017-1 to read as follows:

§ 162.017-1 Incorporation by reference.

(a) Certain material is incorporated by reference into this subchapter with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Coast Guard must publish notice of change in the Federal Register and the material must be available to the public. All approved material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030 or go to [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html). The material is also available for inspection at the U.S. Coast Guard, Office of Design and Engineering Standards (CG-521), 2100 Second Street, SW., Washington, DC 20593-0001, and is available from the sources listed below.

(b) International Organization for Standardization (ISO), Case postal 56, CH-1211 Geneva 20, Switzerland:

- (1) ISO 15364, Ships and Marine Technology—Pressure/Vacuum Valves for Cargo Tanks, First Edition (Sep. 1, 2000) (“ISO 15364”), 162.017-3; and
- (2) [Reserved]

■ 294. Amend § 162.017-3 by adding paragraph (r) to read as follows:

§ 162.017-3 Materials, construction, and workmanship.

\* \* \* \* \*

(r) Pressure-vacuum relief valves constructed in accordance with ISO

15364 (incorporated by reference; see 46 CFR 162.017-1) meet the requirements of this subpart.

PART 170—STABILITY REQUIREMENTS FOR ALL INSPECTED VESSELS

■ 295. The authority citation for part 170 continues to read as follows:

Authority: 43 U.S.C. 1333; 46 U.S.C. 2103, 3306, 3703; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

■ 296. Revise § 170.015 to read as follows:

§ 170.015 Incorporation by reference.

(a) Certain material is incorporated by reference into this subchapter with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Coast Guard must publish notice of change in the Federal Register and the material must be available to the public. All approved material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030 or go to [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html). The material is also available for inspection at the U.S. Coast Guard, Office of Design and Engineering Standards (CG-521), 2100 Second Street, SW., Washington, DC 20593-0001, and is available from the sources listed below.

(b) ASTM International (formerly American Society for Testing and Materials) (ASTM), 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959:

- (1) ASTM F 1196-00, Standard Specification for Sliding Watertight Door Assemblies (2000) (“ASTM F 1196”), 170.270; and

- (2) ASTM F 1197-00, Standard Specification for Sliding Watertight Door Control Systems (2000) (“ASTM F 1197”), 170.270.

(c) Naval Publications and Forms Center (NPFC), Department of Defense, Single Stock Point, 700 Robins Avenue, Philadelphia, PA 19111:

- (1) MIL-P-21929B, Plastic Material, Cellular Polyurethane, Foam in Place, Rigid, 1970 (“NPFC MIL-P-21929B”), 170.245; and

- (2) [Reserved]

(d) International Maritime Organization (IMO), Publications Section, 4 Albert Embankment, London SE1 7SR, United Kingdom:



(1) Resolution A.265 (VIII), Recommendation on a standard method for establishing compliance with the requirements for cross-flooding arrangements in passenger ships ("IMO Resolution A.265 (VIII)"), 170.135; and (2) [Reserved]

■ 297. Revise § 170.135(a) to read as follows:

**§ 170.135 Operating information for a vessel with Type III subdivision.**

(a) In addition to the information required in 46 CFR 170.110, the stability booklet of a passenger vessel with Type III subdivision must contain the information required by Regulation 8(b) of IMO Resolution A.265 (VIII) (incorporated by reference; see 46 CFR 170.015).

\* \* \* \* \*

■ 298. Revise § 170.245(b)(2) to read as follows:

**§ 170.245 Foam flotation material.**

\* \* \* \* \*

(b) \* \* \*

(2) The foam must comply with NPFCL MIL-P-21929B (incorporated by reference; see 46 CFR 170.015), including the requirements for fire resistance.

\* \* \* \* \*

**PART 175—GENERAL PROVISIONS**

■ 299. Revise the authority citation for part 175 to read as follows:

**Authority:** 46 U.S.C. 2103, 3205, 3306, 3307, 3703; Pub. L. 103–206, 107 Stat. 2439; 49 U.S.C. App. 1804; Department of Homeland Security Delegation No. 0170.1;

175.900 also issued under authority of 44 U.S.C. 3507.

■ 300. Amend § 175.400 by revising the introductory text and paragraph (10) of the definition of "corrosion-resistant material or corrosion-resistant" and the definition of "flash point" to read as follows:

**§ 175.400 Definitions of terms used in this subchapter.**

The following terms are used in this subchapter:

\* \* \* \* \*

*Corrosion-resistant material or corrosion-resistant* means made of one of the following materials in a grade suitable for its intended use in a marine environment: \* \* \*

(10) A material, which when tested in accordance with ASTM B 117 (incorporated by reference, see 46 CFR 175.600) for 200 hours, does not show pitting, cracking, or other deterioration.

\* \* \* \* \*

*Flash point* means the temperature at which a liquid gives off a flammable vapor when heated using the Pensky-Martens Closed Cup Tester method in accordance with ASTM D–93 (incorporated by reference, see 46 CFR 175.600).

\* \* \* \* \*

■ 301. Revise § 175.540(c) to read as follows:

**§ 175.540 Equivalents.**

\* \* \* \* \*

(c) The Commandant may approve a novel lifesaving appliance or arrangement as an equivalent if it has performance characteristics at least

equivalent to the appliance or arrangement required under this part, and:

(1) Is evaluated and tested under IMO Resolution A. 520(13) (incorporated by reference, see 46 CFR 175.600); or

(2) Has successfully undergone an evaluation and tests that are substantially equivalent to those recommendations.

\* \* \* \* \*

■ 302. Revise § 175.600 to read as follows:

**§ 175.600 Incorporation by reference.**

(a) Certain material is incorporated by reference into this subchapter with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Coast Guard must publish notice of change in the **Federal Register** and the material must be available to the public. All approved material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030 or go to [http://www.archives.gov/federal-register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal-register/code_of_federal_regulations/ibr_locations.html). The material is also available for inspection at the U.S. Coast Guard, Office of Design and Engineering Standards (CG–521), 2100 Second Street, SW., Washington, DC 20593–0001, and is available from the sources listed below.

(b) The material approved for incorporation by reference in this subchapter and the sections affected are shown in Table 175.600:

TABLE 175.600: SUBCHAPTER T INCORPORATIONS BY REFERENCE

Standards organization and name of standard	Section(s) incorporating the standard
American Boat and Yacht Council (ABYC), 613 Third Street, Suite 10, Annapolis, MD 21403	
A–1–93—Marine Liquefied Petroleum Gas (LPG) Systems ("ABYC A–1")	184.240.
A–3–93—Galley Stoves ("ABYC A–3")	184.200.
A–7–70—Boat Heating Systems ("ABYC A–7")	184.200.
A–16–89—Electric Navigation Lights ("ABYC A–16")	183.130.
A–22–93—Marine Compressed Natural Gas (CNG) Systems ("ABYC A–22")	184.240.
E–8 Alternating Current (AC) Electrical Systems on Boats (July 2001) ("ABYC E–8")	183.130; 183.340.
E–9 Direct Current (DC) Electrical Systems on Boats (May 28, 1990) ("ABYC E–9")	183.130; 183.340.
H–2–89—Ventilation of Boats Using Gasoline ("ABYC H–2")	183.130; 182.460.
H–22–86—DC Electric Bilge Pumps Operating Under 50 Volts ("ABYC H–22")	182.130; 182.500.
H–24–93—Gasoline Fuel Systems ("ABYC H–24")	182.130; 182.440; 182.445; 182.450; 182.455.
H–25–94—Portable Gasoline Fuel Systems for Flammable Liquids ("ABYC H–25")	182.130; 182.458.
H–32–87—Ventilation of Boats Using Diesel Fuel ("ABYC H–32")	182.130; 182.465; 182.470.
H–33–89—Diesel Fuel Systems ("ABYC H–33")	182.130; 182.440; 182.445; 182.450; 182.455.
P–1–93—Installation of Exhaust Systems for Propulsion and Auxiliary Engines ("ABYC P–1").	177.405; 177.410; 182.130; 182.425; 182.430.
P–4–89—Marine Inboard Engines ("ABYC P–4")	182.130; 182.420.
American Bureau of Shipping (ABS), ABS Plaza, 16855 Northchase Drive, Houston, TX 77060	
Guide for High Speed Craft, 1997 ("ABS High Speed Craft")	177.300.
Rules for Building and Classing Aluminum Vessels, 1975 ("ABS Aluminum Vessel Rules")	177.300.
Rules for Building and Classing Reinforced Plastic Vessels, 1978 ("ABS Plastic Vessel Rules").	177.300.
Rules for Building and Classing Steel Vessels, 1995 ("ABS Steel Vessel Rules")	183.360.

TABLE 175.600: SUBCHAPTER T INCORPORATIONS BY REFERENCE—Continued

Standards organization and name of standard	Section(s) incorporating the standard
Rules for Building and Classing Steel Vessels Under 61 Meters (200 feet) in Length, 1983 ("ABS Steel Vessel Rules (< 61 Meters)").	177.300.
Rules for Building and Classing Steel Vessels for Service on Rivers and Intracoastal Waterways, 1995 ("ABS Steel Vessel Rules (Rivers/Intracoastal)").	177.300.
American National Standards Institute (ANSI), 11 West 42nd Street, New York, NY 10036	
A 17.1–1984, including supplements A 17.1a and B–1985—Safety Code for Elevators and Escalators ("ANSI A 17.1").	183.540.
B 31.1–1986—Code for Pressure Piping, Power Piping ("ANSI B 31.1") .....	182.710.
Motor Vehicles Operating on Land Highways ("ANSI Z 26.1") .....	177.1030.
ASTM International (formerly American Society for Testing and Materials) (ASTM), 100 Barr Harbor Drive, West Conshohocken, PA 19428–2959.	
ASTM B 96–93, Standard Specification for Copper–Silicon Alloy Plate, Sheet, Strip, and Rolled Bar for General Purposes and Pressure Vessels ("ASTM B 96").	182.440.
ASTM B 117–97, Standard Practice for Operating Salt Spray (Fog) Apparatus ("ASTM B 117").	175.400.
ASTM B 122/B 122M–95, Standard Specification for Copper-Nickel-Tin Alloy, Copper-Nickel-Zinc Alloy (Nickel Silver), and Copper-Nickel Alloy Plate, Sheet, Strip and Rolled Bar ("ASTM B 122").	182.440.
ASTM B 127–98, Standard Specification for Nickel-Copper Alloy (UNS NO4400) Plate, Sheet, and Strip ("ASTM B 127").	182.440.
ASTM B 152–97a, Standard Specification for Copper Sheet, Strip, Plate, and Rolled Bar ("ASTM B 152").	182.440.
ASTM B 209–96, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate ("ASTM B 209").	182.440.
ASTM D 93–97, Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester ("ASTM D 93").	175.400.
ASTM D 635–97, Standard test Method for Rate of Burning and or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position ("ASTM D 635").	182.440.
ASTM D 2863–95, Standard Method for Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index) ("ASTM D 2863").	182.440.
ASTM E 84–98, Standard Test Method for Surface Burning Characteristics of Building Materials ("ASTM E 84").	177.410.
Institute of Electrical and Electronics Engineers, Inc. (IEEE), IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854	
Standard 45–1977—Recommended Practice for Electrical Installations on Shipboard ("IEEE 45–1977").	183.340.
International Organization for Standardization (ISO), Case postale 56, CH–1211 Geneva 20, Switzerland	
ISO 8846, Small Craft-Electrical Devices-Protection Against Ignition of Surrounding Flammable Gases (Dec. 1990) ("ISO 8846").	182.500.
ISO 8849, Small Craft-Electrically Operated Bilge Pumps (Dec. 15, 1990) ("ISO 8849") .....	182.500.
International Maritime Organization (IMO), International Maritime Organization, Publications Section, 4 Albert Embankment, London SE1 7SR, United Kingdom	
Code of Practice for the Evaluation, Testing and Acceptance of Prototype Novel Life-Saving Appliances and Arrangements-Resolution A.520(13), dated 17 November 1983 ("IMO Resolution A.520(13)").	175.540.
Use and Fitting of Retro-Reflective Materials on Life-Saving Appliances-Resolution A.658(16), dated 20 November 1989 ("IMO Resolution A.658(16)").	185.604.
Fire Test Procedures For Ignitability of Bedding Components, Resolution A.688(17), dated 06 November 1991 ("IMO Resolution A.688(17)").	177.405.
Symbols Related to Life-Saving Appliances and Arrangements, Resolution A.760(18), dated 17 November 1993 ("IMO Resolution A.760(18)").	185.604.
Lloyd's Register of Shipping, 71 Fenchurch Street, London EC3M 4BS	
Rules and Regulations for the Classification of Yachts and Small Craft, as amended through 1983 ("Lloyd's Yachts and Small Craft").	177.300.
National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02269–9101.	
NFPA 10–1994—Portable Fire Extinguishers ("NFPA 10") .....	176.810.
NFPA 17–1994—Dry Chemical Extinguishing Systems ("NFPA 17") .....	181.425.
NFPA 17A–1994—Wet Chemical Extinguishing Systems ("NFPA 17A") .....	181.425.
NFPA 70–1996—National Electrical Code (NEC) ("NFPA 70") .....	183.320; 183.340; 183.372.
NFPA 302–1994—Pleasure and Commercial Motor Craft, Chapter 6 ("NFPA 302") .....	184.200; 184.240.
NFPA 306–1993—Control of Gas Hazards on Vessels ("NFPA 306") .....	176.710.
NFPA 1963–1989—Fire Hose Connections ("NFPA 1963") .....	181.320.

TABLE 175.600: SUBCHAPTER T INCORPORATIONS BY REFERENCE—Continued

Standards organization and name of standard	Section(s) incorporating the standard
Naval Publications and Forms Center, Customer Service Code 1052, 5801 Tabor Ave., Philadelphia, PA 19120 Military Specification MIL-P-21929C (1991)—Plastic Material, Cellular Polyurethane, Foam-in-Place, Rigid (2 and 4 pounds per cubic foot) (“NPFC MIL-P-21929C”). Military Specification MIL-R-21607E(SH) (1990)—Resins, Polyester, Low Pressure Laminating, Fire Retardant (“NPFC MIL-R-21607E(SH)”).	179.240. 177.410.
Society of Automotive Engineers (SAE), 400 Commonwealth Drive, Warrendale, PA 15096-0001 SAE J-1475—Hydraulic Hose Fittings For Marine Applications, 1984 (“SAE J-1475”) ..... SAE J-1928—Devices Providing Backfire Flame Control for Gasoline Engines in Marine Applications, August 1989 (“SAE J-1928”). SAE J-1942—Hose and Hose Assemblies for Marine Applications, 1992 (“SAE J-1942”)	182.720. 182.415. 182.720.
Underwriters Laboratories Inc. (UL), 12 Laboratory Drive, Research Triangle Park, NC 27709 UL 19-1992—Lined Fire Hose and Hose Assemblies (“UL 19”) ..... UL 174-1989, as amended through June 23, 1994—Household Electric Storage Tank Heaters (“UL 174”). UL 217-1993—Single and Multiple Station Smoke Detectors (“UL 217”) ..... UL 486A-1992—Wire Connectors and Soldering Lugs For Use With Copper Conductors (“UL 486A”). UL 489-1995—Molded-Case Circuit Breakers and Circuit Breaker Enclosures (“UL 489”) .. UL 595-1991—Marine Type Electric Lighting Fixtures (“UL 595”) ..... UL 710-1990, as amended through September 16, 1993—Exhaust Hoods For Commercial Cooking Equipment (“UL 710”). UL 1058-1989, as amended through April 19, 1994—Halogenated Agent Extinguishing System Units (“UL 1058”). UL 1102-1992—Non integral Marine Fuel Tanks (“UL 1102”) ..... UL 1110-1988, as amended through May 16, 1994—Marine Combustible Gas Indicators (“UL 1110”). UL 1111-1988—Marine Carburetor Flame Arresters (“UL 1111”) ..... UL 1113, Electrically Operated Pumps for Nonflammable Liquids, Marine, Third Edition (Sep. 4, 1997) (“UL 1113”). UL 1453-1988, as amended through June 7, 1994—Electric Booster and Commercial Storage Tank Water Heaters (“UL 1453”). UL 1570-1995—Fluorescent Lighting Fixtures (“UL 1570”) ..... UL 1571-1995—Incandescent Lighting Fixtures (“UL 1571”) ..... UL 1572-1995—High Intensity Discharge Lighting Fixtures (“UL 1572”) ..... UL 1573-1995—Stage and Studio Lighting Units (“UL 1573”) ..... UL 1574-1995—Track Lighting Systems (“UL 1574”) .....	181.320. 182.320. 181.450. 183.340. 183.380. 183.410. 181.425. 181.410. 182.440. 182.480. 182.415. 182.520. 182.320. 183.410. 183.410. 183.410. 183.410. 183.410.

**PART 176—INSPECTION AND CERTIFICATION**

■ 303. Revise the authority citation for part 176 to read as follows:

**Authority:** 33 U.S.C. 1321(j); 46 U.S.C. 2103, 3205, 3306, 3307; 49 U.S.C. App. 1804; E.O. 11735, 38 FR 21243, 3 CFR, 1971-1975 Comp., p. 743; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

■ 304. Revise § 176.710(a) introductory text to read as follows:

**§ 176.710 Inspection and testing prior to hot work.**

(a) An inspection for flammable or combustible gases must be conducted by a certified marine chemist or other person authorized by the cognizant OCMI in accordance with the provisions of NFPA 306 (incorporated by reference, see 46 CFR 175.600) before alterations, repairs, or other operations involving riveting, welding, burning, or other fire

producing actions may be made aboard a vessel: \* \* \*

\* \* \* \* \*

■ 305. Revise § 176.810(b)(1) to read as follows:

**§ 176.810 Fire protection.**

\* \* \* \* \*

(b) \* \* \*

(1) For portable fire extinguishers, the inspections, maintenance procedures, and hydrostatic pressure tests required by Chapter 4 of NFPA 10 (incorporated by reference, 46 CFR 175.600) with the frequency specified by NFPA 10. In addition, carbon dioxide and Halon portable fire extinguishers must be refilled when the net content weight loss exceeds that specified for fixed systems by Table 176.810(b). The owner or managing operator shall provide satisfactory evidence of the required servicing to the marine inspector. If any of the equipment or records have not been properly maintained, a qualified servicing facility must be required to

perform the required inspections, maintenance procedures, and hydrostatic pressure tests. A tag issued by a qualified servicing organization, and attached to each extinguisher, may be accepted as evidence that the necessary maintenance procedures have been conducted.

\* \* \* \* \*

**PART 177—CONSTRUCTION AND ARRANGEMENT**

■ 306. The authority citation for part 177 continues to read as follows:

**Authority:** 46 U.S.C. 2103, 3306; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

■ 307. Revise § 177.300 to read as follows:

**§ 177.300 Structural design.**

Except as otherwise allowed by this subpart, a vessel must comply with the structural design requirements of one of

the standards listed below for the hull material of the vessel.

(a) Wooden hull vessels: Lloyd's Yachts and Small Craft (incorporated by reference, see 46 CFR 175.600);

(b) Steel hull vessels:

(1) Lloyd's Yachts and Small Craft; or

(2) ABS Steel Vessel Rules (< 61 Meters)(incorporated by reference, see 46 CFR 175.600);

(c) Fiber reinforced plastic vessels:

(1) Lloyd's Yachts and Small Craft;

(2) ABS Plastic Vessel Rules

(incorporated by reference, see 46 CFR 175.600); or

(3) ABS High Speed Craft (incorporated by reference, see 46 CFR 175.600);

(d) Aluminum hull vessels:

(1) Lloyd's Yachts and Small Craft; or

(i) For a vessel of more than 30.5 meters (100 feet) in length: ABS Aluminum Vessel Rules (incorporated by reference, see 46 CFR 175.600); or

(ii) For a vessel of not more than 30.5 meters (100 feet) in length: ABS Steel Vessel Rules (< 61 Meters), with the appropriate conversions from the ABS Aluminum Vessel Rules; or

(2) ABS High Speed Craft;

(e) Steel hull vessels operating in protected waters: ABS Steel Vessel Rules (Rivers/Intracoastal) (incorporated by reference, see 46 CFR 175.600).

■ 308. Revise § 177.405(b) and (g)(2) to read as follows:

§ 177.405 General arrangement and outfitting.

\* \* \* \* \*

(b) *Combustibles insulated from heated surfaces.* Internal combustion engine exhausts, boiler and galley uptakes, and similar sources of ignition must be kept clear of and suitably insulated from combustible material. Dry exhaust systems for internal combustion engines on wooden or fiber reinforced plastic vessels must be installed in accordance with ABYC P-1 (incorporated by reference, see 46 CFR 175.600).

\* \* \* \* \*

(g) \* \* \*

(2) IMO Resolution A.688(17)

(incorporated by reference, see 46 CFR 175.600). Mattresses that are tested to this standard may contain polyurethane foam.

■ 309. Revise § 177.410(a), the introductory text of paragraph (b), and (c)(2) to read as follows:

§ 177.410 Structural fire protection.

(a) *Cooking areas.* Vertical or horizontal surfaces within 910 millimeters (3 feet) of cooking appliances must have an ASTM E-84 (incorporated by reference, see 46 CFR

175.600) flame spread rating of not more than 75. Curtains, draperies, or free hanging fabrics must not be fitted within 910 millimeters (3 feet) of cooking or heating appliances.

(b) *Composite materials.* When the hull, bulkheads, decks, deckhouse, or superstructure of a vessel is partially or completely constructed of a composite material, including fiber reinforced plastic, the resin used must be fire retardant and meet as accepted by the Commandant as meeting NPFC MIL-R-21607E(SH) (incorporated by reference, see 46 CFR 175.600). Resin systems that have not been accepted as meeting NPFC MIL-R-21607E(SH) may be accepted as fire retardant if they have an ASTM E-84 flame spread rating of not more than 100 when tested in laminate form. The laminate submitted for testing the resin system to ASTM E-84 must meet the following requirements: \* \* \*

(c) \* \* \*

(2) *Sources of ignition.* Electrical equipment and switch boards must be protected from fuel or water sources. Fuel lines and hoses must be located as far as practical from heat sources. Internal combustion engine exhausts, boiler and galley uptakes, and similar sources of ignition must be kept clear of and suitably insulated from any woodwork or other combustible matter. Internal combustion engine dry exhaust systems must be installed in accordance with ABYC P-1 (incorporated by reference, see 46 CFR 175.600).

\* \* \* \* \*

■ 310. Revise § 177.1030(b) to read as follows:

§ 177.1030 Operating station visibility.

\* \* \* \* \*

(b) Glass or other glazing material used in windows at the operating station must have a light transmission of not less than 70 percent according to Test 2 of ANSI Z 26.1 (incorporated by reference, see 46 CFR 175.600) and must comply with Test 15 of ANSI Z 26.1 for Class I Optical Deviation.

PART 179—SUBDIVISION, DAMAGE STABILITY, AND WATERTIGHT INTEGRITY

■ 311. The authority citation for part 179 continues to read as follows:

**Authority:** 43 U.S.C. 1333; 46 U.S.C. 2103, 3306, 3703; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

■ 312. Revise § 179.240(b)(1) to read as follows:

§ 179.240 Foam flotation material.

(b) \* \* \*

(1) All foam must comply with NPFC MIL-P-21929C (incorporated by reference, see 46 CFR 175.600). The fire resistance test is not required.

\* \* \* \* \*

PART 181—FIRE PROTECTION EQUIPMENT

■ 313. The authority citation for part 181 continues to read as follows:

**Authority:** 46 U.S.C. 2103, 3306; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

■ 314. Revise § 181.320(b)(1) and (3) to read as follows:

§ 181.320 Fire hoses and nozzles.

\* \* \* \* \*

(b) \* \* \*

(1) Be lined commercial fire hose that conforms to UL 19 (incorporated by reference, see 46 CFR 175.600) or hose that is listed and labeled by an independent laboratory recognized by the Commandant as being equivalent in performance;

\* \* \* \* \*

(3) Have fittings of brass or other suitable corrosion-resistant material that comply with NFPA 1963 (incorporated by reference, see 46 CFR 175.600) or other standard specified by the Commandant.

\* \* \* \* \*

■ 315. Revise § 181.410(g)(1) to read as follows:

§ 181.410 Fixed gas fire extinguishing systems.

\* \* \* \* \*

(g) *Specific requirements for Halon 1301 systems.* (1) A custom engineering fixed gas fire extinguishing system, which uses Halon 1301, must comply with the applicable sections of UL 1058 (incorporated by reference, see 46 CFR 175.600) and the requirements of this paragraph (g).

\* \* \* \* \*

■ 316. Revise § 181.425 to read as follows:

§ 181.425 Galley hood fire extinguishing systems.

(a) A grease extraction hood required by 46 CFR 181.400 must meet UL 710 (incorporated by reference, see 46 CFR 175.600) or other standard specified by the Commandant.

(b) A grease extraction hood must be equipped with a dry or wet chemical fire extinguishing system meeting the applicable sections of NFPA 17 or NFPA 17A (both incorporated by reference, see 46 CFR 175.600), or other standard specified by the Commandant, and must

be listed by an independent laboratory recognized by the Commandant.

■ 317. Revise § 181.450(a)(1) to read as follows:

**§ 181.450 Independent modular smoke detecting units.**

(a) \* \* \*  
 (1) Meet UL 217 (incorporated by reference, see 46 CFR 175.600) and be listed as a “Single Station Smoke detector—Also suitable for use in Recreational Vehicles,” or other standard specified by the Commandant;

**PART 182—MACHINERY INSTALLATION**

■ 318. The authority citation for part 182 continues to read as follows:

**Authority:** 46 U.S.C. 3306; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

■ 319. Revise § 182.130 to read as follows:

**§ 182.130 Alternative standards.**

As an alternative to complying with the provisions of this part, a vessel of not more than 19.8 meters (65 feet) in length, carrying not more than 12 passengers, and propelled by gasoline or diesel internal combustion engines, other than a High Speed Craft, may comply with ABYC H-2, ABYC H-22, ABYC H-24, ABYC H-25, ABYC H-32, ABYC H-33, ABYC P-1, and ABYC P-4 (all eight standards incorporated by reference, see 46 CFR 175.600) as specified in this part.

■ 320. Revise § 182.320(a)(3) to read as follows:

**§ 182.320 Water heaters.**

(a) \* \* \*  
 (3) Is listed under UL 174, UL 1453 (both incorporated by reference; see 46 CFR 175.600) or other standard specified by the Commandant; and

■ 321. Revise § 182.415(c)(1) to read as follows:

**§ 182.415 Carburetors.**

(c) \* \* \*  
 (1) A backfire flame arrester complying with SAE J-1928 or UL 1111 (both incorporated by reference; see 46 CFR 175.600) and marked accordingly. The flame arrester must be suitably secured to the air intake with a flamtight connection.

■ 322. Revise § 182.420(b) to read as follows:

**§ 182.420 Engine cooling.**

(b) An engine water cooling system on a vessel of not more than 19.8 meters (65 feet) in length, carrying not more than 12 passengers, may comply with the requirements of ABYC P-4 (incorporated by reference; see 46 CFR 175.600) instead of the requirements of paragraph (a) of this section.

■ 323. Revise § 182.425(c) to read as follows:

**§ 182.425 Engine exhaust cooling.**

(c) Engine exhaust cooling system built in accordance with the requirements of ABYC P-1 (incorporated by reference; see 46 CFR 175.600) will be considered as meeting the requirements of this section.

■ 324. Revise § 182.430(k) to read as follows:

**§ 182.430 Engine exhaust pipe installation.**

(k) Engine exhaust pipe installations built in accordance with the requirements of ABYC P-1 (incorporated by reference; see 46 CFR 175.600), will be considered as meeting the requirements of this section.

■ 325. Revise § 182.440 to read as follows—

**§ 182.440 Independent fuel tanks.**

(a) *Materials and construction.* Independent fuel tanks must be designed and constructed as described in this paragraph (a).

(1) The material used and the minimum thickness allowed must be as indicated in Table 182.440(a)(1), except that other materials that provide equivalent safety may be approved for use under paragraph (a)(3) of this section. Tanks having a capacity of more than 570 liters (150 gallons) must be designed to withstand the maximum head to which they may be subjected in service, but in no case may the thickness be less than that specified in Table 182.440(a)(1).

TABLE 182.440(a)(1)

Material	ASTM specification (all incorporated by reference; see 46 CFR 175.600)	Thickness in millimeters (inches) and [gauge number] <sup>1</sup> vs. tank capacities for:		
		4 to 300 liter (1 to 80 gal) tanks	More than 300 liter (80 gal) and not more than 570 liter (150 gal) tanks	Over 570 liter (150 gal) <sup>2</sup> tanks
Nickel-copper .....	B 127, hot rolled sheet or plate .....	0.94 (0.037) [USSG 20] <sup>3</sup> .	1.27 (0.050) [USSG 18].	2.72 (0.107) [USSG 12].
Copper-nickel <sup>4</sup> .....	B 122, UNS alloy C71500 .....	1.14 (0.045) [AWG 17]	1.45 (0.057) [AWG 15]	3.25 (0.128) [AWG 8].
Copper <sup>4</sup> .....	B 152, UNS alloy C11000 .....	1.45 (0.057) [AWG 15]	2.06 (0.081) [AWG 12]	4.62 (0.182) [AWG 5].
Copper-silicon <sup>4</sup> .....	B 96, alloys C65100 and C65500 .....	1.29 (0.051) [AWG 16]	1.63 (0.064) [AWG 14]	3.66 (0.144) [AWG 7].
Steel or iron <sup>5,6</sup> .....	.....	1.90 (0.0747) [MSG 14].	2.66 (0.1046) [MSG 12].	4.55 (0.1793) [MSG 7].
Aluminum <sup>7</sup> .....	B 209, alloy 5052, 5083, 5086 .....	6.35 (0.250) [USSG 3]	6.35 (0.250) [USSG 3]	6.35 (0.250) [USSG 3].
Fiber reinforced plastic.	.....	As required <sup>8</sup> .....	As required <sup>8</sup> .....	As required <sup>8</sup> .

<sup>1</sup> The gage numbers used in this table may be found in many standard engineering reference books. The letters “USSG” stand for “U.S. Standard Gage,” which was established by the act of March 3, 1892 (15 U.S.C. 206), for sheet and plate iron and steel. The letters “AWG” stand for “American Wire Gage” (or Brown and Sharpe Gage) for nonferrous sheet thicknesses. The letters “MSG” stand for “Manufacturer’s Standard Gage” for sheet steel thickness.

<sup>2</sup> Tanks over 1514 liters (400 gallons) must be designed with a factor of safety of four on the ultimate strength of the material used with a design head of not less than 1220 millimeters (4 feet) of liquid above the top of the tank.

<sup>3</sup> Nickel-copper not less than 0.79 millimeter (0.031 inch) [USSG 22] may be used for tanks up to 114-liter (30-gallon) capacity.

<sup>4</sup> Acceptable only for gasoline service.

<sup>5</sup> Gasoline fuel tanks constructed of iron or steel, which are less than 5 millimeter (0.1875) inch) thick, must be galvanized inside and outside by the hot dip process. Tanks intended for use with diesel oil must not be internally galvanized.

<sup>6</sup> Stainless steel tanks are not included in this category.

<sup>7</sup> Anodic to most common metals. Avoid dissimilar metal contact with tank body.

<sup>8</sup> The requirements of 46 CFR 182.440(a)(2) apply.

(2) Fiber reinforced plastic may be used for diesel fuel tanks under the following provisions:

(i) The materials must be fire retardant. Flammability of the material must be determined by the standard test methods in ASTM D 635 and ASTM D 2863 (both incorporated by reference; see 46 CFR 175.600), or other standard specified by the Commandant. The results of these tests must show that the average extent of burning is less than 10 millimeters (0.394 inches), the average time of burning is less than 50 seconds, and the limiting oxygen index is greater than 21.

(ii) Tanks must meet UL 1102 (incorporated by reference; see 46 CFR 175.600) or other standard specified by the Commandant. Testing may be accomplished by an independent laboratory or by the fabricator to the satisfaction of the OCMI.

(iii) Tanks must be designed to withstand the maximum heat to which they may be subjected to in service.

(iv) Installation of nozzles, flanges or other fittings for pipe connections to the tanks must be acceptable to the cognizant OCMI.

(v) Baffle plates, if installed, must be of the same material and not less than the minimum thickness of the tank walls. Limber holes at the bottom and air holes at the top of all baffles must be provided. Baffle plates must be installed at the time the tests required by UL 1102, or other standard specified by the Commandant, are conducted.

(3) Materials other than those listed in Table 182.440(a)(1) must be approved by the Commandant. An independent tank using material approved by the Commandant under this paragraph must meet the testing requirements of UL 1102, or other standard specified by the Commandant. Testing may be accomplished by an independent laboratory or by the fabricator to the satisfaction of the OCMI.

(4) Tanks with flanged-up top edges that may trap and hold moisture are prohibited.

(5) Openings for fill pipes, vent pipes, and machinery fuel supply pipes, and openings for fuel level gauges, where used, must be on the topmost surfaces of tanks. Tanks may not have any openings in bottoms, sides, or ends, except for:

(i) An opening fitted with a threaded plug or cap installed for tank cleaning purposes; and

(ii) In a diesel fuel tank, openings for supply piping and tubular gauge glasses.

(6) All tank joints must be welded or brazed. Lap joints may not be used.

(7) Nozzles, flanges, or other fittings for pipe connections to a metal tank must be welded or brazed to the tank. Tank openings in way of pipe connections must be properly reinforced where necessary. Where fuel level gauges are used on a metal tank, the flanges to which gauge fittings are attached must be welded or brazed to the tank. No tubular gauge glasses may be fitted to gasoline fuel tanks. Tubular gauge glasses, if fitted to diesel fuel tanks, must be of heat resistant materials, adequately protected from mechanical damage, and provided at the tank connections with devices that will automatically close in the event of rupture of the gauge or gauge lines.

(8) A metal tank exceeding 760 millimeters (30 inches) in any horizontal dimension must:

(i) Be fitted with vertical baffle plates, which meet subparagraph (a)(9) of this section, at intervals not exceeding 760 millimeters (30 inches) to provide strength and to control the excessive surge of fuel; or

(ii) The owner must submit calculations to the cognizant OCMI demonstrating the structural adequacy of the tank in a fully loaded static condition and in a worst case dynamic (sloshing) condition.

(9) Baffle plates, where required in metal tanks, must be of the same material and not less than the minimum thickness required in the tank walls and must be connected to the tank walls by welding or brazing. Limber holes at the bottom and air holes at the top of all baffles must be provided.

(10) Iron or steel diesel fuel tanks must not be galvanized on the interior. Galvanizing, paint, or other suitable coating must be used to protect the outside of iron and steel diesel fuel tanks and the inside and outside of iron and steel gasoline fuel tanks.

(b) *Location and installation.* Independent fuel tanks must be located and installed as described in this paragraph (b).

(1) Fuel tanks must be located in, or as close as practicable to, machinery spaces.

(2) Fuel tanks and fittings must be so installed as to permit examination, testing, or removal for cleaning with

minimum disturbance to the hull structure.

(3) Fuel tanks must be adequately supported and braced to prevent movement. The supports and braces must be insulated from contact with the tank surfaces with a nonabrasive and nonabsorbent material.

(4) All fuel tanks must be electrically bonded to a common ground.

(c) *Tests.* Independent fuel tanks must be tested as described in this paragraph (c) prior to being used to carry fuel.

(1) Prior to installation, tanks vented to the atmosphere must be hydrostatically tested to, and must withstand, a pressure of 35 kPa (5 psig) or 11/2 times the maximum pressure head to which they may be subjected in service, whichever is greater. A standpipe of 3.5 meters (11.5 feet) in height attached to the tank may be filled with water to accomplish the 35 kPa (5 psig) test. Permanent deformation of the tank will not be cause for rejection unless accompanied by leakage.

(2) After installation of the fuel tank on a vessel, the complete installation must be tested in the presence of a marine inspector, or individual specified by the cognizant OCMI, to a heat not less than that to which the tank may be subjected in service. Fuel may be used as the testing medium.

(3) All tanks not vented to the atmosphere must be constructed and tested in accordance with 46 CFR 182.330.

(d) *Alternative procedures.* A vessel of not more than 19.8 meters (65 feet) in length carrying not more than 12 passengers, with independent gasoline fuel tanks built in accordance with ABYC H-24 (incorporated by reference, see 46 CFR 175.600), or 33 CFR 183, subpart J, or with independent diesel fuel tanks built in accordance with ABYC H-33 (incorporated by reference, see 46 CFR 175.600), will be considered as meeting the requirements of this section. However, tanks must not be fabricated from any material not listed in Table 182.440(a)(1) without approval by the Commandant under paragraph (a)(3) of this section.

■ 326. Revise § 182.445(f) to read as follows:

**§ 182.445 Fill and sounding pipes for fuel tanks.**

\* \* \* \* \*

(f) A vessel of not more than 19.8 meters (65 feet), carrying not more than

12 passengers, with a gasoline fuel system built in accordance with ABYC H-24 (incorporated by reference; see 46 CFR 175.600), or 33 CFR 183, subpart J, or with a diesel fuel system built in accordance with ABYC H-33 (incorporated by reference; see 46 CFR 175.600), will be considered as meeting the requirements of this section.

\* \* \* \* \*

■ 327. Revise § 182.450(f) to read as follows:

**§ 182.450 Vent pipes for fuel tanks.**

\* \* \* \* \*

(f) A vessel of not more than 19.8 meters (65 feet) in length, carrying not more than 12 passengers, with fuel gasoline tank vents built in accordance with ABYC H-24 (incorporated by reference; see 46 CFR 175.600), or 33 CFR 183, subpart J, or with diesel fuel tank vents built in accordance with ABYC H-33 (incorporated by reference; see 46 CFR 175.600), will be considered as meeting the requirements of this section.

\* \* \* \* \*

■ 328. Revise § 182.455(c) to read as follows:

**§ 182.455 Fuel piping.**

\* \* \* \* \*

(c) *Alternative procedures.* A vessel of not more than 19.8 meters (65 feet), carrying no more than 12 passengers, with machinery powered by gasoline and a fuel system built in accordance with ABYC H-24 (incorporated by reference; see 46 CFR 175.600), or 33 CFR 183, subpart J, or with machinery powered by diesel fuel and a fuel system built in accordance with ABYC H-33 (incorporated by reference; see 46 CFR 175.600), will be considered as meeting the requirements of this section.

■ 329. Revise § 182.458(b) to read as follows:

**§ 182.458 Portable fuel systems.**

\* \* \* \* \*

(b) The design, construction, and stowage of portable tanks and related fuel lines and accessories must meet the requirements of ABYC H-25 (incorporated by reference; see 46 CFR 175.600) or other standard specified by the Commandant.

■ 330. Revise § 182.460(m) to read as follows:

**§ 182.460 Ventilation of spaces containing machinery powered by, or fuel tanks for, gasoline.**

\* \* \* \* \*

(m) A vessel of not more than 19.8 meters (65 feet) in length, carrying not

more than 12 passengers, with ventilation installations in accordance with ABYC H-2 (incorporated by reference; see 46 CFR 175.600) or 33 CFR 183, subpart K, "Ventilation," will be considered as meeting the requirements of this section.

■ 331. Revise § 182.465(i) to read as follows:

**§ 182.465 Ventilation of spaces containing diesel machinery.**

\* \* \* \* \*

(i) A vessel of not more than 19.8 meters (65 feet) in length, carrying not more than 12 passengers, with ventilation installations in accordance with ABYC H-32 (incorporated by reference; see 46 CFR 175.600) will be considered as meeting the requirements of this section.

■ 332. Revise § 182.470(c) to read as follows:

**§ 182.470 Ventilation of spaces containing diesel fuel tanks.**

\* \* \* \* \*

(c) A vessel of not more than 19.8 meters (65 feet) in length, carrying not more than 12 passengers, with ventilation installations in accordance with ABYC H-32 (incorporated by reference; see 46 CFR 175.600) will be considered as meeting the requirements of this section.

■ 333. Revise § 182.480(a) to read as follows:

**§ 182.480 Flammable vapor detection systems.**

(a) A flammable vapor detection system required by § 182.410(c) must meet UL 1110 (incorporated by reference; see 46 CFR 175.600) or be approved by an independent laboratory.

\* \* \* \* \*

■ 334. Revise § 182.500(b) to read as follows:

**§ 182.500 General.**

\* \* \* \* \*

(b) A vessel of not more than 19.8 meters (65 feet) in length, carrying not more than 12 passengers, may meet the requirements of ABYC H-22 or the requirements in ISO 8846 and ISO 8849 (all three standards incorporated by reference; see 46 CFR 175.600), instead of those of this subpart, provided that each watertight compartment forward of the collision bulkhead is provided with a means for dewatering.

\* \* \* \* \*

■ 335. Revise § 182.520(e)(1) to read as follows:

**§ 182.520 Bilge pumps.**

\* \* \* \* \*

(e) \* \* \*

(1) The pump is listed by an independent laboratory as meeting the requirements in UL 1113 (incorporated by reference; see 46 CFR 175.600);

\* \* \* \* \*

■ 336. Revise § 182.710(c)(2) to read as follows:

**§ 182.710 Piping for vital systems.**

\* \* \* \* \*

(c) \* \* \*

(2) If subject to a pressure of more than 1,034 kPa (150 psig), be designed, fabricated, and inspected in accordance with the principles of ANSI B 31.1 (incorporated by reference; see 46 CFR 175.600) or other standard specified by the Commandant.

■ 337. In § 182.720, revise the introductory paragraph of paragraph (e) and paragraph (e)(1) to read as follows:

**§ 182.720 Nonmetallic piping materials.**

\* \* \* \* \*

(e) Where flexible nonmetallic hose is permitted for use in piping systems by this section, it must meet SAE J-1942 (incorporated by reference; see 46 CFR 175.600) or be specifically approved by the Commandant. The following restrictions apply:

(1) Flexible nonmetallic hose must be complete with factory-assembled end fittings requiring no further adjustment of the fittings on the hose, or field attachable type fittings may be used. Hose end fittings must comply with SAE J-1475 (incorporated by reference; see 46 CFR 175.600). Field attachable fittings must be installed following the manufacturer's recommended practice. If special equipment is required, such as crimping machines, it must be of the type and design specified by the manufacturer. If field attachable type fittings are used, each hose assembly must be individually hydrostatically tested to twice the maximum operating pressure of the system;

\* \* \* \* \*

**PART 183—ELECTRICAL INSTALLATION**

■ 338. The authority citation for part 183 continues to read as follows:

**Authority:** 46 U.S.C. 2103, 3306; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

■ 339. Add new § 183.230 to read as follows:

**§ 183.230 Temperature ratings.**

Temperature ratings of electrical equipment must meet the requirements of 46 CFR 111.01-15.

■ 340. Revise § 183.320(d) and (e) to read as follows:

§ 183.320 Generators and motors.

\* \* \* \* \*

(d) Each generator must have a nameplate attached to it containing the information required by Article 445 of NFPA 70 (incorporated by reference; see 46 CFR 175.600), and for a generator derated in accordance with paragraph (b)(2) of this section, the derated capacity.

(e) Each motor must have a nameplate attached to it containing the information required by Article 430 of NFPA 70, and for a motor derated in accordance with paragraph (b)(2) of this section, the derated capacity.

\* \* \* \* \*

■ 341. In § 183.340, revise paragraphs (b)(4), (d)(1), (i) introductory text, and (o) to read as follows:

§ 183.340 Cable and wiring requirements.

\* \* \* \* \*

(b) \* \* \*

(4) Be installed with metal supports spaced not more than 610 millimeters (24 inches) apart, and in such a manner as to avoid chafing and other damage. The use of plastic tie wraps must be limited to bundling or retention of multiple cable installations, and not used as a means of support, except that on vessels of not more than 19.8 meters (65 feet) in length, installations in accordance with paragraph 14.h of ABYC E-8 and paragraph 15.h of ABYC E-9 (both incorporated by reference; see 46 CFR 175.600) are acceptable as meeting the requirements of this section;

\* \* \* \* \*

(d) \* \* \*

(1) Meet Section 310-13 of NFPA 70 (incorporated by reference; see 46 CFR 175.600) except that asbestos insulated cable and dry location cables may not be used;

\* \* \* \* \*

(i) Each pressure type wire connector and lug must meet UL 486A (incorporated by reference; see 46 CFR 175.600) or other standard specified by the Commandant. The use of twist-on type wire nuts is permitted under the following conditions:

\* \* \* \* \*

(o) Ampacities of wires must meet Section 310-15 of NFPA 70 or other standard specified by the Commandant. Ampacities of cable must meet table A6 of IEEE 45-1977 (incorporated by

reference; see 46 CFR 175.600) or other standard specified by the Commandant.

\* \* \* \* \*

■ 342. Revise § 183.360(b)(3) to read as follows:

§ 183.360 Semiconductor rectifier systems.

\* \* \* \* \*

(b) \* \* \*

(3) Meet Sections 35.84.2 and 35.84.4 of the ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 175.600) or other standard specified by the Commandant.

■ 343. Revise § 183.372(c) to read as follows:

§ 183.372 Equipment and conductor grounding.

\* \* \* \* \*

(c) Equipment grounding conductors must be sized in accordance with Section 250-96 of NFPA 70 (incorporated by reference; see 46 CFR 175.600), or other standard specified by the Commandant.

\* \* \* \* \*

■ 344. Revise the introductory paragraph of § 183.380(m) to read as follows:

§ 183.380 Overcurrent protection.

\* \* \* \* \*

(m) Each circuit breaker must meet UL 489 (incorporated by reference; see 46 CFR 175.600) or other standard specified by the Commandant, and be of the manually reset type designed for:

\* \* \* \* \*

■ 345. Revise § 183.410(d) to read as follows:

§ 183.410 Lighting fixtures.

\* \* \* \* \*

(d) An exterior lighting fixture in an electrical system operating at more than 50 volts must comply with the requirements of UL 595 (incorporated by reference; see 46 CFR 175.600) or other standard specified by the Commandant. A lighting fixture in an accommodation space, radio room, galley or similar interior space may comply with UL 1570, UL 1571, UL 1572, UL 1573, or UL 1574 (all five standards incorporated by reference; see 46 CFR 175.600) as long as the general marine requirements of UL 595 are satisfied.

■ 346. Revise § 183.540 to read as follows:

§ 183.540 Elevators.

Each elevator on a vessel must meet the requirements of ANSI A 17.1 (incorporated by reference; see 46 CFR 175.600) or other standard specified by the Commandant.

PART 185—OPERATIONS

■ 347. The authority citation for part 185 continues to read as follows:

Authority: 46 U.S.C. 2103, 3306, 6101; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

■ 348. In § 185.604 revise paragraphs (f), (h), and (i) to read as follows:

§ 185.604 Lifesaving equipment markings.

\* \* \* \* \*

(f) The number and identification of the items stowed inside, and their sizes, must be marked in clearly legible letters and numbers on each container for life jackets and immersion suits.

Identification of the items may be in words, or the appropriate symbols in IMO Resolution A.760(18) (incorporated by reference; see 46 CFR 175.600). Letters and numbers must be at least 50 millimeters (2 inches) high. Symbols must be at least 100 mm (4 inches) square.

\* \* \* \* \*

(h) Each life jacket must be marked with Type I retroreflective material approved in 46 CFR 164.018 or other standard specified by the Commandant. The arrangement of the retroreflective material applied after March 11, 1996, must be as specified by IMO Resolution A.658(16) (incorporated by reference; see 46 CFR 175.600).

(i) Each rescue boat and ring life buoy must be marked with Type II retroreflective material approved in accordance with 46 CFR 164.018 or other standard specified by the Commandant. The arrangement of the retroreflective material applied after March 11, 1996, must be as specified by IMO Resolution A.658(16).

Dated: September 22, 2008.

J.G. Lantz,

Acting Assistant Commandant for Marine Safety, Security, and Stewardship, U.S. Coast Guard.

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