

DEPARTMENT OF TRANSPORTATION**Coast Guard****46 CFR Parts 108, 110, 111, 112, 113, and 161****[CGD 94-108]****Electrical Engineering Requirements for Merchant Vessels****AGENCY:** Coast Guard, DOT.**ACTION:** Interim rule with request for comments.

SUMMARY: As part of the President's Regulatory Reinvention Initiative, the Coast Guard is amending its electrical engineering regulations to reduce the regulatory burden on the marine industry, purge obsolete and out-of-date regulations, and eliminate requirements that create an unwarranted differential between domestic rules and international standards. This rulemaking harmonizes, where possible, the electrical engineering regulations with recent amendments to the International Convention for the Safety of Life at Sea, 1974, as amended. Additionally, this rulemaking dramatically revises certain prescriptive electrical equipment design, specification, and approval requirements and replaces them with performance-based requirements that incorporate international standards.

DATES: This rule is effective on September 30, 1996. Comments must be received on or before August 5, 1996. The incorporation by reference of certain publications listed in the regulation are effective as of September 30, 1996.

ADDRESSES: Comments may be mailed to the Executive Secretary, Marine Safety Council (G-LRA/3406) (CGD 94-108), U.S. Coast Guard Headquarters, 2100 Second Street SW., Washington, DC 20593-0001, or may be delivered to room 3406 at the same address between 8 a.m. and 3 p.m., Monday through Friday, except Federal holidays. The telephone number is (202) 267-1477. Comments on collection-of-information requirements must be mailed also to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street NW, Washington, DC 20503, ATTN: Desk Officer, U.S. Coast Guard.

The Executive Secretary maintains the public docket for this rulemaking. Comments will become part of this docket and will be available for inspection or copying at room 3406, U.S. Coast Guard Headquarters, between 8 a.m. and 3 p.m., Monday through Friday, except Federal holidays.

A copy of the material listed in "Incorporation by Reference" of this rule is available for inspection at room 1300, U.S. Coast Guard Headquarters.

FOR FURTHER INFORMATION CONTACT: Mr. Gerald P. Miente, Project Manager, Office of Design and Engineering Standards (G-MSE), (202) 267-2206.

SUPPLEMENTARY INFORMATION:**Request for Comments**

The Coast Guard encourages interested persons to participate in this rulemaking by submitting written data, views, or arguments, particularly on the changes made since the notice of proposed rulemaking of February 2, 1996, was published. It is not necessary to resubmit comments submitted under that notice.

Persons submitting comments should include their names and addresses, identify this rulemaking (CGD 94-108) and the specific section of this rule to which each comment applies, and give the reason for each comment. Please submit two copies of all comments and attachments in an unbound format, no larger than 8½ by 11 inches, suitable for copying and electronic filing. Persons wanting acknowledgement of receipt of comments should enclose stamped, self-addressed postcards or envelopes.

The Coast Guard will consider all comments received during the comment period. It may change this rule in view of the comments.

The Coast Guard plans no additional public meetings. Persons may request a public meeting by writing to the Marine Safety Council at the address under **ADDRESSES**. The request should include the reasons why a public meeting would be beneficial. If it determines that the opportunity for oral presentations will aid this rulemaking, the Coast Guard will hold a public meeting at a time and place announced by a later notice in the Federal Register.

Regulatory History

On February 2, 1996, the Coast Guard published a notice of proposed rulemaking (NPRM) entitled "Electrical Engineering Requirements for Merchant Vessels" in the Federal Register (61 FR 4132). Correction notices were published on February 23, 1996 (61 FR 7050), and March 5, 1996 (61 FR 8539). The Coast Guard received 45 letters commenting on the proposal. As a result of requests from a national trade association, a notice was published on February 26, 1996 (61 FR 7090), extending the comment period from March 18, 1996, to April 2, 1996, and announcing a public meeting on March 25, 1996. Over 20 persons attended the

meeting and 9 commented on the NPRM. A recording and summary of the meeting are in the rulemaking docket.

Purpose

Under the authorities cited in the "Authority" section for each part amended, the Coast Guard is amending its electrical engineering and equipment regulations for certain Coast Guard-inspected vessels in 46 CFR chapter I, subchapters I-A, J, and Q to accomplish the following:

(1) To reduce the regulatory burden on the marine industry by eliminating obsolete and unnecessary regulations and by clarifying the remaining ones. This objective is consistent with the President's Regulatory Reinvention Initiative and the Coast Guard's regulatory reform program.

(2) To replace, where appropriate, requirements that are prescriptive in nature with performance-based requirements that incorporate national and international standards and allow increased flexibility for small businesses.

(3) To eliminate requirements that create an unwarranted differential between domestic rules and international standards. This rulemaking harmonizes, where possible, the electrical regulations with amendments to the International Convention for the Safety of Life at Sea, 1974, (SOLAS 74) since the electrical regulations were last revised in 1982.

(4) To address comments received from the marine industry and from Coast Guard field and inspection offices.

This rulemaking is intended to serve the needs of industry while maintaining a comparable level of safety.

Discussion of Comments and Changes

The following is a summary of the comments received, both by letter and at the public meeting, and the changes made to the regulatory text since the NPRM was published. The items are grouped first by those that address a general issue, then by those that relate to a specific provision in the text.

I. General Comments

(1) A number of comments suggested changes that require further consideration by the Coast Guard. For example, several comments recommended that certain other standards be referenced in the regulations as replacements for, or options to, those cited in the NPRM. A few comments suggested changes to sections not addressed in the NPRM. The recommended standards for incorporation by reference will be considered for inclusion in the final rule

of this rulemaking. These comments are noted in this section of the preamble as subject to further consideration.

(2) A number of comments applauded the Coast Guard's effort to streamline its electrical regulations and incorporate industry standards, both domestic and international.

Consistent with the President's Regulatory Reinvention Initiative, the Coast Guard is taking this approach in all its rulemaking projects.

(3) One comment requested an additional 60 days for the comment period and at least four public meetings.

In response, the Coast Guard extended the comment period an additional 15 days and held a public meeting on March 25, 1996. Under this interim rule, the comment period is reopened for an additional 45 days.

(4) One comment expressed concern that proposed mobile offshore drilling unit (MODU) regulations were being presented in a piecemeal fashion throughout subchapter J. It suggested that these amendments be added to the Coast Guard's MODU regulations and that subchapter I-A be revised to incorporate the 1989 International Maritime Organization (IMO) MODU Code.

The Coast Guard has a long-range plan to extensively revise its MODU regulations in 46 CFR chapter I, subchapter I-A. At that time, both the IMO MODU Code and the American Bureau of Shipping Rules for Building and Classing Mobile Offshore Drilling Units (ABS MODU Rules) will be considered.

(5) One comment expressed concern that the Coast Guard proposed to apply the International Convention for Safety of Life at Sea, 1974 (SOLAS 74) in a blanket fashion to all vessels including MODU's.

SOLAS 74 has not been applied to non-self-propelled MODU's under this rulemaking.

(6) The terms "wheelhouse" and "pilothouse" have been replaced throughout subchapter J with the term "navigating bridge" as used in SOLAS 74.

(7) One comment recommended that the incorporation by reference list include other equivalent international standards.

The Coast Guard has a long-range plan to broaden the use of acceptable standards. Until those standards are incorporated into the regulations, any vessel owner or operator who desires to employ a fitting, material, apparatus, equipment, or arrangement other than that required by this subchapter may submit a request using the equivalency provision in § 110.20-1.

(8) One comment recommended that all regulations in excess of international standards be removed and that the regulations incorporate rules promulgated by ABS or other recognized classification societies.

The Coast Guard is continuing to address the issue in the ABS-generated U.S. supplement. Presently, ABS Rules are undergoing a major revision and some provisions, even now, differ with those of other International Association of Classification Societies (IACS) members. The Coast Guard will consider revising those areas of its regulations in the future.

II. Comments to Specific Sections

§ 108.170. (1) One comment indicated that this section is duplicated in § 111.105-33.

This rulemaking merely corrects a citation in the note to the section. This section, as well as the remainder of subchapter I-A, is under consideration for revision at a later date.

(2) One comment suggested a change in the wording of Note 1 to align its terminology with subpart 111.105.

This change has been made accordingly.

§ 101.01-1. (1) Several comments suggested that paragraphs (a) and (b) were confusing and should be revised or combined.

The paragraphs have been revised accordingly.

(2) One comment requested that the effective date be changed from 90 to 120 days to provide the additional time necessary to comply with the new regulations.

The effective date has been set for September 30, 1996.

(3) One comment suggested that the term "vessels", as used in proposed paragraph (b), be clarified to exclude fixed platforms.

This change was not considered necessary because nowhere in Coast Guard regulations is the term "fixed platform" included in the definition of "vessel."

(4) One comment suggested adding "and its tributaries" to the definition of Great Lakes vessel.

The definition has been revised to align it with the definition of "Great Lakes" in the Coast Guard's Inland Navigation Rules, Commandant Instruction M16672.2B (33 CFR chapter I, subchapter E).

§ 110.01-3. One comment stated that this section is confusing.

This section has been revised to discuss repairs and replacements, alterations and modifications, and conversions in separate paragraphs.

§ 110.10-1. (1) Several comments noted that the Institute of Electrical and

Electronic Engineer (IEEE) is in the process of revising its standards.

The Coast Guard will consider these revisions when approved by IEEE and update this section accordingly.

(2) One comment noted that Underwriters Laboratories Inc. (UL) 595 is not cited in § 111.60-11(c).

The reference to that section has been deleted.

(3) One comment noted that UL 50 is listed as being cited in § 111.81-13(a) but this section is removed.

UL 50 is now cited in § 111.81-1.

(4) One comment recommended that American Petroleum Institute (API) Recommended Practices (RP's) be incorporated by reference.

API RP's are being considered for future rulemakings.

(5) Two comments stated that some of the standards incorporated by reference in §§ 110.10-1 and 161.002-1 may also be available in American National Standards Institute (ANSI) versions.

Items approved by the Director of the Federal Register for incorporation by reference are required to be identified by the information on the cover of the document.

(6) Several comments noted that MIL-C-24643 and MIL-C-24640 should read MIL-C-24643A and MIL-C-24640A.

These have been changed accordingly.

(7) Several comments noted that ANSI/UL 1581 (VW-1) should read ANSI/UL 1581.

This title and the three sections referenced have been amended accordingly.

(8) Several comments indicated that the Canadian Standards Association (CSA) standard CSA-C 22.2 No. 245/UL 1309, Marine Shipboard Cable, should be included.

This standard is new and still under consideration by the Coast Guard.

(9) Several comments requested that UL 1569, Metal-Clad Cables, should be included.

The standard has been added as requested. See the discussion of § 111.60-23 in this preamble.

(10) One comment noted that American Society for Testing and Materials (ASTM) D 789, Standard Specification for Nylon Injection and Extrusion Materials (PA), should be ANSI/ASTM D 1897.

The correct replacement for ASTM D 789 is ASTM D 4066-94B. The reference has been changed accordingly.

(11) Many comments suggested that the references not cite the date of the document as they are periodically revised.

As indicated in § 110.10-1(a), only the edition listed in § 110.10-1(b) can be enforced. The Coast Guard will consider

future revisions but must provide public notice for comment before adopting them.

(12) One comment questioned whether the vessel must comply with the specific edition of a standard incorporated or could it comply with a later edition.

When requested, provisions in later editions may be used if they are accepted by the Commanding Officer, Marine Safety Center (MSC), under subpart 110.20 or § 161.002-17, as providing an equivalent level of safety.

(13) Several comments suggested incorporating ABS MODU Rules into the following sections: §§ 111.12-1(a), 111.12-3, 111.12-5, 111.12-7, 111.33-11, 111.35-1, and 111.70-1(a).

The ABS MODU Rules have been included as suggested.

(14) One comment noted that International Electrotechnical Commission (IEC) Publication 533 was not mentioned in the referred section.

The publication is now referenced in new § 113.05-7 addressing environmental testing.

(15) One comment questioned whether some of the material incorporated is the latest available edition or is readily available in the ANSI on-line catalog.

The editions incorporated are the latest supplied to the Coast Guard by the organization which originated the standard.

§ 110.15-1. (1) One comment recommended that the ABS definition of "nonsparking fan" is more complete and should be used.

The definition has been changed accordingly.

(2) Several comments pointed out inconsistencies in the definitions of "waterproof" and "watertight" and the associated National Electrical Manufacturers Association (NEMA) and IEC ingress protection (IP) ratings.

The definitions and the text have been corrected accordingly.

(3) One comment suggested that the definition of "qualified person" indicate that the person be qualified in electrical procedures.

This change has been made accordingly.

(4) One comment stated that the reference to § 1.01 in the definition of "Commandant" is unnecessary and adds no value.

The reference has been deleted.

(5) One comment suggested deleting the definition of "emergency squad" since it no longer appeared in revised § 113.30-5(d).

"Emergency squad" has been reinserted in § 113.30-5(d) for clarity.

(6) The definition of the term "independent laboratory" has been

added to this section. Minor conforming amendments have been made throughout subchapter J to accommodate this definition and subpart 110.35 has been removed.

§ 110.20-1. This section has been aligned with equivalency provisions in other recent Coast Guard rulemakings.

§ 110.25-1. (1) Several comments stated that the requirement in proposed new paragraph (c)(12) for the owner to submit lists of equipment and components used in hazardous locations does little to improve safety because components are inspected during installation by the Officer in Charge, Marine Inspection (OCMI). Additionally, the comments point out most of the requirements are duplicated in paragraph (i).

This requirement is retained because it is vital to the plan review process, which identifies suitability of each component and the system before installation. All of the required elements of the plan submittal have been included in revised paragraph (i) and proposed paragraph (c)(12) has been removed.

(2) One comment recommended that the Coast Guard address, in the note to paragraph (n), the manufacturer's self-certification to a list standard when that standard requires third-party certification.

A sentence has been added as recommended.

(3) One comment pointed out that independent laboratories referenced must be accepted for testing and listing or certification.

Paragraph (j) has been changed accordingly.

§ 110.25-3. One comment observed that, in the note to paragraph (c), the Coast Guard Technical Office no longer exists.

The Technical Office has been replaced by the Marine Safety Center. The note has been revised accordingly.

§ 110.30-1. One comment stated that the CFR parts listed in this section were out of date.

The section has been amended to avoid specifying individual parts.

§ 110.30-5. One comment recommended that this section be removed because information regarding the scope of inspection is in the pertinent parts under which vessels are certificated.

This section is necessary because the pertinent parts refer to subchapter J and because this section addresses inspection of electrical equipment specifically.

§ 110.30-7. One comment suggested that notice to the OCMI is already required in the subchapter under which

a vessel is certificated and that this section should be removed.

Not all of these subchapters provide for this notice. Therefore, this section is retained.

Subpart 110.35. (1) This subpart has been removed because "independent laboratory" is now defined in § 110.15-1, Definitions.

(2) One comment requested that the Coast Guard use Occupational Safety and Health Administration's (OSHA's) Nationally Recognized Test Laboratory program.

The Coast Guard's program under part 159, subpart 159.010, focuses on performance in the marine environment, rather than in the general workplace, as does the OSHA program. Any OSHA laboratory capable of testing to marine product performance and environment may apply for inclusion in the Coast Guard's program.

§ 111.01-1. One comment suggested the addition of a general requirement that system integrity be maintained.

A new paragraph (c) has been added accordingly.

§ 111.01-5. Several comments recommended that the qualifier in paragraph (d) for electric cable be removed.

This section has been revised to indicate that protection from bilge water is required for all of the equipment listed in paragraphs (a) through (d), if located in or around the bilge area.

§ 111.01-7. One comment recommended adding the words "and spacing" to the title of this section because spacing is addressed in paragraph (b).

The change was made accordingly.

§ 111.01-9. (1) One comment requested that the words "on deck" be removed from paragraph (b) because the hazard could exist in other locations on the vessel.

In line with this recommendation, paragraphs (a) and (b) were revised to align the minimum degree of protection required with the hazard rather than the specific location.

(2) One comment requested that a NEMA Type 1 enclosure be the minimum requirement in paragraphs (a), (c), and (d).

Paragraph (d) has been revised to reflect the suggestion. However, the minimum requirements for the equipment in paragraphs (a) and (c) have been adjusted to provide a slightly higher degree of protection consistent with the hazards and vital functions performed. The definitions for those locations requiring, and those locations not requiring, exceptional degrees of protection have been slightly revised accordingly.

(3) One comment suggested modifying the second sentence of paragraph (a) to include the phrase "pressure-directed liquids".

This change was made in paragraph (b) because of the amendments to paragraphs (a) and (b) discussed above.

(4) One comment stated that personal computers and similar equipment should be allowed to be used as control consoles when not subject to exposure from liquids.

Personal computers are not prohibited under this section if they meet the stated degrees of protection.

§ 111.01-15. (1) One comment recommended a major revision of this section, including removing paragraphs (b) and (d), because the preamble to the NPRM failed to identify the international requirement upon which the proposal was based or to give any other justification.

The design parameters for this section were based upon table 4 of IEC Publication 92-101, Electrical Installations in Ships—Part 101: Definitions and General Requirements. The paragraphs are retained.

(2) One comment suggested minor editorial changes in paragraph (e).

The recommendations to clarify paragraph (e) have been adopted.

§ 111.01-17. One comment stated that the deletion of standard voltages may introduce the risk of proliferation of non-marine arrangements.

This section replaces prescriptive regulation with performance criteria. The Coast Guard will consider referring to industry standard voltages and frequencies when IEEE Std 45 is revised.

§§ 111.01-19, 111.01-21, and 111.01-23. (1) Several comments stated that some requirements in these sections were in excess of ABS Rules for Building and Classing Steel Vessels (ABS Rules), and suggested the Coast Guard adopt ABS Rules for environmental testing.

Section 111.01-19 is retained because it applies to all electrical equipment. Sections 111.01-21 and 111.01-23, although consistent with IEC Publication 92-101, have been removed because they apply to control equipment similar to that covered by the ABS Rules. Environmental testing requirements for communication, alarm, control, and monitoring equipment have now been addressed in new § 113.05-7 incorporating table 4/11.1 of ABS Rules.

(2) One comment suggested that Lloyd's Register Type Approval System—Test Specification Number 1 be incorporated for all electrical control equipment.

The options of this test specification and ABS Rules table 4/11.1 now appear in § 113.05-7.

(3) One comment suggested that inclination criteria be limited to conventional hulled or self-propelled vessels and not column stabilized units, such as MODU's and tension leg platforms (TLP's).

The requirement is retained pending further consideration by the Coast Guard.

(4) One comment noted that in § 111.01-21 "all electrical control equipment" is too broad. Vibration criteria should be limited to vital propulsion and vessel control systems on self-propelled vessels.

In addition to the discussion of the first comment to these sections, the requirements apply to the control and monitoring equipment referenced in ABS Rules 4/11 and communication and alarm systems under part 113 of this chapter.

§ 111.05-07. Several comments suggested that IEC 92-352 be removed because it is obscure, misleading, and unnecessary and that it be replaced with a domestic standard.

IEC Publication 92-352 has been replaced with IEC 92-3 and IEEE Std 45 is added as an option.

§ 111.05-9. One comment suggested incorporating the American Boat and Yacht Council Standard E-2 for lightning ground conductors.

The Coast Guard is reviewing this standard for possible incorporation by reference.

§ 111.05-23. Two comments indicated that the requirement in paragraph (d) was overly prescriptive and costly, with limited benefit. One suggested alternative locations.

Paragraph (d) has been amended accordingly.

§ 111.05-27. One comment suggested deleting the provision to "momentarily remove the indicating device from the reference ground" because monitoring technology exists which obviates the need.

The requirement is retained because not all ground detection systems employ such state-of-the-art design.

§ 111.05-33. (1) Many comments suggested that the Coast Guard retain its current regulations for equipment grounding conductor size according to the National Electrical Code (the NEC).

Paragraph (a) has been revised as suggested.

(2) Many comments discussed the proposal to require that equipment grounding conductors be insulated.

Paragraph (b) has been revised to reference the NEC article 310-12(b) for conductor covering and identification.

(3) Many comments agreed with the proposal of prohibiting cable armor from being used as the grounding conductor and suggested adding metallic sheath to the regulation.

Paragraph (c) has been revised as suggested and moved to a more appropriate location in § 111.60-5(d).

(4) One comment suggested adding a reference to IEC requirements for grounding conductors, noting that the 1996 revision of ABS Rules will be incorporating the IEC criteria.

The IEC criteria is presently under review pending ABS incorporation.

§ 111.10-7. One comment stated that paragraph (b) duplicates the provisions of § 112.05-5.

This paragraph is intended to introduce general dead ship power requirements into subpart 111.10, Power Supply. Section 112.05-5 contains more detailed requirements.

§ 111.10-9. One comment stated that the sizing and transformer redundancy requirements are overly prescriptive for other than self-propelled vessels.

The requirements are for ship's service supply loads listed in § 111.10-4(b). Propulsion accounts for only a portion of the loads. The transformer requirements are retained for non-self-propelled vessels because of safety and habitability considerations.

111.12-1. (1) One comment pointed out that the overspeed trip requirement in paragraph (b) may not be entirely practicable because some manufacturers recommend different settings, such as 18 percent.

The requirement is consistent with ABS Rules and is retained. If a manufacturer designs and recommends a trip value in excess of this requirement, the manufacturer may apply for equivalency under part 110, subpart 110.20.

(2) One comment pointed out that pressure-lubricated generator bearings mentioned in paragraph (c) are rare. The comment also noted that neither Coast Guard regulations nor ABS Rules provide for automatic shutdown of a diesel generator's prime mover upon failure of that engine's pressure lubrication system.

The revision to paragraph (c) in the NPRM was to expand the present provision to consider proliferation of shaft driven generators. The Coast Guard is reviewing its requirements for generator prime movers and will address shutdown upon loss of lube oil in another rulemaking.

§ 111.12-11. (1) Several comments recommended replacing the words "inverse time," in paragraph (c)(1), with the word "longtime" to be consistent

with the proposed change to paragraph (d).

Paragraph (c)(1) has been amended as suggested.

(2) One comment suggested a complete revision of paragraph (g) to align terminology with SOLAS 74 and allow deviations on a case-by-case basis.

The requirements are considered comparable. Case-by-case equivalences are already provided for under part 110, subpart 110.20.

§ 111.15-2. One comment discussed the change in the angle of inclination of a battery cell from the existing 30 degrees to the proposed 40 degrees, stating that one specific angle is not appropriate for all vessel types in determining suitability for marine use.

The figure of 40 degrees static inclination is from the international standards of IEC Publications 92-101 and 92-305 and is applicable to all vessels. However, the Coast Guard recognizes that a 40 degree static inclination may be beyond the reasonable or practical limits for certain vessels to which these regulation apply. Where installations are made on specific vessels that cannot attain or sustain a 40 degree static inclination, a lesser value may be accepted under the equivalency provisions in subpart 110.20.

§ 111.15-5. (1) One comment suggested the prescriptive language in paragraph (d), be replaced with performance standards relative to battery tray clearance.

Paragraph (d) has been amended as suggested.

(2) One comment discussed the need to differentiate between cranking and other types of batteries in paragraph (e).

Paragraph (e) has been revised as suggested.

§ 111.15-20. One comment suggested a minor wording order change in paragraph (c) for clarity.

Paragraph (c) has been revised as suggested.

§ 111.15-30. One comment suggested that portable battery chargers incorporating an autotransformer may impose an intentional ground on a vessel's power supply system and, therefore, should not be used.

A sentence was added prohibiting the use of chargers incorporating grounded autotransformers.

111.30-1. One comment recommended incorporating IEC standards on switchboards.

The incorporation has been made accordingly.

§ 111.30-5. (1) One comment observed that the wire sizes mentioned in the reference of paragraph (a) differed from those cited in § 111.30-19(b)(3).

Section 111.30-19(b)(3) has been revised accordingly.

(2) One comment pointed out that the requirement in paragraph (b) repeats the requirement in § 111.01-9.

Paragraph (b) is retained because it additionally mentions deck-to-overhead construction.

(3) One comment noted that low and medium voltage is defined differently in the IEEE and IEC standards.

Paragraphs (a)(1) and (a)(2) have been revised to reflect this difference.

§ 111.30-19. (1) One comment stated that section 17.11 of IEEE Std 45, as referred to in paragraph (a)(1), itself refers to the NEC article 384-26 (1981). The comment suggested that, where an edition of a standard is referred to in a document incorporated by reference, the latest edition of that standard applies.

Until IEEE Std 45 adopts a newer edition of the 1981 NEC and the Coast Guard incorporates the new IEEE Std 45, the 1981 edition of the NEC applies in this instance.

(2) One comment pointed out that there are no specific acceptance criteria in subchapter J for aluminum bus bars.

Guidelines for aluminum bus bar installations are contained in Coast Guard Navigation and Vessel Inspection Circular (NVIC) 2-79 and are considered to provide adequate guidance on aluminum bus bars until the new revision of IEEE Std 45 is published and incorporated by reference.

§ 111.30-24. One comment requested that the exclusion for a non-self-propelled MODU be expanded to include floating Outer Continental Shelf (OCS) facilities.

This section has been revised to extend the exclusion to a non-self-propelled floating Outer Continental Shelf (OCS) facility.

§ 111.30-29. (1) One comment pointed out that proposed paragraph (i) was merely a repetition of the requirement in § 112.05-5(h).

Paragraph (i) has been removed accordingly.

(2) One comment suggested that the section would appear better organized if proposed paragraphs (g) and (h) were inserted after existing paragraph (a).

The section has been revised accordingly.

§ 111.30-31. One comment recommended that § 111.30-31 be retained because, even though the current ABS Rules do not include switchboard testing, the new 1996 ABS Rules will.

The Coast Guard will consider reinstating the requirement when ABS issues its new rules.

§ 111.40-5. One comment recommended that this section be removed because it is redundant and is only a cross-reference to the requirements of §§ 111.01-9.

This section has been retained to address the noncombustible requirement and to cross-reference the accessibility and degree-of-protection requirements in §§ 111.01-7 and 111.01-9.

§ 111.40-7. One comment suggested rewriting this section for ease of comprehension.

This section has been rewritten as suggested, without substantive change.

§ 111.50-3. (1) Several comments noted that the word "not" was inadvertently omitted from paragraph (c).

The paragraph has been revised accordingly.

(2) One comment suggested adding the clarifying phrase "standard fuse or circuit breaker" after the words "next larger" in paragraph (c).

This paragraph has been revised accordingly.

(3) One comment suggested revising the last sentence of paragraph (c) to clarify the intent of the requirement.

Paragraph (c) has been revised accordingly.

§ 111.52-3. One comment pointed out that, although this section was not addressed in the NPRM, it merely repeats criteria given in IEEE Std 45.

The Coast Guard will consider revising this section when the new IEEE Std 45 is published.

§ 111.52-5. One comment suggested deleting the word "Detailed" from the introductory text because the following paragraphs (a) through (d) defined the level of detail.

The word "Detailed" has been removed as suggested.

§ 111.53-1. One comment suggested replacing "§ 110.35-1" in paragraph (a)(3) with "part 159" because § 110.35-1 merely cites part 159 of this chapter.

"Independent laboratory", as now defined in § 110.15-1, references part 159 and subpart 110.35 has been removed.

§ 111.54-1. One comment suggested the addition of "one of the following:" to the end of the introductory text of paragraph (c)(1) so that only one of the stated standards need be complied with.

Paragraph (c)(1) already provides for this.

Subpart 111.60. (1) Several comments pointed out that MIL-C-915 is an obsolete standard and should be removed.

The standard has been removed.

(2) Several comments indicated that MIL-C-24640 and 24643 are now in modification A status.

The modification A edition of both standards has been referenced.

(3) Many comments pointed out that "VW-1" is a test that resides in ANSI/UL 1581.

The standard is now cited as "ANSI/UL 1581 test VW-1."

(4) Several comments suggested that Coast Guard regulations be harmonized with the NEC along with ANSI and otherwise recognized national standards.

One of the primary elements of this and other current Coast Guard rulemakings is the incorporation of both international and domestic recognized industry standards where appropriate. Article 90-2(b)(1) of the NEC states that the NEC does not cover installations in ships. In many cases, however, certain specific recommendations of the NEC are considered appropriate for inclusion into the regulations.

§ 111.60-1. (1) Several comments questioned whether the Coast Guard will accept cables equivalent to those stated in this section.

Equivalents may be accepted under § 110.20-1.

(2) Many comments requested that the 75°C requirement in paragraph (c)(6) be changed to 90°C, as allowed in USA/Canadian binational shipboard cable standard UL 1309/CSA C22.2 No. 245.

The requirement for 75° is retained in accordance with IEEE Std 45 and classification society rules. UL 1309/CSA C22.2 No. 245 is not recognized by either the Coast Guard or the Ship Inspection Directorate, Transport Canada.

(3) Several comments noted that International Association of Drilling Contractors (IADC) guidelines IADC-DCCS-1/1991 describes a special-purpose cable and, therefore, this standard should be referred to in the industrial systems subpart. One requested the removal of the standard altogether.

The standard is referred to in § 111.60-1 because both § 111.60-1 and the standard concern cable construction details.

(4) Several comments requested that the Coast Guard include acceptance of IEC 92-350 cable.

This type of cable is not included because IEC 92-350 is not now a reaffirmed publication. In addition, as a result of tests conducted for the Coast Guard, this cable failed to meet all of the performance criteria in IEEE Std 45.

(5) One comment pointed out that IEC 92-3 does not require any markings and suggested that this section include a marking or labeling requirement to avoid confusion and promote consistency.

Paragraph (d) has been revised to include a marking requirement.

(6) Several comments suggested that the only reliable way to ensure that cable meets the referenced

specifications would be to include wording requiring independent laboratory compliances testing for these products.

Third party testing of marine shipboard cable is being considered for inclusion into the 1996 revision IEEE Std 45 which will be incorporated by reference into the CFR when the standard is published by the IEEE.

§ 111.60-2. One comment pointed out that the 1983 IEEE Std 45 neither requires nor modifies IEEE Std 1202. Additionally, it suggests the inclusion of Canadian Standards Association (CSA) FT-4.

This section has been revised to remove the modification language. CSA FT-4 is under review for consideration.

§ 111.60-3. Several comments suggested the need to address cables exposed to vibration, festooning, and repeated flexing.

Paragraph (d), which references cables for special applications in IEEE Std 45 section 19.6.5, has been added to this section.

§ 111.60-4. One comment pointed out that 2.08 mm² does not correlate to #14 AWG.

The metric equivalent has been revised in accordance with IEEE Std 45 table A6.

§ 111.60-6. One comment suggested several standards to be referenced relative to fiber optic cable and its fire load.

This concern is adequately addressed in paragraph (b) which refers to § 111.60-2 concerning specialty cable.

§ 111.60-13. Several comments requested reinserting UL 62 and adding article 400 of the NEC as references in paragraph (a).

Paragraph (a) has been revised accordingly.

§ 111.60-17. Several comments recommended that the thread-cutting type of connector is likely to sever strands of stranded-copper conductors and, therefore, should not be allowed. Several other comments recommended not allowing the use of the twist-on type of connectors.

If properly installed and secured, the twist-on type of connector, used in an enclosure, is suitable for joining relatively small loads to the supply cable. The reference to thread-cutting type of connectors has been removed.

§ 111.60-19. Several comments suggested prohibiting cable splices in all Class I, Division 1, locations.

Splices are prohibited in all hazardous locations, except that splices in intrinsically safe systems are allowed under paragraph (a).

§ 111.60-23. Many comments were received either requesting a more liberal

policy on the use of metal-clad (MC) cable on vessels or recommending its complete prohibition as being totally unsuitable for shipboard and MODU installations. This extensive range of comments necessitated a complete review and revision of the MC cable section. In the process of revising this section, the Coast Guard reviewed each comment and tried to balance the conflicting views to provide a solution that would allow MC cable to be used safely.

Based upon on-site observations, the Coast Guard determined that limited use of MC cable may be allowed. New § 111.60-23 is a restatement of the policy developed by the Coast Guard since January 1991.

§ 111.70-1. (1) Several comments suggested deleting "-94" after "ABS Rules, Part 4/5.87" in paragraph (a).

This typographical error has been corrected and the word "Part" has been replaced with the correct word "sections".

(2) One comment recommended deleting the reference to subpart 111.35 in paragraph (a)(2) and citing ABS Rules directly.

The reference remains as proposed to avoid the more lengthy cross-reference to ABS Rules each time an electrical propulsion installation is mentioned throughout the subchapter.

(3) One comment recommended that ABS Rule 4/5.115.6 be included in paragraph (a) due to the NPRM's deleting the NEC article 430.

Paragraph (a) has been revised accordingly with an additional cross-reference to ABS MODU Rules.

§ 111.70-3. (1) Several comments noted that the incorrect NEMA standard was cited in paragraph (a).

The correct standard is now cited.

(2) One comment suggested that enclosures in a hazardous location must meet subpart 111.105 in addition to the other stated standards.

Paragraph (a) has been revised accordingly.

(3) One comment suggested that schematics and wiring diagrams need only be available on the vessel and not necessarily on the door of each controller.

The requirement is retained for safety reasons. This information must be immediately available in emergency situations.

(4) One comment suggested replacing "and" with "or" and deleting (v) and (vii) in paragraph (d)(1).

The comment provided no reason for these changes. Therefore, the paragraph remains unchanged.

§ 111.75-16. One comment requested replacing the prescriptive reference to

"floodlights" with the more performance-oriented term "lighting".

The Coast Guard agrees and has amended this section accordingly.

§ 111.75-17. (1) One comment started that the requirement for flexible cables and receptacles is unnecessarily restrictive and suggested that permanent installations be addressed in paragraphs (e)(e) and (e)(4).

The paragraphs has been revised accordingly.

(2) One comment recommended including alternative wording in the labeling requirement in paragraph (d)(3)(1) to allow for the registered certification mark instead of the name of the independent laboratory which tested the figure.

Paragraph (d)(3)(1) has been revised accordingly.

(3) One comment suggested that, in paragraph (d)(3)(i), "independent laboratory, accepted by the Commandant" be replaced by "accepted independent laboratory" and that "UL 1104" be replaced by "this standard".

The directions properly express the intent of the requirement and the wording remains as published in the NPRM.

(4) One comment stated that navigation lights should also meet international standards (COLREGS).

The reference in paragraph (d)(1) to "applicable navigation rules" includes COLREGS as well as Inland Navigation Rules, as applicable.

(5) One comment suggested that specific requirements for battery-operated navigation lights and additional labeling information be included in paragraph (d).

Paragraphs (d)(3)(iv), (v), and (vi) were added to provide essential information needed by marine inspectors to determine the fixture's suitability for vessel type and location.

(6) One comment suggested the inclusion of specific photometric requirements for battery powered navigation lights.

This concern is currently under consideration by the Navigation Safety Advisory Committee (NAVSAC) and the Coast Guard is awaiting NAVSAC's recommendations before further rulemaking on this issue.

§ 111.75-20. (1) Several comments requested clarification of the word "certified" in paragraph (a) and the words "self-certified" and "listing is not required" in paragraph (e).

These words have been replaced with the requirement that the lighting fixtures meet the stated standards.

(2) One comment objected to the incorporation of the UL standards in the proposal on the grounds that they are prescriptive and non-consensus-based.

The Coast Guard has determined that, in this, instance, the UL standards referenced adequately address the equipment.

(3) One questioned the proposed environmental testing requirements for luminaries (lighting fixtures).

The comment offered no explanation. Coast Guard accepts either standard as an option.

(4) On May 1, 1996, UL announced the publication of the Marine Supplements to the Standard for Fluorescent Lighting Fixtures, UL 1570; the Standard for Incandescent Lighting Fixtures, UL 1571; and the Standard for High Intensity Discharge Lighting Fixtures, UL 1572. The requirements in these supplements are effective May 3, 1999, and will replace the requirements of UL 595. UL 595 will be withdrawn at that time. Between May 1, 1996, and May 3, 1999, UL is allowing compliance testing of fixtures to either the new series of standards or UL 595. The Coast Guard accepts either regimen.

§ 111.77-3. One comment suggested removing the word "internationally" because both international and domestic standards are appropriate.

This section has been amended by removing "internationally" and by specifying UL safety and construction standards. The use of other domestic and international standards may be requested under the equivalency provision in § 110.20-1.

§ 111.79-1. (1) One comment suggested deleting the last sentence of paragraph (d), because the requirement is redundant, and moving the requirement of § 111.79-7 to a more appropriate location in new paragraph (e) of § 111.79-1.

The changes have been made accordingly.

(2) One comment indicated that the change in the spacing of receptacles in paragraph (b) went beyond recognized classification society and international standards.

The Coast Guard agrees and has amended the section accordingly.

§ 111.79-5. One comment expressed concern that adding the words "suitable for the environment" to § 111.79-1(d) and removing § 111.79-5 would allow misinterpretation and create a safety problem.

Although "suitable for the environment" should provide sufficient guidance, paragraph (d) has been revised to include a specific cross-reference to § 111.01-9, Degrees of protection.

§ 111.81-1. (1) Several comments suggested replacing "section 370" with "article 370", in paragraph (d), to be

consistent with the terminology used in the document referred to (the NEC).

The recommended change has been made in this and other locations in the rulemaking.

(2) Several comments noted that the requirements in §§ 111.81-7 and 111.81-9 should be consolidated in § 111.81-1.

This change has been made and §§ 111.81-7 and 111.81-9 have been consolidated into § 111.81-1.

§ 111.85-1. One comment recommended the removal of proposed paragraph (b) because this equipment could fail and create an arc without necessarily reaching the ignition temperature of the oil or vapor.

The paragraph has been removed.

§ 111.87-3. Several comments pointed out that third-party certification may place an undue hardship on heater manufacturers.

Paragraph (a) has been revised to remove the proposed third-party testing requirement. Also, the words "UL safety and construction standards" have been added.

§ 111.95-1. One comment stated that the list of provisions paragraph (b) is incomplete.

Paragraph (b) has been amended to avoid specifying individual provisions.

§ 111.99-5. One comment stated that there are no requirements to install a holding and release system on fire doors and that the holding force and power interruption requirements in paragraph (e), for systems which are installed, exceed any SOLAS 74 requirement.

The 1992 Fire Safety Amendments to SOLAS 74 address fire door release systems in regulation II-2/30.4.3. This subpart has been revised to cross-reference the SOLAS 74 regulation.

§ 111.105-5. (1) Several comments questioned if the intent of this section was to prohibit the use of both NEC and IEC approved equipment in the same space.

The intent of this section is to ensure that proper and safe equipment is used in hazardous locations. This section has been amended to allow safe combinations of both types.

(2) Several comments pointed out the need for the word "location" after the word "hazardous" in the second sentence.

The sentence has been revised accordingly.

(3) One comment recommended the inclusion of API RP 505 as a criterion for system integrity.

The standard is currently under consideration for incorporation.

(4) One comment requested clarification of this section's effect on the application of the NEC and IEC

methods of classification in any one hazardous location and between similar areas aboard the same vessel.

Any given location is subject to more than one classification. For example, a specific cargo oil tank may be classified as a Class I, Division 1, location under the NEC and a Zone 0 location under the IEC system. Electrical equipment approved for Class I, Division 1 (intrinsically safe) or approved for Zone 0 (I_a) may be used.

§ 111.105-9. Several comments considered this section unnecessary and redundant in light of *§ 111.105-7*.

Both *§§ 111.105-7* and *111.105-9* have been revised. Section *111.105-9* is considered necessary due to the term "explosionproof" having a different but related meaning in the IEC system.

§ 111.105-11. (1) Several comments pointed out that either distance separation or a partition is an acceptable practice for intrinsically safe circuits.

This section has been revised accordingly.

(2) One comment pointed out that paragraph (a) referred more specifically to intrinsically safe "components" instead of "systems"; that the reference to *§ 111.105-7* was redundant; and that other changes are needed to provide clarity.

The section has been revised accordingly.

§ 111.105-15. (1) One comment pointed out that the preamble to the NPRM stated that electrical installations in hazardous locations will continue to meet explosionproof/intrinsically safe requirements but that other allowances are made in *§ 111.105-15* for additional locations.

The comment was correct in recognizing that methods other than "explosionproof" or "intrinsically safe" are included in the text. The methods of protection listed in *§ 111.105-15* are acceptable in addition to "explosionproof" or "intrinsically safe."

(2) One comment suggested providing acceptable alternative standards based on the NEC in paragraphs (b) and (d).

Paragraph (b) has been revised accordingly; other equivalent types of protection are being evaluated.

(3) One comment recommended removing paragraph (b0) because its requirements are redundant.

This section has been revised accordingly.

§ 111.105-17. (1) Several comments expressed concern about deleting, from paragraph (a), the requirements for armored cable in hazardous locations.

Paragraph (a) has been revised to clarify that armored marine shipboard cable is required in Class I, Division 1

(Zone 0 and Zone 1) hazardous locations.

(2) One comment pointed out that MI and SI type cables should be deleted because they are generally obsolete and are used in only highly specialized applications.

These type cables have been retained to allow an option for those particular applications.

(3) One comment suggested that the Class and Zone designations in paragraph (d) are incorrect.

Class II and Class III (Zone Z or 10, and Zone Y or 11) refer to atmospheres containing dusts and flyings. Paragraph (d) has been slightly revised to clarify.

§ 111.105-31. (1) Several comments pointed out that Appendix B does not appear in IEEE Std 45-1983 and that IEC Publication 92-502 should be included as a reference for this section.

This section has been revised as suggested.

(2) Several comments requested the rationale of the requirements in new paragraphs (1)(3) and (1)(4).

These requirements are consistent with ABS Rule 4/5.151.lb.

§ 111.105-32. One comment suggested that the word "Commandant" in paragraph (c) be changed to "Commanding Officer, Marine Safety Center".

Paragraph (c) has been revised to provide for concept approval by the Commandant (G-MSE) and plan approval by Commanding Officer, Marine Safety Center.

§ 111.105-33. One comment recommended that a provision be added to paragraph (f) that loss-of-ventilation alarms be powered independently of the ventilator's power system consistent with the independency concept for vessels under 46 CFR 62.30-5.

This change has been made to the MODU regulations in *§ 108.185*.

§ 111.105-35. One comment recommended adding corresponding IEC Zone designations to the NEC locations specified in this section.

These additions have been made.

§ 111.105-39. Several comments suggested deleting the note to this section because it does not relate to the subject of the section.

The note has been removed.

§ 111.105-40. One comment suggested a vertical distance limit be added to paragraph (b) so that hazardous location classification is not extended to an unlimited height.

The open deck of a roll-on/roll-off (RO/RO) vessel is not classified. The paragraph has been revised to address closed cargo spaces.

§§ 111.105-43 and 111.105-45. One comment recommended adding

corresponding IEC Zone designations to the NEC locations specified in this section.

These additions have been made.

§ 111.105-47. One comment suggested that this section should not apply when the flashpoint of the flammable or combustible cargo is 60°C or more.

This section has been removed and transferred to *§ 111.105-31(n)*.

§ 111.107-1. (1) One comment noted that IEEE Std 383 referred to in paragraph (c)(2)(i) has been replaced with IEEE Std 1202.

This paragraph has been changed accordingly.

(2) One comment noted that paragraph (c) as proposed required compliance with (c) (1), (2), and (3) instead of (c) (1) and (2) or (c)(3).

Paragraph (c) has been revised as noted.

§ 112.05-1. One comment suggested removing "only" in paragraph (a) and adding, after "emergency", "and those additional loads that may be authorized under paragraph (c) of this section."

Paragraph (a) has been revised as suggested.

§ 112.05-5. Several comments requested clarification of the words "any other machinery" in paragraph (d).

Paragraph (d) has been revised to clarify the words.

§ 112.15-1. One comment recommended that the cross-references in the last sentence of paragraph (g) were informational only and, therefore, unnecessary.

The last sentence has been removed.

§ 112.15-5. (1) One comment suggested that the list of parts in paragraph (e) may not be complete.

Paragraph (e) has been revised as suggested.

(2) One comment suggested replacing "a mobil offshore drilling unit" in paragraph (m) with "an offshore unit."

Paragraph (m) has been revised as suggested.

§ 112.50-1. One comment suggested that the 45-second delay in paragraph (d) be aligned with proposed revision of NFPA Standard 301, which would require a 10-second delay.

The 45-second delay is retained because this requirement is aligned with SOLAS 74.

§ 112.50-3. One comment stated that paragraphs (f) and (g) have been superseded by proposed paragraph (a).

Paragraphs (f) and (g) have been removed.

§ 112.50-5. One comment recommended that the starting battery have a reserve starting capacity of at least three starts.

The proposal already provides for this, either by means of the battery itself

or by means of the battery and a second source of starting energy.

§ 113.05-7. Several comments addressed the subject of environmental testing of communication, alarm, control, and monitoring equipment.

New *§ 113.05-7*, Environmental Testing, has been created in response to these concerns.

§ 113.10-7. One comment recommended removing the specific degrees of ingress protection referred to in this section due to their excessive nature.

The NEMA and IEC IP ratings of the connection boxes are retained because exceptional degrees of protection are required throughout part 113 since these systems are emergency in nature. However, the "watertight" requirements have been replaced with the less stringent "waterproof" requirements.

§ 113.10-9. One comment pointed out in paragraph (a) that, by requiring the second source of power for the fire detection system to be a battery, the Coast Guard is deviating from its present regulations and SOLAS 74, which allow the second source to be either the emergency source or a battery.

Paragraph (a) has been revised to keep the present options and to define the source of power for the battery charger if used.

§ 113.25-6. One comment suggested that, in paragraph (d), the Coast Guard cite the specific SOLAS 74 regulations for the power supply for the general alarm system.

The section has been revised to refer to SOLAS 74, regulations II-1/42, 11-1/43, III/6, and III/50.

§ 113.25-9. One comment suggested harmonizing our general alarm requirements in paragraphs (b) and (c) with NFPA 72 (National Fire Alarm Code). Another comment suggested harmonizing the section with the new IMO Lifesaving Appliances Code.

Paragraph (c) has been revised according to the second suggestion. The sound level requirements have been moved from 113.25-9(c), concerning location of general emergency alarm signals, to paragraph (d) of *§ 113.25-12*, Alarm signals.

§ 113.25-10. One comment noted that the prohibition against using red flashing or rotating beacons for purposes other than the general alarm seems to be in conflict with the IMO "Code on Alarms and Indicators," which recommends red lights as supplemental visual alarms for fire alarm and fire-extinguishing medium release.

Pending further consideration of the IMO Code, proposed paragraph (c) has been removed.

§ 113.25-11. (1) One comment recommended removing specific degrees of ingress protection in paragraph (a) because the degree should be consistent with the location of the device.

The NEMA and IEC IP ratings of the contact makers are retained because exceptional degrees of protection are required throughout part 113 since these systems are emergency in nature. However, the "watertight" requirements have been replaced with the less stringent "waterproof" requirements.

(2) One comment recommended revising the section to address SOLAS 74-compliant digital systems that do not incorporate contact makers.

Since the term "contact maker" refers to the primary initiating device and not the resultant audible device, it follows that every system, regardless of design, should employ some form of contact maker as a manual means to initiate the alarm.

§ 113.25-12. One comment suggested replacing "bells" with the more common term "audible devices" and, in the process, deleting paragraph (b).

The term "bells" has been removed and replaced with the SOLAS 74 description "general emergency alarm signal." Paragraph (b) has been deleted as its requirements are now included in paragraph (a).

§ 113.30-1. One comment suggested not adding the words "and each self-propelled mobile offshore drilling unit" since MODU's are defined as vessels in *§ 107.111*.

This change has been made accordingly.

§ 113.30-3. One comment recommended that the section be revised to address all communication means that are in compliance with SOLAS 74, regulations II-1/42, II-1/43, and III/6.4.

This section has been revised as suggested.

§ 113.30-5. Minor editorial changes were made to align this section with the changes made to 113.30-3.

§ 113.30-20. One comment recommended that paragraph (b) be revised to require that only systems that do not have other effective means of station isolation during a fault have a cut-out switch on the navigating bridge. Paragraph (b) has been revised as suggested.

§ 113.30-25. One comment recommended that paragraph (i) be revised to allow the option of cable routing through high fire-risk spaces if the cable meets the requirements of IEC 331. The use of this standard can lead to significant cost savings and more practical installations.

Paragraph (i) has been revised accordingly.

§ 113.35-5. One comment stated that the audible alarm signal in paragraph (e)(3) should not be able to be silenced but reduced in volume.

This change has been accepted.

§ 113.35-19. One comment suggested redesignating this section as *§ 113.35-7* (which has been removed in this rule) because both *§ 113.35-19* and *§ 113.35-5* concern electric engine order telegraph systems.

Section 113.35-19 has been redesignated accordingly.

§ 113.40-10. One comment suggested that the requirement in paragraph (a) seemed extreme and questioned whether the system must have an entirely independent power source and whether it could be physically located in the same console as other systems.

The proposed requirement that the power system be independent is retained because it is the intent that the power for a rudder angle indicator system be provided from a power supply circuit other than power circuits used for the equipment in paragraph (a). Paragraph (a) is revised to allow location in the same console.

Subpart 113.43. One comment suggested that the requirement for a steering gear failure alarm be removed because it is excessive when compared to international safety standards and suggested that improved training could be initiated in place of this requirement to address the watchstander's response to steering gear failures.

This requirement was established in direct response to a National Transportation Safety Board (NTSB) recommendation resulting from their investigation of the SEA WITCH/ESSO BRUSSELS collision in New York Harbor in 1974. Although improved crew training and related human factor consideration may help, the Coast Guard determined that both technological and non-technological solutions should not be considered to be mutually exclusive. With regard to human factors, the Coast Guard has found that even the best training, by itself, cannot account for the many variables contributing to human error. Proper and timely execution of steering orders is critical to safe vessel navigation. While training may assist in proper actions taken by the helmsman, the failure alarm is intended to provide the operator with a warning when the physical system does not respond as expected. This regulation is therefore being retained and the Coast Guard intends to introduce this system feature as a safety issue to be considered at IMO

for improving international regulations on steering system controls.

§ 113.50-5. (1) Several comments discussed the prescriptive nature of the central amplifier-type system in paragraph (a) citing the many optional system configurations available.

Paragraph (a) has been revised to allow alternative amplifier systems.

(2) One comment suggested allowing for a combined public address, general alarm, and fire detecting and alarm system, as provided for in Navigation and Vessel Inspection Circular (NVIC) 2-89.

Paragraph (a) has been changed accordingly.

(3) One comment suggested adding a requirement from the IMO Lifesaving Appliance Code to protect the public address system from unauthorized use.

Paragraph (a) has been revised as suggested.

§ 113.50-10. (1) One comment suggested deleting the words "enables an officer on the bridge to broadcast" as unnecessary prescriptive language.

The words have been deleted. The requirement for the announcing station of the system to be on the bridge is retained in *§ 113.50-5(b)*.

(2) One comment recommended removing the replacement for two-way communication in paragraph (b) because it appears to require a two-way communication as part of the public address system.

Paragraph (b) has been deleted because two-way communication requirements are covered in subpart 113.30.

§ 113.50-15. (1) Several comments recommended revising paragraph (b) to remove the prescriptive words "directed aft."

Paragraph (b) has been revised as suggested by substituting a performance standard.

(2) One comment suggested replacing table 113.50-15 with the requirements from the IMO Lifesaving Appliance Code.

The table has been removed and the requirements for minimum sound levels from the IMO Lifesaving Appliance Code have been added to paragraph (c).

§ 113.65-5. (1) One comment suggested removing the note following *§ 113.65-5* as being out of date and merely a cross-reference to other requirements for associated equipment.

The note has been removed.

§ 161.002-1. (1) Components of automatic fire detection systems, EN54 parts 1 through 11, published by the European Committee for Standardization (CEN) have been removed from this section because some of the documents obtained by the Coast

Guard were in draft form. Once finalized, these documents will again be reviewed for inclusion.

(2) This section has been conformed to the current format for incorporation by reference sections. Existing paragraph (b), left untouched by the NPRM, is removed by this rule. The existing paragraph required manufacturers to maintain a copy of certificates of approval and the material listed in proposed paragraph (a) (paragraph (b) in this rule). As the list of materials has grown, it is unnecessary for manufacturers to maintain a copy of all of these documents.

(3) One comment suggested that American National Standards Institute (ANSI) be listed as a source of all incorporated materials.

Though not all of the documents listed in *§ 161.002-1* (Incorporation by reference) are available from ANSI, some may be obtained from ANSI's address listed in *§ 110.10-1*.

§ 161.002-4. (1) A cross-reference to subchapter J has been added to the end of paragraph (b)(1) because it has been deleted from *§ 161.002-1* (Incorporation by reference) for formatting reasons.

(2) One comment suggested removing paragraph (b)(3) because there is no justification for its inclusion.

LR Test Specification Number 1 is an internationally accepted testing protocol for shipboard electrical and electronic equipment based upon various requirements of the IEC and is retained.

(3) An option has been provided in paragraph (b)(3) to include table 4/11.1 of the ABS Rules.

§ 161.002-10. One comment recommended that paragraphs (b)(1)(i) and (ii) be revised to clarify the term "similar annunciating device."

Paragraph (b)(1) has been revised for clarification.

§ 161.002-15. (1) One comment requested that "aural" be changed to "audible."

This change has been made because it conforms to Factory Mutual terminology.

(2) Proposed paragraph (b) has been removed because SOLAS 74 is already mentioned in *§ 161.002-1*.

§ 161.002-17. This section has been aligned with equivalency provisions in other recent Coast Guard rulemakings.

Subpart 161.004. One comment noted that subpart 161.004, which is removed, included *§ 161.004-1* as well.

This change has been made accordingly.

Incorporation by Reference

The Director of the Federal Register has approved the material in §§ 110.10-1 and 161.002-1 for incorporation by

reference under 5 U.S.C. 552 and 1 CFR part 51. The material is available as indicated in that section.

Regulatory Evaluation

This rule is not a significant regulatory action under section 3(f) of Executive Order 12866 and does not require an assessment of potential costs and benefits under section 6(a)(3) of that order. It has not been reviewed by the Office of Management and Budget under that order. It is not significant under the regulatory policies and procedures of the Department of Transportation (DOT) (44 FR 11040, February 26, 1979). A Regulatory Evaluation under paragraph 10e of the regulatory policies and procedures of DOT has been prepared and is available in the docket for inspection or copying where indicated under "ADDRESSES." The Evaluation is summarized as follows.

Most of the changes to the regulations are either editorial or update technical specifications to reflect latest practices. Although some of these changes will cause minor cost increases for shipbuilders, others will result in substantial savings. The cost increases resulting from these rules will be more than offset by the cost savings, due to relaxations in the rules. The Coast Guard estimates that the cost of complying with the interim rule over the next 10 years will total \$33,753,392 (in present value); but, this cost will be more than offset by the estimated net benefits of \$73,538,213. This is a cost-benefit ratio of \$1.00 of costs to \$2.18 of benefits.

Many of the changes causing cost increases are already current marine industry practices, such as an increase in the protection of cable from bilge water.

There are several intangible benefits. Due to the increased use of national and international standards, certain items will now be more readily available "off the shelf" for marine use. A significant economic savings will result from the ability of equipment manufacturers, in many cases, to meet the new performance specifications instead of the old, prescriptive design standards. Also, the cost of submitting detailed plans and specifications to the Coast Guard for approval of certain equipment, such as sound powered telephones, emergency loudspeaker systems, and navigation lights, will be eliminated.

No comments were received to the evaluation in the preamble to the NPRM. The Coast Guard solicits cost data and comments regarding the economic impact of the changes made

since requirements were published in the NPRM.

Small Entities

Under the Regulatory Flexibility Act (the Act) (5 U.S.C. 601 *et seq.*), the Coast Guard must consider the economic impact on small entities of a rule for which a general notice of proposed rulemaking is required. "Small entities" may include (1) small businesses and not-for-profit organizations that are independently owned and operated and are not dominant in their fields and (2) governmental jurisdictions with populations of less than 50,000.

The concerns of many small entities have been addressed by the incorporation of wide variety of national and international standards. This rule dramatically revises certain prescriptive requirements concerning the design, specification, and approval of electrical equipment and replaces them with performance-based requirements that incorporate national and international standards. Whenever possible, requirements have been adjusted to address the size of the vessel and, in some cases, relaxed for smaller vessels. Small entities that build or own vessels should experience reduced costs and potentially increased business opportunities due to the flexibility of requirements in these rules and the eliminating of regulatory burden.

Therefore, the Coast Guard certifies under section 605(b) of the Act that this rule will not have a significant economic impact on a substantial number of small entities.

Collection of Information

Under the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*), the Office of Management and Budget (OMB) reviews each rule that contains a collection-of-information requirement to determine whether the practical value of the information is worth the burden imposed by its collection. Collection-of-information requirements include reporting, recordkeeping, notification, and other, similar requirements. This rule contains collection-of-information requirements in subpart 110.25 of subchapter J and subpart 161.002 of subchapter Q.

I. The following particulars apply to subpart 110.25:

DOT No.: 2115.

OMB Control No.: 2115-0115.

Administration: U.S. Coast Guard.

Title: Electrical Engineering Requirements for Merchant Vessels.

Need For Information: Subpart 110.25 requires industry to complete electrical engineering plans to meet performance

requirements on newly built vessels and modifications of current vessels.

Proposed Use of Information: This information is necessary to determine compliance with the electrical regulations before vessel construction or modification begins.

Frequency of Response: The information must be submitted when a vessel is built or modified.

Burden Estimate: 478 hours.

Respondents: 175 owners or operators.

Average Burden Hours Per

Respondent: 1 hour per submission.

II. The following particulars apply to subpart 161.002:

DOT No.: 2115.

OMB Control No.: 2115-0121.

Administration: U.S. Coast Guard.

Title: Electrical Engineering Requirements for Merchant Vessels.

Need for Information: Subpart 161.002 concerns application for type approval of fire protection systems.

Proposed Use of Information: This information is necessary to ensure compliance with the electrical regulations.

Frequency of Response: A response is due each time initial approval is sought and each time a revision is requested.

Burden Estimate: 60 hours.

Respondents: 6 manufacturers.

Average Burden Hours Per

Respondent: 10 hours per respondent.

The collection-of-information requirements were submitted to the Department of Transportation on the following dates: February 6, 1996, for subchapter Q and February 26, 1996, for subchapter J. The requirements have not yet been approved by OMB under section 3504(h) of the Paperwork Reduction Act. When approved by OMB, notice of approval will be published in the Federal Register.

Federalism

The Coast Guard has analyzed this rule under the principles and criteria contained in Executive Order 12612 and has determined that this rule does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

Environment

The Coast Guard considered the environmental impact of this rule and concluded that, under paragraph 2.B.2e(34) (d) and (e) of Commandant Instruction M16475.1B, this rule is categorically excluded from further environmental documentation. This rule concerns only system arrangement and equipment approval. The approved system arrangement and equipment required by this rule should contribute

in the enhancement of vessel safety and, thereby, help to minimize impacts on the marine environment. A "Categorical Exclusion Determination" is available in the docket for inspection or copying where indicated under **ADDRESSES**.

List of Subjects

46 CFR Part 108

Fire prevention, Marine safety, Occupational safety and health, Oil and gas exploration, Reporting and recordkeeping requirements, Vessels.

46 CFR Part 110

Incorporation by reference, Reporting and recordkeeping requirements, Vessels.

46 CFR Parts 111 and 112

Vessels.

46 CFR Part 113

Communications equipment, Fire prevention, Vessels.

46 CFR Part 161

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

For the reasons set forth in the preamble, the Coast Guard amends 46 CFR parts 108, 110, 111, 112, 113, and 161 as follows:

PART 108—DESIGN AND EQUIPMENT

1. The authority citation for part 108 is revised to read as follows:

Authority: 43 U.S.C. 1333; 46 U.S.C. 3102, 3306; 49 CFR 1.46.

2. In § 108.170, in the notes following paragraph (b), note 1 is revised to read as follows:

§ 108.170 Definitions.

* * * * *

Notes: 1. Further requirements with respect to hazardous locations are contained in part 111, subpart 111.105, of this chapter.

* * * * *

3. In § 108.181, paragraph (c) is revised to read as follows:

§ 108.181 Ventilation for enclosed spaces.

* * * * *

(c) Each fan in a ventilating system must have remote controls installed in accordance with part 111, subpart 111.103, of this chapter.

* * * * *

4. In § 108.185, paragraph (c), introductory text, is revised to read as follows:

§ 108.185 Ventilation for enclosed classified locations.

* * * * *

(c) Each unit must have alarms that are powered independently of the

ventilation motor power and control circuitry and sound at a continuously manned station when—

* * * * *

PART 110—GENERAL PROVISIONS

5. The authority citation for part 110 is revised 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; 49 CFR 1.45, 1.46; § 110.01–2 also issued under 44 U.S.C. 3507.

6. In § 110.01–1, paragraphs (a) and (b) are revised to read as follows and paragraph (d) is removed and reserved:

§ 110.01–1 General.

(a) This subchapter applies to all electrical installations on vessels subject to subchapters D, H, I, I–A, K, L, O, Q, R, T, U, and W of this chapter whenever those subchapters require an electrical installation to be in accordance with this subchapter.

(b) This subchapter applies only to electrical installations contracted for after September 30, 1996.

* * * * *

(d) [Reserved]

* * * * *

7. Section 110.01–3 is revised to read as follows:

§ 110.01–3 Repairs and alterations.

(a) Repairs and replacements in kind must comply with either the regulations in this subchapter or those in effect when the vessel was built.

(b) Alterations and modifications, such as re-engining, re-powering, upgrading of the main propulsion control system, or replacing extensive amounts of cabling, must comply with either the regulations in this subchapter or those in effect at the time the alterations or modifications are made.

(c) Conversions, such as the addition of a midbody or a change in the service of the vessel, are handled on a case-by-case basis by Commandant (G–MOC).

8. Section 110.10–1 is revised 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 paragraph (b) of 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 Office of the Federal Register, 800 North Capitol Street NW., suite 700, Washington, DC, and at the U.S. Coast Guard, (G–MSE), 2100 Second Street SW., Washington, DC 20593–0001, and is available from the sources indicated in paragraph (b) of this section.

(b) The material approved for incorporation by reference in this subchapter and the sections affected are as follows:

American Bureau of Shipping (ABS), American Bureau of Shipping, Two World Trade Center, 106th Floor, New York, NY 10048:

Rules for Building and Classing Steel Vessels, 1995

Rules for Building and Classing Mobile Offshore Drilling Units, 1994

110.15–1; 111.12–1(a); 111.12–3; 111.12–5; 111.12–7; 111.33–11; 111.35–1; 111.70–1(a); 111.105–31(n); 111.105–39(a); 111.105–40(a); 113.05–7.

111.12–1(a); 111.12–3; 111.12–5; 111.12–7; 111.33–11; 111.35–1; 111.70–1(a).

American National Standards Institute (ANSI), American National Standards Institute, 11 West 42nd Street, New York, NY 10036:

ANSI/ASME A17.1, Safety Code for Elevators and Escalators, 1993

ANSI/ASME A17.1A, Addenda to ANSI/ASME A17.1, Safety Code for Elevators and Escalators (including Errata, 1995), 1994.

ANSI/IEEE C37.04, Rating Structure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis, 1979.

ANSI C37.12, For AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis—Specification Guide, 1991.

111.91–1

111.91–1.

111.54–1(c).

111.54–1(c).

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

ASTM B 117–95, Standard Practice for Operating Salt Spray (Fog) Apparatus, 1996

ASTM D 4066–94b, Standard Specification for Nylon Injection and Extrusion Materials (PA), 1994.

110.15–1(b).

111.60–1(c)

Institute of Electrical and Electronic Engineers (IEEE), IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854:

IEEE Std C37.13, IEEE Standard for Low-Voltage AC Power Circuit Breakers used in Enclosures, 1990.

IEEE Std C37.14, IEEE Standard for Low-Voltage DC Power Circuit Breakers Used in Enclosures, 1992.

IEEE Std 45–1983, IEEE Recommended Practice for Electric Installations on Shipboard, 1983.

111.54–1(c).

111.54–1(c).

111.05–7; 111.15–2(b); 111.30–1; 111.30–5(a); 111.30–19(a); 111.33–3(a); 111.33–5(a); 111.60–1(a); 111.60–2; 111.60–3; 111.60–5(a); 111.60–6(a); 111.60–11(c); 111.60–13(a); 111.60–19(b); 111.60–21; 111.60–23(d); 111.105–3; 111.105–31(e); 111.105–41; 111.107–1(c); 113–65–5.

110.15–1(a).

IEEE Std 100–1992, The New IEEE Standard Dictionary of Electrical and Electronics Terms, 1992.

IEEE Std 320, Application Guide for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis (ANSI/IEEE C37.010–79), 1979.

IEEE Std 331, Application Guide for Low-Voltage AC Nonintegrally Fused Power Circuit Breakers (Using Separately Mounted Current-Limiting Fuses) (ANSI/IEEE C37.27), 1987.

IEEE Std 1202–1991, IEEE Standard for Flame Testing of Cables for Use in Cable Tray in Industrial and Commercial Occupancies, 1991.

111.54–1(c).

111.54–1(c).

111.60–2; 111.60–6(a); 111.107–1(c).

International Association of Drilling Contractors (IADC), International Association of Drilling Contractors, PO Box 4287, Houston, TX 77210–4287:

The International Society for Measurement and Control (ISA), International Society for Measurement and Control, 67 Alexander Drive, P.O. Box 12277 Research Triangle Park, NC 27709:

- RP 12.6, Wiring Practices for Hazardous (Classified) Locations Instrumentation Part I: Intrinsic Safety, 1995. 111.105–11(e).

National Electrical Manufacturers Association (NEMA), National Electrical Manufacturers Association, 2101 L Street, NW, Washington, DC 20036:

- NEMA Standards Publication No. ICS 2, Industrial Control and Systems Controllers, Contractors, and Overload Relays Rated not more than 2000 Volts AC or 750 Volts DC, 1993. 111.70–3(a).
- NEMA Standards Publication No. 2.3 1983, Instructions for the Handling, Installation, Operation, and Maintenance of Motor Control Centers, 1983. 111.70–3(a).
- NEMA Standards Publication No. 2.4, NEMA and IEC Devices for Motor Service—A Guide for Understanding the Differences, 1989. 111.70–3(a).
- NEMA Standards Publication No. 250, Enclosures for Electrical Equipment (1000 Volts Maximum), 1991. 111.01–9(a); 111.01–9(b); 111.01–9(c); 111.01–9(d); 111.01–9 (Note); 111.10–7; 113.20–3; 113.25–11; 113.30–25(c); 113.30–25(h); 113.40–10(b).

- NEMA Standards Publication No. WC–3, Rubber Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy, 1980 (with revisions through May 1989). 111.60–13(a); 111.60–13(c).

- NEMA Standards Publication No. WC–8, Ethylene-Propylene-Rubber-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy, 1988 (with revisions through 1992). 111.60–13(a); 111.60–13(c).

National Fire Protection Association (NFPA), National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02269:

- NEC, see NFPA 70.
- NFPA 70, National Electrical Code (NEC), 1996 111.05–33; 111.20–15; 111.25–5(a); 111.50–3(c); 111.50–9; 111.53–1(a); 111.54–1(a); 111.55–1(a); 111.59–1; Table 111.60–7; 111.60–11(f); 111.60–13(a); 111.60–13(b); 111.60–13(c); 111.60–23; 111.81–1(d); 111.83–3(a); 111.105–1; 111.105–1 (Note); 111.105–3; 111.105–5; 111.105–7; 111.105–9; 111.105–15(a); 111.105–17(b); 111.107–1(b).
- NFPA 77, Recommended Practice on Static Electricity, 1993 111.105–27.
- NFPA 99, Standard for Health Care Facilities, 1996 111.105–37.
- NFPA 496, Standard for Purged and Pressurized Enclosures for Electrical Equipment, 1993. 111.105–7(b).

Naval Publications and Forms Center (NPFC), Naval Publications and Forms Center, Customer Service—Code 1052, 5801 Tabor Avenue Philadelphia, PA 19120:

- MIL–W–76D, Military Specification Wire and Cable, Hook-up, Electrical, Insulated, General Specification For, 1992. 111.60–11(c).
- MIL–W–16878F, Military Specification, Wire, Electrical, Insulated, General Specification For, 1992. 111.60–11(c).
- MIL–C–24640A, Military Specification Cables, Light Weight, Electric, Low Smoke, For Shipboard Use, General Specification For, 1995. 111.60–1(a); 111.60–3(c).
- MIL–C–24643A, Military Specification Cables and Cords, Electric, Low Smoke, For Shipboard Use, General Specification For, 1994 (Including Amendment 1). 111.60–1(a); 111.60–3(c).

Naval Sea Systems Command (NAVSEA), Naval Sea Systems Command, Code 55Z, Department of Navy Washington, DC 20362:

- DDS 300–2, A. C. Fault Current Calculations, 1988 111.52–5.
- MIL–HDBK–299 (SH), Military Handbook Cable Comparison Handbook Data Pertaining to Electric Shipboard Cable, 1989. 111.60–3(c).

Underwriters Laboratories Inc. (UL), Underwriters Laboratories, Inc., ATTN: Publications Stock, 333 Pfingsten Rd. Northbrook, IL 60062–2096:

- UL 44, Standard for Rubber-Insulated Wire and Cable, 1991 (including revisions through February, 1996). 111.60–11(c).
- UL 50, Standard for Enclosures for Electrical Equipment, 1995 111.81–1(d).
- UL 62, Standard for Flexible Cord and Fixture Wire, 1991 (including revisions through February, 1996). 111.60–13(a).
- UL 83, Standard for Thermoplastic-Insulated Wires and Cables, 1991 (including revisions through March, 1996). 111.60–1(c); 111.60–11(c).
- UL 489, Standard for Molded-Case Circuit Breakers and Circuit-Breaker Enclosures, 1991 (including revisions through June, 1995). 111.54–1(b).
- UL 514A, Standard for Metallic Outlet Boxes, 1991 (including revisions through April, 1995). 111.81–1(d).
- UL 514B, Standard for Fittings for Conduit and Outlet Boxes, 1989 (including revisions through April, 1995). 111.81–1(d).
- UL 514C, Standard for Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers, 1988 (including revisions through April, 1995). 111.81–1(d).
- UL 595, Standard for Marine-Type Electric Lighting Fixtures, 1985 (including revisions through September, 1991). 111.75–20(a); 111.75–20(e).
- UL 913, Standard for Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III Division 1, Hazardous (Classified) Locations, 1988. 111.105–11(a).

UL 1042, Standard for Electric Baseboard Heating Equipment, 1994 (including revisions through November, 1995).	111.87-3(a).
UL 1072, Standard for Medium-Voltage Power Cables, 1995 (including revisions through January, 1996).	111.60-1(e).
UL 1096, Standard for Electric Central Air Heating Equipment, 1986 (including revisions through January, 1988).	111.87-3(a).
UL 1104, Standard for Marine Navigation Lights, 1981 (including revisions through May, 1988).	111.75-17(d).
UL 1203, Standard for Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations, 1994 (including revisions through October, 1995).	111.105-9.
UL 1569, Standard for Metal-Clad Cables, 1995 (including revisions through April, 1996).	111.60-23(a).
UL 1570, Standard for Fluorescent Lighting Fixtures, 1988 (including revisions through April, 1996).	111.75-20.
UL 1571, Standard for Incandescent Lighting Fixtures, 1995 (including revisions through April, 1996).	111.75-20.
UL 1572, Standard for High Intensity Discharge Lighting Fixtures, 1995 (including revisions through May, 1996).	111.75-20.
UL 1573, Standard for Stage and Studio Lighting Units, 1994 (including revisions through February, 1995).	111.75-20.
UL 1574, Standard for Track Lighting Systems, 1995 (including revisions through July, 1995).	111.75-20.
ANSI/UL 1581, Reference Standard for Electrical Wires, Cables, and Flexible Cords, 1991 (including revisions through January, 1996).	111.30-19(b); 111.60-2; 111.60-6(a).

(c) 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.

9. Section 110.5-1 is revised to read as follows:

§ 110.15-1 Definitions.

As used in this subchapter—

(a) The electrical and electronic terms are defined in IEEE Std 100 or IEC 92-101.

(b) In addition to the definitions in paragraph (a) of this section—

Coastwise Vessel means a vessel that normally navigates the waters of any ocean or the Gulf of Mexico 20 nautical miles or less offshore and is certificated for coastwise navigation by the Coast Guard.

Commandant means the Commandant of the Coast Guard.

Corrosion resistant material or finish means any material or finish that meets the testing requirements of ASTM B-117 or test Kb in IEC 68-2-52 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.

Corrosive location means a location exposed to the weather on vessels operating in salt water or a location on board which may be exposed to the corrosive effects of the cargo carried or of the vessel's systems.

Dead ship condition is the condition in which the main propulsion plant, boilers and auxiliaries are not in operation due to the absence of power.

Dripproof means enclosed so that equipment meets at least a NEMA 250

Type 1 with dripshield, NEMA 250 Type 2, or an IEC IP 32 rating.

Embarkation station means a location from which persons embark into survival craft or are assembled before embarking into survival craft.

Emergency squad means the crew designated on the station bill as the nucleus of a damage control party.

Flashpoint means the minimum temperature at which a liquid gives off a vapor in sufficient concentration to form an ignitable mixture with air near the surface of the liquid, as specified by the appropriate test procedure and apparatus.

Great Lakes vessel means a vessel that navigates exclusively on the Great Lakes and their connecting and tributary waters.

Independent laboratory means a laboratory that is accepted by the Commandant under part 159 of this chapter for the testing and listing or certification of electrical equipment.

Location not requiring an exceptional degree of protection means a location which is not exposed to the environmental conditions outlined in the definition for locations requiring exceptional degrees of protection. This location requires the degree of protection of § 111.01-9 (c) or (d) of this chapter. These locations include—

- (1) An accommodation space;
- (2) A dry store room;
- (3) A passageway adjacent to quarters;
- (4) A water closet without a shower or bath;
- (5) A radio, gyro and chart room; and
- (6) A location with similar environmental conditions.

Location requiring an exceptional degree of protection means a location exposed to weather, seas, splashing,

pressure-directed liquids, or similar moisture conditions. These locations include—

- (1) On deck;
- (2) A machinery space;
- (3) A cargo space;
- (4) A location within a galley or pantry area, laundry, or water closet which contains a shower or bath; and
- (5) Other spaces with similar environmental conditions.

Marine inspector or *inspector* means a civilian employee or military member of the Coast Guard assigned by an Officer in Charge, Marine Inspection, or the Commandant to perform duties with respect to the inspection, enforcement, and administration of vessel safety and navigation laws and regulations.

Nonsparking fan means nonsparking fan as defined in ABS Rules 4/5.149.6.

Ocean vessel means a vessel that navigates the waters of any ocean or the Gulf of Mexico more than 20 nautical miles offshore and is certificated by the Coast Guard for ocean navigation.

Qualified person means a person who by virtue of that person's knowledge, ability, experience, specialized training, or licensing can competently and safely perform required electrical duties or functions.

Waterproof means enclosed so that equipment meets at least a NEMA 250 Type 4 or 4X or an IEC IP 56 or 66 rating.

Watertight means enclosed so that equipment meets at least a NEMA 250 Type 6 or 6P or an IEC IP 67 or 68 rating.

10. Section 110.20-1 is revised to read as follows:

§ 110.20-1 Equivalents.

The Commanding Officer, Marine Safety Center (MSC), may approve any arrangement, fitting, appliance, apparatus, equipment, calculation, information, or test that provides a level of safety equivalent to that established by specific provisions of this subchapter. Requests for approval must be submitted to the Marine Safety Center. If necessary, the Marine Safety Center may require engineering evaluations and tests to demonstrate the equivalence of the substitute.

11. In § 110.25-1, paragraphs (c), (i), (j), and (l) and the notes to paragraphs (m) and (n) are revised and paragraph (o) is added to read as follows:

§ 110.25-1 Plans and information required for new construction.

* * * * *

(c) Elementary and isometric or deck wiring plans, including the location of each cable splice, a list of symbols, and the manufacturer's name and identification of each item of electrical equipment, of each—

- (1) Steering gear circuit and steering motor controller;
- (2) General emergency alarm system;
- (3) Sound-powered telephone or other fixed communication system;
- (4) Power-operated boat winch;
- (5) Fire detecting and alarm system;
- (6) Smoke detecting system;
- (7) Electric watertight door system;
- (8) Fire door holding systems;
- (9) Public address system;
- (10) Manual alarm system; and
- (11) Supervised patrol system.

* * * * *

(i) For vessels with hazardous locations for which part 111, subpart 111.105, is applicable, plans showing the extent and classification of all hazardous locations, including information on—

- (1) Equipment identification by manufacturer's name and model number;
- (2) Equipment use within the system;
- (3) Cable parameters;
- (4) Equipment locations;
- (5) Installation details; and
- (6) Independent laboratory certificate of testing.

(j) Plans and installation instructions for each approved component of an intrinsically safe system listed or certified by an independent laboratory (see § 111.105-11 of this chapter).

* * * * *

(l) Plans and information sufficient to evaluate equipment to be considered for equivalency under § 110.20-1.

(m) * * *

Note to paragraph (m): This equipment evaluation is generally performed by the

Commanding Officer, Marine Safety Center and includes items such as cable splices, signalling lights, shore connection boxes, submersible pumps, engine order telegraph systems, shaft speed and thrust indicator systems, and steering gear failure alarm systems.

(n) * * *

Note to paragraph (n): This equipment evaluation is generally performed by the Commanding Officer, Marine Safety Center, and includes items such as circuit breakers, switches, lighting fixtures, air heating equipment, busways, outlet boxes, and junction boxes. Items required to meet an IEEE, IEC, NEMA, UL, ANSI, or other industry standard or a military specification are considered acceptable if manufacturer's certification of compliance is indicated on a material list or plan. However, if the standards require third-party testing and listing or certification, proof of listing or certification by an independent laboratory must also be submitted.

(o) Detailed analysis showing compliance with the MC cable requirements in § 111.60-23(b) of this chapter.

§ 110.25-3 [Amended]

12. In § 110.25-3, in paragraph (a)(1), remove "(G-MSC)" and add, in its place, "(MSC)"; paragraph (a)(3) is removed; and, in the note to paragraph (c), remove "a Coast Guard Technical Office" and add, in their place, "Commanding Officer, Marine Safety Center,".

13. In § 110.30-1, paragraph (a) is revised to read as follows:

§ 110.30-1 General.

(a) This section supplements the general requirements for testing and inspecting vessels in other parts of this chapter.

* * * * *

14. Section 110.30-7 is revised to read as follows:

§ 110.30-7 Repairs or alterations.

The Officer in Charge, Marine Inspection must be notified before—

- (a) Alterations or modifications that deviate from approved plans; or
- (b) Repairs, alterations, or modifications that affect the safety of the vessel.

PART 111—ELECTRICAL SYSTEMS—GENERAL REQUIREMENTS

15. The authority citation for part 111 is revised to read as follows:

Authority: 46 U.S.C. 3306, 3703; 49 CFR 1.46.

16. In § 111.01-1, paragraph (c) is added to read as follows:

§ 111.01-1 General.

* * * * *

(c) Maintenance of system integrity through compliance with the applicable system requirements (IEEE, NEC, IEC, etc.) to which plan review has been approved.

17. Section 111.01-5 is revised to read as follows:

§ 111.01-5 Protection from bilge water.

Each of the following in or around the bilge area must be arranged or constructed so that it cannot be damaged by bilge water:

- (a) Generators.
- (b) Motors.
- (c) Electric coupling.
- (d) Electric cable.

18. Section 111.01-7 is revised to read as follows:

§ 111.01-7 Accessibility and spacing.

(a) The design and arrangement of electric apparatus must afford accessibility to each part as needed to facilitate proper inspection, adjustment, maintenance, or replacement.

(b) Within an enclosure, the spacing between energized components (or between an energized component and ground) must be to the appropriate industry standard for the voltage and current utilized in the circuit. Additionally, spacing within any enclosure must be sufficient to facilitate servicing.

19. Section 111.01-9 is revised 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 Type 2 or IEC IP 32 degree of protection as appropriate for the service intended.

(b) Electrical equipment in locations requiring exceptional degrees of protection as defined in § 110.15-1 of this chapter must be enclosed to meet at least a NEMA 250 Type 4 or 4X or IEC IP 56; or NEMA 250 Type 6 or 6P or IEC IP 67 degree of protection as appropriate for the service intended. Each enclosure must be designed in such a way 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 IP 32 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 IP 11.

Note to § 111.01-9: The degrees of protection designated in this section are described in NEMA Standards Publication No. 250 and IEC IP Code 529.

20. Section 111.01–15 is revised to read as follows:

§ 111.01–15 Temperature ratings.

(a) In this subchapter, an ambient temperature of 40°C is assumed except as otherwise stated.

(b) A 50°C ambient temperature is assumed for all rotating electrical machinery in boiler rooms, engine rooms, auxiliary machinery rooms, and weather decks, unless it can be shown that a 45°C ambient temperature will not be exceeded in these spaces.

(c) A 45°C ambient temperature is assumed for cable and all other (non-rotating) electrical equipment in boiler rooms, engine rooms, auxiliary machinery rooms, and weather decks.

(d) Unless otherwise indicated in this subchapter, a 55°C ambient temperature is assumed for all control and instrumentation equipment.

(e) If electrical equipment is utilized in a space in which the equipment's rated ambient temperature is below the assumed ambient temperature of the space, its load must be derated. The assumed ambient temperature of the space plus the equipment's actual temperature rise at its derated load must not exceed the equipment's total rated temperature (equipment's rated ambient temperature plus its rated temperature rise).

21. Section 111.01–17 is revised to read as follows:

§ 111.01–17 Voltage and frequency variations.

Unless otherwise stated, electrical equipment must function at variations of at least ± 5 percent of rated frequency and +6 percent to –10 percent of rated voltage. This limitation does not address transient conditions.

22. Section 111.01–19 is added to read as follows:

§ 111.01–19 Inclination of the vessel.

(a) All electrical equipment must be designed and installed to operate under any combination of the following conditions:

(1) 15 degrees static list, 22.5 degrees dynamic roll; and

(2) 7.5 degrees static trim.

(b) All emergency installations must be designed and installed to operate when the vessel is at 22.5 degrees list and 10 degrees trim.

23. In § 111.05–1, the text, excluding the note, is revised to read as follows:

§ 111.05–1 Purpose.

This subpart contains requirements for the grounding of electric systems, circuits, and equipment.

* * * * *

24. Section 111.05–7 is revised 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 IEC 92–3 or section 20 of IEEE Std 45.

25. Section 111.05–9 is revised to read as follows:

§ 111.05–9 Masts.

Each nonmetallic mast and topmast must have a lightning ground conductor.

26. Section 111.05–19 is revised to read as follows:

§ 111.05–19 Tank vessels; grounded distribution systems.

(a) If the voltage of a distribution system is less than 1,000 volts, line to line, a tank vessel must not have a grounded distribution system.

(b) If the voltage of a distribution system on a tank vessel is 1,000 volts or greater, line to line, and the distribution system is grounded, any resulting current must not flow through a hazardous (classified) location.

27. In § 111.05–23, paragraph (d) is added to read as follows:

§ 111.05–23 Location of ground detection indicators.

* * * * *

(d) Be provided (at the distribution switchboard or at another location, such as a centralized monitoring position for the circuit affected) for each branch circuit that is isolated from the main source by a transformer or other device.

28. Section 111.05–25 is revised to read as follows:

§ 111.05–25 Ungrounded systems.

Each ungrounded system must be provided with a suitably sensitive ground detection system located at the respective switchboard which provides continuous indication of circuit status to ground with a provision to momentarily remove the indicating device from the reference ground.

29. Section 111.05–27 is revised to read as follows:

§ 111.05–27 Grounded neutral alternating current systems.

Each system must have a suitably sensitive ground detection system which indicates current in the ground connection, be able to withstand the maximum available fault current without damage, and provides continuous indication of circuit status to ground with a provision to momentarily remove the indicating device from the reference ground.

30. Section 111.05–29 is revised to read as follows:

§ 111.05–29 Dual voltage direct current systems.

Each dual voltage direct current system must have a suitably sensitive ground detection system which indicates current in the ground connection, has a range of at least 150 percent of neutral current rating and indicates the polarity of the fault.

31. Section 111.05–33 is revised to read as follows:

§ 111.05–33 Equipment grounding conductors.

(a) Each equipment grounding conductor must be sized in accordance with article 250–95 of the National Electrical Code (the NEC) (NFPA 70).

(b) Each grounding conductor of a cable must be permanently identified as a grounding conductor in accordance with the requirements of article 310–12(b) of the NEC.

32. Section 111.05–37 is revised to read as follows:

§ 111.05–37 Overcurrent devices.

(a) A permanently grounded conductor must not have an overcurrent device unless the overcurrent device simultaneously opens each ungrounded conductor of the circuit.

(b) The neutral conductor of the emergency-main switchboard bus-tie must not have a switch or circuit breaker.

§ 111.05–39 [Removed]

33. Section 111.05–39 is removed.

34. In § 111.10–1, paragraph (a) is revised to read as follows:

§ 111.10–1 Definitions.

* * * * *

(a) *Ships's service loads* mean electrical equipment for all auxiliary services necessary for maintaining the vessel in a normal, operational and habitable condition. Ship's service loads include, but are not limited to, all safety, lighting, ventilation, navigational, communications, habitability, and auxiliary propulsion loads. Electrical propulsion motor, bow thruster motor, cargo transfer, drilling, cargo refrigeration for other than Class 5.2 organic peroxides and Class 4.1 self-reactive substances, and other industrial type loads are not included.

* * * * *

35. Section 111.10–3 is revised to read as follows:

§ 111.10–3 Two generating sources.

In addition to the emergency power sources required under part 112 of this chapter, each self-propelled vessel and

each mobile offshore drilling unit must have at least two electric generating sources.

36. Section 111.10-4 is revised to read as follows:

§ 111.10-4. Power requirements, generating sources.

(a) The aggregate capacity of the electric's ship's service generating sources required in § 111.10-3 must be sufficient for the ship's service loads.

(b) With the ship's service generating source of the largest capacity stopped, the combined capacity of the remaining electric ship's service generating source or sources must be sufficient to supply those services necessary to provide normal operational conditions of propulsion and safety, and minimum comfortable conditions of habitability. Habitability services include cooking, heating, air conditioning (where installed), domestic refrigeration, mechanical ventilation, sanitation, and fresh water.

(c) The capacity of the ship's service generating sources must be sufficient for supplying the ship's service loads without the use of a generating source which is dependent upon the speed or direction of the main propelling engines or shafting.

(d) Operating generators must provide a continuous and uninterrupted source of power for the ship's service load under normal operational conditions. Any vessel speed change or throttle movement must not cause a ship's service load power interruption.

(e) Vessels with electric propulsion that have two or more constant-voltage generators which supply both ship's service and propulsion power do not need additional ship's service generators provided that with any one propulsion/ship's service generator out of service the capacity of the remaining generator(s) is sufficient for the electrical loads necessary to provide normal operational conditions of propulsion and safety, and minimum comfortable conditions of habitability.

(f) A generator driven by a main propulsion unit (such as a shaft generator) which is capable of providing electrical power continuously, regardless of the speed and direction of the propulsion shaft, may be considered one of the ship's service generating sets required by § 111.10-3. A main-engine-dependent generator which is not capable of providing continuous electrical power may be utilized as a supplemental generator provided that a required ship's service generator or generators having sufficient capacity to supply the ship's service loads can be automatically brought on line prior to

the main-engine-dependent generator tripping off-line due to a change in the speed or direction of the main propulsion unit.

37. In § 111.10-7, paragraph (b) is revised to read as follows:

§ 111.10-7 Dead ship.

* * * * *

(b) If the emergency generator is used for part or all of the electric power necessary to start the main propulsion plant from a dead ship condition, the emergency generator must be capable of providing power to all emergency lighting, emergency internal communications systems, and fire detection and alarm systems in addition to the power utilized for starting the main propulsion plant. Additional requirements are in § 112.05-3(c) of this chapter.

38. Section 111.10-9 is revised to read as follows:

§ 111.10-9

Ship's service supply transformer; 2 required.

If transformers are used to supply the ship's service distribution system required by this subpart for ships and mobile offshore drilling units, there must be at least two installed, independent power transformers. With the largest transformer out of service, the capacity of the remaining units must be sufficient to supply the ship service loads.

Note to § 111.10-9: A ship's service supply system would consist of transformers, overcurrent protection devices, and cables, and would normally be located in the system between a medium voltage bus and a low voltage ship's service switchboard.

§ 111.10-11 [Removed]

39. Section 111.10-11 is removed.

40. Section 111.12-1 is revised to read as follows:

§ 111.12-1 Prime movers.

(a) Prime movers must meet part 58, subpart 58.10, of this chapter, section 4/5.21 of the ABS Rules, and for mobile offshore drilling units, section 4/3.21 of the ABS MODU Rules. Additional requirements for prime movers for emergency generators are in part 112, subpart 112.50, of this chapter.

(b) Each generator prime mover must have an overspeed device that is independent of the normal operating governor and adjusted so that the speed cannot exceed the maximum rated speed by more than 15 percent.

(c) Each prime mover must shut down automatically upon loss of lubricating pressure to the generator bearings if the generator is directly coupled to the

engine. If the generator is operating from a power take-off, such as a shaft driven generator on a main propulsion engine, the generator must automatically declutch (disconnect) from the prime mover upon loss of lubricating pressure to generator bearings.

§ 111.12-3 [Amended]

41. In § 111.12-3, remove the words "Section 35.23 of the American Bureau of Shipping's 'Rules for Building and Classing Steel Vessels,'" and add, in their place, the words, "section 4/5.23 of the ABS Rules or, for a mobile offshore drilling unit, section 4/3.23 of the ABS MODU Rules,".

42. Section 111.12-5 is revised to read as follows:

§ 111.12-5 Generator construction and testing.

Each generator must meet the applicable construction and test requirements of section 4/5 of the ABS Rules, or for mobile offshore drilling units, section 4/3 of the ABS MODU Rules.

43. Section 111.12-7 is revised to read as follows:

§ 111.12-7 Voltage regulation and parallel operation.

Voltage regulation and parallel operation must meet sections 4/5.31 and 4/5.33 of the ABS Rules, or for mobile offshore drilling units, sections 4/3.31 and 4/3.33 of the ABS MODU Rules.

§ 111.12-11 [Amended]

44. In § 111.12-11, in paragraph (c)(1), remove the words "inverse time" and add, in their place, the word "longtime" and, in the heading to paragraph (d), remove the words "inverse time" and add, in their place, the words "longtime overcurrent".

45. Section 111.15-1 is revised to read as follows:

§ 111.15-1 General.

Each battery must meet the requirements of this subpart.

46. Section 111.15-2 is revised to read as follows:

§ 111.15-2 Battery construction.

(a) A battery cell, when inclined at 40 degrees from the vertical, must not spill electrolyte.

(b) Each fully charged lead-acid battery must have a specific gravity that meets section 16 of IEEE Std 45.

(c) Batteries must not evolve hydrogen at a rate exceeding that of a similar size lead-acid battery under similar charging condition.

(d) Batteries must be constructed to take into account the environmental conditions of a marine installation,

including temperature, vibration, and shock.

47. In § 111.15-3, the introductory text and paragraphs (a), (b), and (c) are redesignated as paragraphs (a) introductory text, (a)(1), (a)(2), and (a)(3) and paragraph (b) is added to read as follows:

§ 111.15-3 Battery categories.

* * * * *

(b) Batteries that generate less hydrogen under normal charging and discharging conditions than an equivalent category of lead-acid batteries (e.g., sealed batteries) may have their battery category reduced to an equivalent category of lead-acid batteries.

48. In § 111.15-5, paragraphs (a), (c), (e), (f), and (g) and the last sentence of paragraph (d) are revised to read as follows and paragraph (h) is removed:

§ 111.15-5 Battery installation.

(a) *Large batteries.* Each large battery installation must be in a room that is only for batteries or a box on deck. Installed electrical equipment must meet the hazardous location requirements in support 111.105 of this part.

* * * * *

(c) *Small batteries.* Small size battery installations must be located in well-ventilated spaces. They must not be located in closets, staterooms, or similar spaces, unless the batteries are sealed.

(d) * * *. Each battery tray must provide adequate accessibility for installation, maintenance, and removal of the batteries.

(e) *Nameplates.* Each battery must be provided with the name of its manufacturer, model number, type designation, either the cold cranking amp rating or the amp-hour rating at a specific discharge and, for a lead-acid battery, the fully charged specific gravity value. This information must be permanently fixed to the battery.

(f) *Lining in battery rooms and lockers.* (1) Each battery room and locker must have a watertight lining that is—

(i) On each shelf to a height of at least 76 mm (3 inches); or

(ii) On the deck to a height of at least 152 mm (6 inches).

(2) For lead-acid batteries, the lining must be 1.6 mm ($\frac{1}{16}$ inch) thick lead or other material that is corrosion-resistant to the electrolyte of the battery.

(3) For alkaline batteries, the lining must be 0.8 mm ($\frac{1}{32}$ inch) thick steel or other material that is corrosion-resistant to the electrolyte of the battery.

(g) *Lining of battery boxes.* Each battery box must have a watertight

lining to a height of at least 76 mm (3 inches) that meets paragraphs (f)(2) and (f)(3) of this section.

49. In § 111.15-10, paragraph (g) is revised to read as follows:

§ 111.15-10 Ventilation.

* * * * *

(g) *Boxes for small battery installations.* Each box for a small battery installation must have openings near the top to allow escape of gas. If the installation is in a non-environmentally-controlled location, the installation must prevent the ingress of water.

50. Section 111.15-20 is revised to read as follows:

§ 111.15-20 Conductors.

(a) Each conductor penetration to a battery room must be made watertight.

(b) The termination of each cable must be sealed to prevent the entrance of electrolyte by spray or creepage.

(c) Each connecting cable must have sufficient capacity to carry the maximum charging current or maximum discharge current, whichever is greater.

51. Section 111.15-30 is revised to read as follows:

§ 111.15-30 Battery chargers.

Each battery charger enclosure must meet § 111.01-9. Additionally, each charger must be suitable for the size and type of battery installation that it serves. Chargers incorporating ground autotransformers must not be used. Except for rectifiers, chargers with a voltage exceeding 20 percent of the line voltage must be provided with automatic protection against reversal of current.

52. Section 111.20-1 is revised to read as follows:

§ 111.20-1 General requirements.

Each transformer winding must be resistant to moisture, sea atmosphere, and oil vapor, unless special precautions are taken, such as enclosing the winding in an enclosure with a high degree of ingress protection.

53. Section 111.20-15 is revised to read as follows:

§ 111.20-15 Transformer overcurrent protection.

Each transformer must have protection against overcurrent that meets article 450 of the NEC or IEC 92-303.

54. Section 111.25-5, paragraph (a) is revised to read as follows:

§ 111.25-5 Marking.

(a) Each motor must have a marking or nameplate that meets either article 430-7 of the NEC or IEC 92-301 (clause 16).

* * * * *

55. Section 111.30-1 is revised to read as follows:

§ 111.30-1 Location and installation.

Each switchboard must meet the location and installation requirements of section 17.1 of IEEE Std 45 or IEC 92-302, as applicable.

56. Section 111.30-4 is revised to read as follows:

§ 111.30-4 Circuit breakers removable from the front.

Circuit breakers, when installed on generator or distribution switchboards, must be mounted or arranged in such a manner that the circuit breaker may be removed from the front without unbolting bus or cable connections or deenergizing the supply, unless the switchboard is divided into sections, such that each section is capable of providing power to maintain the vessel in a navigable condition, and meets § 111.30-24 (a) and (b).

57. Section 111.30-5 is revised to read as follows:

§ 111.30-5 Construction.

(a) All low voltage and medium voltage switchboards (as "low voltage" and "medium voltage" are defined in the standard used) must meet—

(1) For low voltages, either section 17.2 of IEEE Std 45 or IEC 92-302, clause 6; or

(2) For medium voltages, either section 17.3 of IEEE Std 45 or IEC 92-503, as appropriate.

(b) Each switchboard must be fitted with a dripshield unless the switchboard is a deck-to-overhead mounted type which cannot be subjected to leaks or falling objects.

§§ 111.30-9, 111.30-11, and 111.30-13 [Removed]

58. Sections 111.30-9, 111.30-11, and 111.30-13 are removed.

59. Section 111.30-19 is revised to read as follows:

§ 111.30-19 Buses and wiring.

(a) *General.* Each bus must meet the requirements of either—

(1) Section 17.11 of IEEE Std 45; or

(2) IEC 92-302 (clause 6).

(b) *Wiring.* Instrumentation and control wiring must be—

(1) Suitable for installation within in a switchboard enclosure and be rated at 90° C or higher;

(2) Stranded copper;

(3) No. 14 AWG (2.10 mm²) or larger or be ribbon cable or similar conductor size cable recommended for use in low-power instrumentation, monitoring, or control circuits by the equipment manufacturer;

(4) Flame retardant meeting ANSI/UL 1581 test VW-1 or IEC 332-1;

- (5) Extra flexible, if used on a hinged panel; and
 (6) In compliance with § 111.60–11.

§§ 111.30–21 and 111.30–23 [Removed]

60. Sections 111.30–21 and 111.30–23 are removed.

61. In § 111.30–24 the introductory text is revised to read as follows:

§ 111.30–24 Generation systems greater than 3000 kW.

Except on a non-self-propelled mobile offshore drilling unit (MODU) and a non-self-propelled floating Outer Continental Shelf facility, when the total installed electric power of the ship's service generation system is more than 3000 kW, the switchboard must have the following:

* * * * *

62. In § 111.30–29, paragraphs (b) through (f) are redesignated as paragraphs (d) through (h) and new paragraphs (b) and (c) are added to read as follows:

§ 111.30–29 Emergency switchboards.

* * * * *

(b) There must be a test switch at the emergency switchboard to simulate a failure of the normal power source and cause the emergency loads to be supplied from the emergency power source.

(c) The emergency switchboard must be as near as practicable to the emergency power source but not in the same space as a battery emergency power source.

* * * * *

§ 111.30–31 [Removed]

63. Section 111.30–31 is removed.

64. In § 111.33–3, redesignate paragraphs (a) and (b) as paragraphs (b) and (c) and add a new paragraph (a) to read as follows:

§ 111.33–3 Nameplate data.

(a) Each semiconductor rectifier system must have a nameplate of durable material affixed to the unit that meets the requirements of—

- (1) Section 45.11 of IEEE Std 45; or
- (2) IEC 92–304 (clause 8).

* * * * *

65. Section 111.33–5 is revised to read as follows:

§ 111.33–5 Installation.

Each semiconductor rectifier system must meet the installation requirements, as appropriate, of—

- (a) Sections 45.2, 45.7, and 45.8 of IEEE Std 45; or
- (b) IEC 92–304.

66. Section 111.33–11 is revised to read as follows:

§ 111.33–11 Propulsion systems.

Each power semiconductor rectifier system in a propulsion system must meet section 4/5.84 of ABS Rules or, for mobile offshore drilling units, section 4/3.84 of ABS MODU Rules.

67. Section 111.35–1 is revised to read as follows:

§ 111.35–1 Electrical propulsion installations.

Each electric propulsion system installation must meet sections 4/5.79, 4/5.81, 4/5.83, and 4/5.84 ABS Rules or, for mobile offshore drilling units, sections 4/3.79, 4/3.81, 4/3.83, and 4/3.84 of ABS MODU Rules.

§ 111.40–1 [Removed]

68. Section 111.40–1 is removed.

69. Section 111.40–5 is revised to read as follows:

§ 111.40–5 Enclosure.

Each panelboard must have a noncombustible enclosure that meets §§ 111.01–7 and 111.01–9.

70. Section 111.40–7 is revised to read as follows:

§ 111.40–7 Location.

Each panelboard must be accessible but not in a bunker or a cargo hold, except a cargo hold on a roll-on/roll-off vessel.

71. Section 111.50–2 is added to read as follows:

§ 111.50–2 Systems integration.

The electrical characteristics of each overcurrent protective device must be compatible with other devices and its coordination must be considered in the design of the entire protective system.

Note to § 111.50–2: The electrical characteristics of overcurrent protective devices may differ between standards. The interchangeability and compatibility of components complying with differing standards cannot be assumed.

72. In § 111.50–3, paragraph (c) is revised to read as follows; paragraph (d) is removed; paragraphs (e) through (h) are redesignated as paragraphs (d) through (g); and, at the end of redesignated paragraphs (e) and (g)(2), add the words “or in IEC 92–202”:

§ 111.50–3 Protection of conductors.

* * * * *

(c) *Fuses and circuit breakers.* If the allowable current carrying capacity of the conductor does not correspond to a standard fuse or circuit breaker rating which meets article 240–6 of the NEC or IEC 92–202 and the next larger standard fuse or circuit breaker rating is used, it must not be larger than 150 percent of the current carrying capacity of the conductor. The effect of temperature on

the operation of fuses and thermally controlled circuit breakers must be taken into consideration.

* * * * *

73. In § 111.52–1, the introductory text is revised to read as follows:

§ 111.52–1 General.

The available short-circuit current must be computed—

* * * * *

74. Section 111.52–5 is revised to read as follows:

§ 111.52–5 Systems 1500 kilowatts or above.

Short-circuit calculations must be submitted for systems with an aggregate generating capacity of 1500 kilowatts or more by utilizing one of the following methods:

- (a) Exact calculations using actual impedance and reactance values of system components.
- (b) Estimated calculations using the Naval Sea Systems Command Design Data Sheet DDS 300–2.
- (c) Estimated calculations using IEC 363.

(d) The estimated calculations using a commercially established analysis procedure for utility or industrial applications.

75. Section 111.53–1 is revised to read as follows:

§ 111.53–1 General.

(a) Each fuse must—

- (1) Meet the general provisions of article 240 of the NEC or IEC 92–202 as appropriate;
- (2) Have an interrupting rating sufficient to interrupt the asymmetrical RMS short circuit current at the point of application; and
- (3) Be listed by an independent laboratory.

(b) Renewable link cartridge-type fuses must not be used.

(c) Each fuse installation must provide for ready access to test the condition of the fuse.

76. In § 111.54–1, paragraphs (a), (b), and (c) are revised to read as follows:

§ 111.54–1 Circuit breakers.

(a) Each Circuit breaker must—

- (1) Meet the general provision of article 240 of the NEC or IEC 92–202, as appropriate;
- (2) Meet subpart 111.55 of this part; and

(3) Have an interrupting rating sufficient to interrupt the maximum asymmetrical short-circuit current available at the point of application.

(b) Molded case circuit breakers must not be used in circuits having a nominal voltage of more than 600 volts (1,000

volts for circuits containing circuit breaks manufactured to IEC requirements). Each molded case circuit breaker must meet UL 489 and its marine supplement 489 SA or IEC 947-2 Part 2, except as noted in paragraph (e) of this section.

(c) Circuit breakers, other than the molded case type, that are for use in one of the following systems must meet the following requirements:

(1) An alternating current system having a nominal voltage of 600 volts or less, or 1,000 volts for IEC standard circuit breakers must meet—

- (i) IEEE C37.13;
- (ii) IEEE Std 331; or
- (iii) IEC 947-2, Part 2.

(2) A direct current system of 3,000 volts or less must meet ANSI C37.14 or IEC 947-2, Part 2.

(3) An alternating current system having a nominal voltage greater than 600 volts, or greater than 1,000 volts for IEC standard circuit breakers must meet—

- (i) ANSI/IEEE C37.04 including all referenced supplements, IEEE Std 320 including all referenced supplements, and ANSI C37.12; or
- (ii) IEC 947-2, Part 2.

* * * * *

§§ 111.55-5, 111.55-7, and 111.55-9 [Removed]

77. Sections 111.55-5, 111.55-7, and 111.55-9 are removed.

§ 111.57-1 (Subpart 111.57) [Removed]

78. Subpart 111.57 consisting of § 111.57-1 is removed.

79. Section 111.59-1 is revised to read as follows:

§ 111.59-1 General.

Each busway must meet article 364 of the NEC.

80. Section 111.59-3 is revised to read as follows:

§ 111.59-3 No mechanical cooling.

A busway must not need mechanical cooling to operate within its rating.

81. Section 111.60-1 is revised to read as follows:

§ 111.60-1 Cable construction and testing.

(a) Each cable must meet all the construction and identification requirements of either IEEE Std 45, IEC 92-3, MIL-C-24640A, or MIL-C-24643A and the respective flammability tests contained therein and be of a cooper stranded type.

Note to paragraph (a): MIL-C-915 cable is acceptable only for repairs and replacements in kind. MIL-C-915 cable is no longer acceptable for alterations, modifications, conversions, or new construction. (See § 110.01-3 of this chapter).

(b) Each cable constructed to IEC 92-3 must meet the flammability requirements of IEC 332-3, Category A.

(c) Electric cable that has a polyvinyl chloride insulation with a nylon jacket (Type T/N) must meet the requirements for polyvinyl chloride insulated cable in section 18 of IEEE Std 45, except—

(1) The thickness of the polyvinyl chloride insulation must meet UL 83 for type THWN wire;

(2) Each conductor must have a nylon jacket;

(3) The thickness of the nylon jacket must meet UL 83 for type THWN wire;

(4) The material of the nylon jacket must meet ASTM D 4066-94b Type VIII;

(5) The cable must have identification provided by a durable printing or embossing on the cable jacket or a marker under the cable jacket that gives, at intervals not exceeding 610 mm (24 inches), the information required by section 18.8 of IEEE Std 45; and

(6) Type T (T/N) insulations are limited to a 75° C maximum conductor temperature rating.

(d) Electrical cable regardless of construction must meet, at a minimum, all of the performance and marking requirements of section 18 of IEEE Std 45.

(e) Medium voltage electric cable must meet the requirements of IEEE Std 45 and UL 1072, where applicable, for cables rated above 5,000 volts.

(f) Direct current electric cable for industrial applications only must be constructed and labeled in accordance with IADC-DCCS-1/1991.

82. Section 111.60-2 is added to read as follows:

§ 111.60-2 Specialty cable for communication and RF applications.

Specialty cables that cannot pass the flammability test contained in IEEE Std 45, IEEE Std 1202, ANSI/UL 1581 test VW-1, or IEC 332-3 Category A due to unique construction properties, such as certain coaxial cables, must—

(a) Be installed physically separate from all other cable; and

(b) Have fire stops installed—

(1) At least every 7 meters (21.5 feet) vertically, up to a maximum of 2 deck heights;

(2) At least every 15 meters (46 feet) horizontally;

(3) At each penetration of an A or B Class boundary;

(4) At each location where the cable enters equipment; or

(5) In a cableway that has an A-60 fire rating.

83. Section 111.60-3 is revised to read as follows:

§ 111.60-3 Cable Application.

(a) Cable constructed in accordance with IEEE Std 45 must meet the cable application section 19 of IEEE Std 45. Cable constructed in accordance with IEC 92-3 must meet the requirements of section 19 of IEEE Std 45 except 19.6.1, 19.6.4, and 19.8. Cable constructed in accordance with IEC 92-3 must comply with the ampacity values of IEC 92-352, Table 1.

(b) Type T/N cables must meet section 19 of IEEE Std 45 for Type T insulation.

(c) Cables constructed in accordance with IEEE Std 45 must be derated in accordance with Table A6, Note 6 of IEEE Std 45. Cables constructed in accordance with IEC 92-3 must be derated in accordance with IEC 92-352, paragraph 8. MIL-C-24640A and MIL-C-24643A cable must be derated in accordance with MIL-HDBK-299(SH).

(d) Cables for special applications must meet section 19.6.5 of IEEE Std 45.

84. Section 111.60-4 is revised to read as follows:

§ 111.60-4 Minimum cable conductor size.

Each cable conductor must be #18 AWG (0.82 mm²) or larger except—

(a) Each power and lighting cable conductor must be #14 AWG (2.10 mm²) or larger; and

(b) Each thermocouple, pyrometer, or instrumentation cable conductor must be #22 AWG (0.33 mm²) or larger.

85. In § 111.60-5, paragraph (a) is revised; paragraph (b) is redesignated as paragraph (c); and new paragraphs (b) and (d) are added to read as follows:

§ 111.60-5 Cable installation.

(a) Each cable installation must meet—

(1) Sections 20 and 22, except 20.11, of IEEE Std 45; or

(2) IEC 92-3 and paragraph 8 of IEC 92-352.

(b) Each cable installation made in accordance with paragraph 8 of IEC 92-352 must utilize the conductor ampacity values of Table I of IEC 92-352.

* * * * *

(d) Braided cable armor or cable metallic sheath must not be used as the grounding conductor.

86. Section 111.60-6 is added to read as follows:

§ 111.60-6 Fiber optic cable.

Each fiber optic cable must—

(a) Be constructed to pass the flammability test contained in IEEE Std 45, IEEE Std 1202, ANSI/UL 1581 test VW-1, or IEC 332-3 Category A; or

(b) Be installed in accordance with § 111.60-2.

87. Section 111.60-11 is revised to read as follows:

§ 111.60–11 Wire.

- (a) Wire must be in an enclosure.
- (b) Wire must be component insulated.
- (c) Wire, other than in switchboards, must meet the requirements in sections 19.6.4 and 19.8 of IEEE Std 45, MIL–W–76D, MIL–W–16878F, UL 44, or UL 83.
- (d) Switchboard wire must meet subpart 111.30 of this part.
- (e) Wire must be of the copper stranded type.

88. In § 111.60–13, paragraph (a) is revised 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 19.6.1 of IEEE Std 45, article 400 of the NEC, NEMA WC 3, NEMA WC 8, or UL 62.

* * * * *

89. Section 111.60–17 is revised to read as follows:

§ 111.60–17 Connections and terminations.

- (a) In general, connections and terminations to all conductors must retain the original electrical, mechanical, flame-retarding, and, where necessary, fire-resisting properties of the cable. All connecting devices must be suitable for copper stranded conductors.
- (b) If twist-on type of connectors are used, the connections must be made within an enclosure and the insulated cap of the connector must be secured to prevent loosening due to vibration.
- (c) Twist-on type of connectors may not be used for making joints in cables, facilitating a conductor splice, or extending the length of a circuit.

90. Section 111.60–19 is revised to read as follows:

§ 111.60–19 Cable splices.

- (a) A cable must not be spliced in a hazardous location, except in intrinsically safe systems.
- (b) Each cable splice must be made in accordance with section 20.11 of IEEE Std 45.

91. In § 111.60–21, the last sentence is revised to read as follows:

§ 111.60–21 Cable insulation tests.

- * * *. The insulation resistance must not be less than that in section 46.2.1 of IEEE Std 45.

92. Section 111.60–23 is added to read as follows:

§ 111.60–23 Metal-clad (type MC) cable.

- (a) The only metal-clad (type MC) cable permitted on board a vessel is continuously welded corrugated metal-clad (CWCMC) cable.
- (b) The cable must—

- (1) Have a corrugated sheath of aluminum, or other suitable metal, that is close-fitting, impervious, and continuously-welded and an overall jacket of an impervious PVC or thermoset material;

- (2) Be certified or listed by an independent laboratory; and
- (3) Meet the requirements of UL 1569 as marine shipboard cable (UBVZ).

- (c) The cable is not allowed in—
- (1) Areas or applications exposed to high vibration, festooning, repeated flexing, excessive movement, or twisting; and

- (2) Drilling function areas including, but not limited to, drill floor, draw works, shaker areas, and mud pits of an offshore floating drilling and production facility.

- (d) The cable must be installed in accordance with article 334 of the NEC, incorporating article 318 where referenced. The ampacity values found in table A6 IEEE Std 45 may be used.

- (e) The side wall pressure on the cable must not exceed 1,000 pounds per foot of radius.

- (f) Equipment grounding conductors in the cable must be sized in accordance with article 250–95 of the NEC. 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.

- (g) On an offshore floating drilling and production facility, the cable may be used as interconnect cable between production modules and between fixed distribution panels within the production modules, except that interconnection between production and drilling operations is prohibited. Also, the cable may be used within columns, provided that the columns are not subject to the conditions described in paragraph (c) of this section.

- (h) When the cable is used within a hazardous (classified) location, listed terminations or fittings, appropriate for use with CWCMC type MC cable and approved for that location, are required.

- 93. In § 111.70–1, paragraphs (a) and (b) are revised to read as follows:

§ 111.70–1 General.

- (a) Each motor circuit, controller, and protection must meet the requirements of ABS Rules sections 4/5.87 through 4/5.94 and 4/5.115.6, ABS MODU Rules sections 4/3.87 through 4/3.94 and 4/3.115.6, or IEC 92–301, as appropriate, except the following circuits:

- (1) Each steering gear motor circuit and protection must meet part 58, subpart 58.25, of this chapter.

- (2) Each propulsion motor circuit and protection must meet subpart 111.35 of this part.

- (b) In ungrounded three-phase alternating current systems, only two motor-running protective devices need be utilized in any two ungrounded conductors, except when a wye-delta or a delta-wye transformer is utilized.

* * * * *

94. Section 111.70–3 is revised 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 NEMA No. ICS 2 and NEMA No. 2.3 1983 or meet Table 5 of IEC 92–201, as appropriate, for the location where it is installed. In addition, each enclosure in a hazardous location must meet subpart 111.105 of this part. NEMA No. 2.4 provides guidance on the differences between NEMA and IEC devices for motor service.

- (b) *Low-voltage release.* Each motor controller for a fire pump, elevator, steering gear, or auxiliary that is vital to the vessel's propulsion system, except a motor controller for a vital propulsion auxiliary which can be restarted from a central control station, must have low-voltage release if automatic restart after a voltage failure or its resumption to operation is not hazardous. If automatic restart is hazardous, the motor controller must have low-voltage protection. Motor controllers for other motors must not have low-voltage release unless the starting current and the short-time sustained current of the additional low-voltage release load is within the capacity of one ship's service generator. Automatic sequential starting of low-voltage release controllers is acceptable to meet this paragraph.

- (c) *Low-voltage protection.* Each motor controller must have low-voltage protection, except for the following motor controllers:

- (1) A motor controller that has low-voltage release under paragraph (b) of this section.

- (2) A motor controller for a motor of less than 2 horsepower (1.5 kW).

- (d) *Identification of controllers.* (1) Each motor controller and motor control center must be marked externally with the following information:

- (i) Manufacturer's name or identification.
- (ii) Voltage.
- (iii) Number of phases.
- (iv) Current.
- (v) kW (Horsepower).
- (vi) Identification of motor being controlled.
- (vii) Current rating of trip setting.

(2) Each controller must be provided with heat durable and permanent elementary wiring/schematic diagram of the controller located on the door interior.

95. In § 111.70-5, paragraph (a) is revised and paragraph (c) is added to read as follows:

§ 111.70-5 Heater circuits.

(a) If an enclosure for a motor, master switch, or other equipment has an electric heater inside the enclosure that is energized from a separate circuit, the heater circuit must be disconnected from its source of potential by a disconnect device independent of the enclosure containing the heater. The heater disconnecting device must be adjacent to the equipment disconnecting device. A fixed sign, warning the operator to open both devices, must be on the enclosure of the equipment disconnect device, except as in paragraph (b) of this section.

(c) Electric heaters installed within motor controllers and energized from a separate circuit must be disconnected in the same manner as required by paragraph (a) of this section or by § 111.70-7(d).

96. In § 111.70-7, paragraphs (d) introductory text and (d)(2) are revised to read as follows:

§ 111.70-7 Remote control, interlock, and indicator circuits.

(d) *Switching.* In the design of a control, interlock, or indicator circuit, all practicable steps must be taken to eliminate all but one source of power in an enclosure. If the control functions make it impracticable to energize a control interlock or indicator circuit from the load side of a motor and controller disconnect device and the voltage of the control, interlock, or indicator circuit is more than 24 volts, there must be one of the following alternative methods of switching:

(2) Each conductor of a control, interlock, or indicator circuit must be disconnected from all sources of power by a disconnect device actuated by the opening of the controller door, or the power must first be disconnected to allow opening of the door. The disconnect device and its connections, including each terminal block for terminating the vessel's wiring, must not have any electrically uninsulated or unshielded surface. When this type of disconnect device is used for vital auxiliary circuits, a nameplate must be affixed to the vital auxiliary motor controller door that warns that opening

the door will trip a vital auxiliary off-line.

97. In § 111.75-1, paragraph (a) is revised to read as follows and paragraph (c) and the note are removed:

§ 111.75-1 Lighting feeders.

(a) *Passenger vessels.* On a passenger vessel with fire bulkheads forming main vertical and horizontal fire zones, the lighting distribution system, including low location egress lighting where installed, must be arranged so that, to the maximum extent possible, a fire in any main vertical and horizontal fire zone does not interfere with the lighting in any other fire zone. This requirement is met if main and emergency feeders passing through any zone are separated both vertically and horizontally as widely as practicable.

98. In § 111.75-5, paragraphs (b) and (g) are removed; paragraphs (c) through (f) are redesignated as paragraphs (b) through (e); and newly redesignated paragraphs (b) and (d) are revised to read as follows:

§ 111.75-5 Lighting branch circuits.

(b) *Connected load.* The connected load 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 lamp sizes.

(d) *Overcurrent protection.* Each lighting branch circuit must be protected by an overcurrent device rated at 20 amperes or less, except as allowed under paragraph (e) of this section.

99. In § 111.75-15, paragraph (c) is revised to read as follows:

§ 111.75-15 Lighting requirements.

(c) *Illumination of passenger and crew spaces.* (1) Each space used by passengers or crew must be fitted with lighting that provides for a safe habitable and working environment under normal conditions.

(2) Sufficient illumination must be provided by the emergency lighting source under emergency conditions to effect damage control procedures and to provide for safe egress from each space.

100. Section 111.75-16 is revised to read as follows:

§ 111.75-16 Lighting of survival craft and rescue boats.

(a) During preparation, launching, and recovery, each survival craft and rescue boat, its launching appliance, and the

area of water into which it is to be launched or recovered must be adequately illuminated by lighting supplied from the emergency power source.

(b) The arrangement of circuits must be such that the lighting for adjacent launching stations for survival craft or rescue boats is supplied by different branch circuits.

101. In § 111.75-17, in paragraph (b), remove the word "wheelhouse" and add, in its place, the words "navigating bridge"; paragraphs (d) introductory text, (d)(1), (d)(2), (d)(3), (e)(3), and (e)(4) are revised to read as follows; and paragraph (f) is removed:

§ 111.75-17 Navigation Lights.

(d) *Navigation lights.* Each navigation light must meet the following:

(1) Meet the technical details of the applicable navigation rules.

(2) Be certified by an independent laboratory to the requirements of UL 1104. Portable battery powered lights need meet only the requirements of the standard applicable to those lights.

(3) Be labeled with a label stating the following:

(i) "MEETS _____." (Insert the identification name or number of the standard under paragraph (d)(2) of this section to which the light was type-tested.)

(ii) "TESTED BY _____." (Insert the name or registered certification mark of the independent laboratory that tested the fixture to the standard under paragraph (d)(2) of this section).

(iii) Manufacturer's name.

(iv) Model number.

(v) Visibility of the light in nautical miles.

(vi) Date on which the fixture was type-tested.

(vii) Identification of bulb used in the compliance test.

(3) Be wired by a short length of heavy-duty, flexible cable to a watertight receptacle outlet next to the light or, for permanently mounted fixtures, by direct run of fixed cable; and

(4) If it is a double-lens, two-lamp type, have each lamp connected to its branch circuit conductors either by an individual flexible cable and watertight receptacle plug or, for permanently mounted fixtures, by an individual direct run of fixed cable.

102. Section 111.75-18 is revised to read as follows:

§ 111.75-18 Signaling lights.

Each self-propelled vessel over 150 gross tons when engaged on an

international voyage must have on board an efficient daylight signaling lamp that may not be solely dependent upon the vessel's main source of electrical power and that meets the following:

(a) The axial luminous intensity of the beam must be at least 60,000 candelas.

(b) The luminous intensity of the beam in every direction within an angle of 0.7 degrees from the axial must be at least 50 percent of the axial luminous intensity.

103. In § 111.75–20, paragraph (a) is revised; in paragraph (b), remove the word “wheelhouse” and add, in its place, the words “navigating bridge”; and paragraph (e) is added to read as follows:

§ 111.75–20 Lighting fixtures.

(a) The construction of each lighting fixture must meet—

(1) UL 595, until May 3, 1999;

(2) UL 1570, UL 1571, or UL 1572, as applicable, including marine supplement; or

(3) IEC 92–306.

* * * * *

(e) Non-emergency and decorative interior lighting fixtures in environmentally-protected, non-hazardous locations need only meet the applicable UL type-fixture standards in UL 1570 through 1574 (and either the general section of the marine supplement or the general section of UL 595), UL 595, or IEC 92–306. These fixtures must have vibration clamps on fluorescent tubes longer than 103 cm (40 inches), secure mounting of glassware, and rigid mounting.

104. Section 111.77–3 is revised to read as follows:

§ 111.77–3 Appliances.

All electrical appliances, including, but not limited to, cooking equipment, dishwashers, refrigerators, and refrigerated drinking water coolers, must meet UL safety and construction standards. Also, this equipment must be suitably installed for the location and service intended.

§§ 111.77–5, 111.77–7, 111.77–9, and 111.77–11 [Removed]

105. Sections 111.77–5, 111.77–7, 111.77–9, and 111.77–11 are removed.

106. Section 111.79–1 is revised to read as follows:

§ 111.79–1 Receptacle outlets; general.

(a) There must be a sufficient number of receptacle outlets in the crew accommodations for an adequate level of habitability.

(b) There must be a sufficient number of receptacle outlets throughout the

machinery space so that any location can be reached by a portable power cord having a length not greater than 24 meters (75 feet).

(c) Each receptacle outlet must be compatible with the voltage and current of the circuit in which it is installed.

(d) Each receptacle outlet must be suitable for the environment in which it is installed and constructed to the appropriate NEMA or IEC protection standard as referenced in § 111.01–9. Special attention must be given to outlets in hazardous locations.

(e) A receptacle outlet must not have any exposed live parts with the plug opening uncovered.

§ 111.79–5 [Removed]

107. Section 111.79–5 is removed.

§ 111.79–7 [Removed]

108. Section 111.79–7 is removed.

109. Section 111.79–13 is revised to read as follows:

§ 111.79–13 Different voltages and power types.

If receptacle outlets on a vessel are supplied by different voltages (e.g., 110 volts and 220 volts) or by different types of power (e.g., AC and DC), each receptacle outlet must preclude the plugging of a portable device into a receptacle outlet of an incompatible voltage or type of power.

110. In § 111.81–1, paragraphs (d) through (f) are added to read as follows:

§ 111.81–1 Outlet boxes and junction boxes; general.

* * * * *

(d) Each outlet box and junction box installation must meet article 370 of the NEC, UL 50, UL 514 series, or IEC Series 92 Publications (e.g., IEC 92–306), as appropriate.

(e) Each outlet or junction box must be securely attached to its mounting and be affixed so as to maintain its designated degree of protection.

(f) Each outlet and junction box must be suitable for the environment in which it is installed and be constructed to the appropriate NEMA or IEC standard.

§§ 111.81–5, 111.81–7, 111.81–9, 111.81–11, 111.81–13, and 111.83–3 [Removed]

111. Sections 111.81–5, 111.81–7, 111.81–9, 111.81–11, 111.81–13, and 111.83–3 are removed.

112. In § 111.85–1, paragraph (d) is revised to read as follows:

§ 111.85–1 Electric oil immersion heaters.

* * * * *

(d) Either—

(1) A low-fluid-level device that opens all conductors to the heater if the

operating level drops below the manufacturer's recommended minimum safe level; or

(2) A flow device that opens all conductors to the heater if there is inadequate flow.

113. In § 111.87–3, paragraph (a) is revised to read as follows:

§ 111.87–3 General requirements.

(a) Each electric heater must meet UL safety and construction standards.

* * * * *

§ 111.89–1 (Subpart 111.89) [Removed]

114. Subpart 111.89 consisting of § 111.89–1 is removed.

§ 111.91–1 [Amended]

115. In § 111.91–1 and the section heading, remove “control” and add, in its place, “power, control,” and remove “ANSI A17.1” and add, in its place, “ANSI/ASME A17.1 and A17.1A”.

§ 111.91–3 [Removed]

116. Section 111.91–3 is removed.

117. In § 111.95–1, paragraph (b) is revised to read as follows:

§ 111.95–1 Applicability.

* * * * *

(b) The provisions of this subpart supplement the requirements for boat winches in other parts of this chapter under which vessels are certificated and in subchapter Q, Equipment approvals.

118. Section 111.95–3 is revised to read as follows:

§ 111.95–3 General requirements.

(a) Each electrical component (e.g., enclosure, motor controller, or motor) must be constructed to the appropriate NEMA or IEC degree of protection requirement for the service and environment in which it is installed.

(b) Each main line emergency disconnect switch, if accessible to an unauthorized person, must have a means to lock the switch in the open-circuit position with a padlock or its equivalent. The switch must not lock in the closed-circuit position.

§ 111.95–5 [Removed]

119. Section 111.95–5 is removed.

§ 111.95–7 [Amended]

120. In § 111.95–7, the note following paragraph (e) and figures 111.95–7(e)(1) through 111.95–7(e)(5) are removed.

§ 111.97–5 [Amended]

121. In § 111.97–5, in paragraph (c), remove the word “twice” and add, in its place, the word “once” and remove the word “three” and add, in its place, the word “two”.

Subpart 111.99—[Amended]

122. In subpart 111.99, in the subpart heading, remove the word "Firescreen" and add, in its place, the word "Fire".

§ 111.99-1 [Amended]

123. In § 111.99-1, remove the words "firescreen doors on passenger vessels" and add, in their place, the words "fire door holding and release systems, if fitted".

124. Section 111.99-3 is revised to read as follows:

§ 111.99-3 Definitions.

As used in this subpart—

Central control panel means a manually-operated device on the navigating bridge or in the fire control room for releasing one or more fire doors;

Fire door means a door that is in a fire boundary, such as a stairway enclosure or main vertical zone bulkhead, that is not usually kept closed.

Fire door holding magnet means an electromagnet for holding a fire door open.

Local control panel means a manually-operated device next to a fire door for releasing the door so that the fire door self-closing mechanism may close the door.

125. Section 111.99-5 is revised to read as follows:

§ 111.99-5 General.

Fire door release systems, if installed, must meet SOLAS 74, regulation II-2/30.4.3.

126. Section 111.105-1 and its note are revised to read as follows:

§ 111.105-1 Applicability.

This subpart applies to installations in hazardous locations as defined in the NEC and in IEC 79-0.

Note to § 111.105-1: Chemicals and materials in addition to those listed in Table 500-2 of the NEC and IEC 79-12 are listed in subchapter O of this chapter.

127. Section 111.105-3 is added to read as follows:

§ 111.105-3 General requirements.

All electrical installations in hazardous locations must comply with the general requirements of section 43 of IEEE Std 45 and either the NEC articles 500-505 or IEC series 79 publications. When installations are made in accordance with the NEC articles, marine shipboard cable that complies with subpart 111.60 of this chapter may be used instead of rigid metal conduit, if installed fittings are approved for the specific hazardous location and the cable type.

128. Section 111.105-5 is revised 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 NEC articles 500-505, as modified by § 111.105-3, or IEC series 79 publications, but not in combination in a manner that would 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 non-approved equipment is prohibited.

129. Section 111.105-7 is revised to read as follows:

§ 111.105-7 Approved equipment.

When this subpart or the NEC states that an item of electrical equipment must be approved or when IEC 79-0 states that an item of electrical equipment must be tested or approved in order to comply with IEC 79 series publications, that item must be—

- (a) Listed or certified by an independent laboratory as approved for use in the hazardous locations in which it is installed; or
- (b) Purged and pressurized equipment that meets NFPA No. 496 or IEC 79-2.

130. Section 111.105-9 is revised to read as follows:

§ 111.105-9 Explosionproof and flameproof equipment.

Each item of electrical equipment that is required in this subpart to be explosionproof under the NEC classification system must be approved as meeting UL 1203. Each item of electrical equipment that is required in this subpart to be flameproof must be approved as meeting IEC 79-1.

§ 111.105-10 [Removed]

131. Section 111.105-10 is removed.

132. Section 111.105-11 is revised to read as follows:

§ 111.105-11 Intrinsically safe systems.

(a) Each system required under this subpart to be intrinsically safe must use approved components meeting UL 913 or IEC 79-11.

(b) Each electric cable of an intrinsically safe system must—

- (1) Be 50 mm (2 inches) or more from cable of non-intrinsically safe circuits, partitioned by a grounded metal barrier from other non-intrinsically safe electric cables, or a shielded or metallic armored cable; and
- (2) Not contain conductors for non-intrinsically safe systems.

(c) As part of plan approval, the manufacturer must provide appropriate

installation instructions and restrictions on approved system components. Typical instructions and restrictions include information addressing—

- (1) Voltage limitations;
- (2) Allowable cable parameters;
- (3) Maximum length of cable permitted;
- (4) Ability of system to accept passive devices;
- (5) Acceptability of interconnections with conductors or other equipment for other intrinsically safe circuits; and
- (6) Information regarding any instructions or restrictions which were a condition of approval of the system or its components.

(d) Each intrinsically safe system must meet ISA RP 12.6, except Appendix A.1.

133. Section 111.105-15 is revised to read as follows:

§ 111.105-15 Additional methods of protection.

Each item of electrical equipment that is—

- (a) A sand-filled apparatus must meet IEC 79-5;
- (b) An oil-immersed apparatus must meet either IEC 79-6 or NEC article 500-2;
- (c) Type of protection "e" must meet IEC 79-7;
- (d) Type of protection "n" must meet IEC 79-15; and
- (e) Type of protection "m" must meet IEC 79-18.

134. Section 111.105-17 is revised to read as follows:

§ 111.105-17 Wiring methods for hazardous locations.

(a) Through runs of marine shipboard cable meeting subpart 111.60 of this part are required for all hazardous locations. Additionally, for all Division 1 (Zone 0, 1, 10, and Z) locations, cable must be armored or metal sheathed MI type.

(b) Where conduit is installed, the applicable requirements of either the NEC or IEC 79 must be followed.

(c) Each cable entrance into explosionproof or flameproof equipment must be made with approved seal fittings, termination fittings, or glands that meet the requirements of § 111.105-9.

(d) Each cable entrance into Class II and Class III (Zone 10, 11, Z, or Y) equipment must be made with dust-tight cable entrance seals approved for the installation.

135. Section 111.105-9 is revised to read as follows:

§ 111.105-19 Switches.

A switch that is explosionproof or flameproof, or that controls any

explosionproof or flameproof equipment, under § 111.105-19 must have a pole for each ungrounded conductor.

136. Section 111.105-21 is revised to read as follows:

§ 111.105-21 Ventilation.

A ventilation duct which ventilates a hazardous location has the classification of that location. Each fan for ventilation of a hazardous location must be nonsparking.

§§ 111.105-23 and 111.105-25 [Removed]

137. Sections 111.105-23 and 111.105-25 are removed.

138. In § 111.105-29, the introductory text and paragraphs (a) and (b) are redesignated as paragraphs (a), (a)(1), and (a)(2); and paragraphs (b) and (c) are added to read as follows:

§ 111.105-29 Combustible liquid cargo carriers.

* * * * *

(b) If a submerged cargo pump motor is in a cargo tank, it must meet the requirements of § 111.105-31(d).

(c) Where the cargo is heated to within 15°C of its flashpoint, the cargo pumproom must meet the requirements of § 111.105-31(f) and the weather locations must meet § 111.10531(1).

139. In § 111.105-31, paragraphs (e) and (l) introductory text are revised and paragraphs (l)(3), (l)(4), and (n) are added to read as follows:

§ 111.105-31 Flammable or combustible cargo with a flashpoint below 60 degrees C (140 degrees F), liquid sulfur and inorganic acid carriers.

* * * * *

(e) *Cargo tanks.* A cargo tank is a Class I, Division 1 (IEC Zone 0) location which has additional electrical equipment restrictions outlined in IEEE Std 45 and IEC 92-502. Cargo tanks must not contain any electrical equipment except the following:

(1) Intrinsically safe equipment.
(2) Submerged cargo pumps and their associated cable.

* * * * *

(l) *Weather locations.* The following locations in the weather are Class I, Division 1 (Zone 1) locations (except the open deck area on an inorganic acid carrier which is considered a non-hazardous location) and may have only approved intrinsically safe, explosionproof, or purged and pressurized electrical equipment if the location is—

* * * * *

(3) Within 5 meters (16 ft) of cargo pressure/vacuum valves with an unlimited height; or

(4) Within 10 meters (33 ft) of vent outlets for free flow of vapor mixtures and high velocity vent outlets for the passage of large amounts of vapor, air or inert gas mixtures during cargo loading and ballasting or during discharging.

* * * * *

(n) *Duct keel ventilation or lighting.*

(1) Each pipe tunnel, double bottom or duct keel ventilation and lighting system must meet ABS Rule section 4/5.151.7.

(2) If a fixed gas detection system is installed, it must meet the requirements of SOLAS 74 and ABS Rules section 4/5.

140. In § 111.105-32, the section heading and paragraphs (c) and (e) are revised to read as follows:

§ 111.105-32 Bulk liquefied flammable gas and ammonia carriers.

* * * * *

(c) Each submerged cargo pump motor design must receive concept approval by the Commandant (G-MSE) and its installation must receive plan approval by the Commanding Officer, Marine Safety Center.

* * * * *

(e) A submerged cargo pump motor, if installed in a cargo tank, must meet § 111.105-31(d).

* * * * *

141. Section 111.105-35 is revised to read as follows:

§ 111.105-35 Vessels carrying coal.

(a) The following are Class II, Division 1, (Zone 10 or Z) locations on a vessel that carries coal:

(1) The interior of each coal bin and hold.

(2) Each compartment that has a coal transfer point where coal is transferred, dropped, or dumped.

(3) Each open area within 3 meters (10 ft) of a coal transfer point where coal is dropped or dumped.

(b) Each space that has a coal conveyer on a vessel that carries coal is a Class II, Division 2, (Zone 11 or Y) space.

(c) A space that has a coal conveyer on a vessel that carries coal must have electrical equipment approved for Class II, Division 2, (Zone 11 or Y) hazardous locations, except watertight general emergency alarm signals.

§ 111.105-37 [Amended]

142. In § 111.105-37, remove the words "NFA No. 56A" and add, in their place, the words "NFPA No. 99".

143. Section 111.105-39 is revised to read as follows:

§ 111.105-39 Additional requirements for vessels carrying vehicles with fuel in their tanks.

Each vessel that carries vehicles with fuel in their tanks must meet the requirements of ABS Rule 4/5.157, except as follows:

(a) If the ventilation requirement of ABS Rule 4/5.157 is not met, all installed electrical equipment must be suitable for a Class I, Division 1; Zone 0; or Zone 1 hazardous location.

(b) If the vessel is fitted with an approved fixed gas detection system set at 25 percent the LEL, each item of the installed electrical equipment must meet the requirements for a Class I, Division 1; Class I, Division 2; Zone 0; Zone 1; or Zone 2 hazardous location.

144. Section 111.105-40 is added to read as follows:

§ 111.105-40 Additional requirements for RO/RO vessels.

(a) Each RO/RO vessel must meet ABS Rule 4/5.160.

(b) Each item of installed electrical equipment must meet the requirements for a Class I, Division 1; Class 1, Division 2; Zone 0; Zone 1; or Zone 2 hazardous location when installed 460 mm (18 inches) or more above the deck of closed cargo spaces. Electrical equipment installed within 460 mm (18 inches) of the deck must be suitable for either a Class 1, Division 1; Zone 0; or Zone 1 hazardous location.

(c) Where the ventilation requirement of ABS Rule 4/5.160 is not met—

(1) All installed electrical equipment must be suitable for a Class 1, Division 1; Zone 0; or Zone 1 hazardous location; or

(2) If fitted with an approved fixed gas detection system (set at 25 percent of the LEL), each item of installed electrical equipment must meet the requirements for either a Class I, Division 1; Class 1, Division 2; Zone 0; Zone 1; or Zone 2 hazardous location.

145. Section 111.105-41 is revised to read as follows:

§ 111.105-41 Battery rooms.

Each electrical installation in a battery room must meet subpart 111.15 of this part and IEEE Std 45.

§ 111.105-43 [Amended]

146. In § 111.105-43, in paragraphs (a) and (b), following "Group D", add "(Zone 0 or Zone 1)".

147. Section 111.105-45 is added to read as follows:

§ 111.105-45 Vessels carrying agricultural products.

(a) The following areas are Class II, Division 1, (Zone 10 or Z) locations on vessels carrying bulk agricultural

products that may produce dust explosion hazards:

(1) The interior of each cargo hold or bin.

(2) Areas where cargo is transferred, dropped, or dumped and locations within 1 meter (3 feet) of the outer edge of these areas in all directions.

(b) The following areas are Class II, Division 2, (Zone 11 or Y) locations on vessels carrying bulk agricultural products that may produce dust explosion hazards:

(1) All areas within 2 meters (6.5 feet) of a Division 1 (Zone 10 or Z) location in all directions except when there is an intervening barrier, such as a bulkhead or deck.

Note to § 111.105–45: Information on the dust explosion hazards associated with the carriage of agricultural products is contained in Coast Guard Navigation and Vessel Inspection Circular 9–84 (NVIC 9–84) "Electrical Installations in Agricultural Dust Locations."

148. Section 111.107–1 is revised to read as follows:

§ 111.107–1 Industrial systems.

(a) For the purpose of this subpart, an industrial system is a system that—

(1) Is not a ship's service load, as defined in § 111.10–1;

(2) Is used only for the industrial function of the vessel;

(3) Is not connected to the emergency power source; and

(4) Does not have specific requirements addressed elsewhere in this subchapter.

(b) An industrial system that meets the applicable requirements of the NEC must meet only the following:

(1) The switchgear standards in part 110, subpart 110.10, of this chapter.

(2) Part 110, subpart 110.25, of this chapter—Plan Submittal.

(3) Subpart 111.01 of this part—General.

(4) Subpart 111.05 of this part—Equipment Ground, Ground Detection, and Grounded Systems.

(5) Sections 111.12–1(b) and 111.12–1(c)—Prime movers.

(6) Subpart 111.105 of this part—Hazardous Locations.

(c) Cables that penetrate a watertight or fire boundary deck or bulkhead must—

(1) Be installed in accordance with § 111.60–5 and meet the flammability test requirements of—

(i) Section 18.13.5 of IEEE Std 45 and IEEE Std 1202; or

(ii) IEC 332–3, Category A; or

(2) Be specialty cable installed in accordance with § 111.60–2.

PART 112—EMERGENCY LIGHTING AND POWER SYSTEMS

149. The authority citation for part 112 is revised to read as follows:

Authority: 46 U.S.C. 3306, 3703; 49 CFR 1.46.

150. In § 112.05–1, paragraph (a) is revised and paragraph (c) is added to read as follows:

§ 112.05–1 Purpose.

(a) The purpose of this part is to ensure a dependable independent, and dedicated emergency power source with sufficient capacity to supply those services that are necessary for the safety of the passengers, crew, and other persons in an emergency and those additional loads that may be authorized under paragraph (c) of this section.

(c) Other loads may be authorized by the Commanding Officer, Marine Safety Center (MSC), to be connected to the emergency source of power to provide an increased level of safety in recognition of a unique vessel mission or configuration. When these loads are authorized, the emergency power source must—

(1) Be sized to supply these loads using a unity (1.0) service factor; or

(2) Be provided with automatic load shedding that removes these loads and operates before the emergency generator trips due to overload. The automatic load shedding circuit breakers must be manually reset.

151. In § 112.05–5, paragraph (a), footnote 1 to table 112.05–5(a), and paragraphs (c), (d), and (e) are revised to read as follows:

§ 112.05–5 Emergency power source.

(a) The emergency power source must meet table 112.05–5(a) and have the capacity to supply all loads that are simultaneously connected to it, except a load on a bus-tie to the main switchboard or non-required loads that are connected in accordance with § 112.05–1(c).

Table 112.05–5(a)

* * * * *

¹A 12-hour power supply may be especially considered for vessels engaged regularly in voyages of short duration.

* * * * *

(c) The complete emergency installation must function at full rated power when the vessel is upright or inclined to the maximum angle of heel that results from the assumed damage defined in 33 CFR part 155 or in subchapter S of this chapter for the specific vessel type or 22.5 degrees, whichever is greater; when the trim of

the ship is 10 degrees, either in the fore or aft direction, or is in any combination of angles within those limits.

(d) The emergency power source, its associated transforming equipment, and the emergency switchboard must be located aft of the collision bulkhead, outside the machinery casing, and above the uppermost continuous deck. Each compartment containing the emergency power source, its associated transforming equipment, and the emergency switchboard must be readily accessible from the open deck and must not contain any other machinery not associated with the normal operation of the emergency power source.

(e) No compartment that has an emergency power source or its vital components may adjoin a Category A machinery space or those spaces containing the main source of electrical power and its vital components.

* * * * *

152. In § 112.15–1, paragraphs (c), (g), (j), (k), and (p) are revised and paragraphs (q) and (r) are added to read as follows:

§ 112.15–1 Temporary emergency loads.

* * * * *

(c) Lighting, including low location lighting if installed, for passageways, stairways, and escape trunks in passenger quarters, crew quarters, public spaces, machinery spaces, damage control lockers, emergency equipment lockers, and work spaces sufficient to allow passengers and crew to find their way to open decks and to survival craft, muster stations, and embarkation stations with all watertight doors and fire doors closed.

* * * * *

(g) Lighting for survival craft launching, including muster stations, embarkation stations, the survival craft, its launching appliances and the area of the water where it is to be launched.

* * * * *

(j) All shipwide communications systems necessary for the transmittal of information during an emergency.

(k) Each fire door holding and release system.

* * * * *

(p) Each fire detection system; and gas detection system if installed.

(q) All lighting relative to helicopter operations and landing if installed, unless provided for by another source of power (such as independent batteries separately charged by solar cells).

(r) Each general emergency alarm system required by SOLAS 74.

153. In § 112.15–5, paragraphs (b), (e) through (g), and (i) through (t) are revised and new paragraphs (u) and (v) are added to read as follows:

§ 112.15–5 Final emergency loads.

* * * * *

(b) The machinery, controls, and alarms for each passenger elevator.

* * * * *

(e) One of the fire pumps, if the emergency power source is its source of power to meet the requirements of the subchapter under which the vessel is certificated.

(f) Each sprinkler system, water spray extinguishing system, or foam system pump.

(g) If necessary, the lube oil pump for each propulsion turbine and reduction gear, propulsion diesel reduction gear, and ship's service generator turbine which needs external lubrication.

* * * * *

(i) Each radio or global maritime distress and safety system (GMDSS) component.

(j) Each radio direction finder, loran, radar, gyrocompass, depth sounder, global positioning system (GPS), satellite navigation system (SATNAV), speed log, rate-of-turn indicator and propeller pitch indicator.

(k) Each steering gear feeder, if required by part 58, subpart 58.25, of this chapter.

(l) Each general emergency alarm flashing light required by § 113.25–10 of this chapter.

(m) Each electric blow-out-preventer control system.

(n) Any permanently installed diving equipment that is dependent upon the vessel's or drilling unit's power.

(o) Each emergency generator starting compressor, as allowed by § 112.50–7(c)(3)(ii).

(p) Each steering gear failure alarm required by part 113, subpart 113.43, of this chapter.

(q) The ballast control system on each column-stabilized mobile offshore drilling unit.

(r) Each vital system automation load required by part 62 of this chapter.

(s) Motor-operated valves for each cargo oil and fuel oil system, if the emergency power source is the source of power to meet § 56.60(d) of this chapter.

(t) Each ship's stabilizer wing, unless a separate source of emergency power is supplied.

(u) Each indicator that shows the position of the stabilizer wings, if the emergency power source is its emergency source of power.

(v) Each smoke extraction fan (not including smoke detector sampling) and CO₂ exhaust fan for spaces.

§ 112.35–7 [Amended]

154. In § 112.35–7, remove the word “wheelhouse” and add, in its place, the words “navigating bridge”.

155. In § 112.39–1, paragraphs (a)(2) and (a)(3) are revised to read as follows and paragraph (a)(4) is removed:

§ 112.39–1 General.

* * *

(2) Have an automatic battery charger that maintains the battery in a fully charged condition; and

(3) Not be readily portable.

§ 112.39–3 [Amended]

156. In § 112.39–3(a), remove the words “at least 6” and add, in their place, the words “for at least 3”.

§ 112.43–1 [Amended]

157. In § 112.43–1(b), remove “§ 112.43–3” and add, in its place, “§ 112.43–7”.

§ 112.43–3 [Removed]

158. Section 112.43–3 is removed.

§ 112.43–5 [Amended]

159. In § 112.43–5, remove the words “lifeboat and liferaft” and add, in their place, the words “survival craft” and remove the word “wheelhouse” and add, in its place, the words “navigating bridge”.

160. In § 112.43–7, the section heading and paragraphs (a) introductory text, (a)(1), (a)(2), (a)(4)(ii) through (a)(4)(iv), and (b) are revised; and paragraph (a)(4)(v) is added to read as follows:

§ 112.43–7 Navigating bridge distribution panel.

(a) Except as allowed in paragraph (b) of this section, the following emergency lights must be supplied from a distribution panel on the navigating bridge:

(1) Navigation lights not supplied by the navigation light indicator panel.

(2) Lights for survival craft launching operations under § 111.75–16, except as allowed in § 112.43–5.

* * * * *

* * *

(ii) On the navigating bridge;

(iii) In the chartroom;

(iv) In the fire control room; and

(v) For navigation equipment.

(b) On a mobile offshore drilling unit, the distribution panel required in paragraph (a) of this section must be in the control room.

* * * * *

161. Section 112.43–11 is revised to read as follows:

§ 112.43–11 Illumination for launching operations.

Branch circuits supplying power to lights for survival craft launching operations must supply no other equipment and meet § 111.75–16 of this chapter.

§ 112.43–13 [Amended]

162. In § 112.43–13(b), remove the word “wheelhouse” and add, in its place, the words “navigating bridge”.

§ 112.43–15 [Amended]

163. In § 112.43–15, remove the word “firescreen” and add, in its place, the word “fire”.

§ 112.43–17 [Removed]

164. Section 112.43–17 is removed.

165. The heading to subpart 112.45 is revised to read as follows:

Subpart 112.45—Visible Indicators**§ 112.45–5 [Removed]**

165a. Section 112.45–5 is removed.

166. In § 112.50–1, paragraph (d) is revised; paragraph (e) is removed; paragraphs (f) through (k) are redesignated as paragraphs (e) through (j); newly redesignated paragraph (f) is revised; and new paragraph (k) is added to read as follows:

§ 112.50–1 General.

* * * * *

(d) The generator set must be capable of carrying its full rated load within 45 seconds after cranking is started with the intake air, room ambient temperature, and starting equipment at 0°C. The generator's prime mover must not have a starting aid to meet this requirement, except that a thermostatically-controlled electric water-jacket heater connected to the final emergency bus is permitted.

* * * * *

(f) The generator set must maintain proper lubrication when inclined to the angles specified in § 112.05–5(c), and must be arranged so that it does not spill oil under a vessel roll of 30 degrees to each side of the vertical.

* * * * *

(k) Each emergency generator that is arranged to be automatically started must be equipped with a starting device with an energy-storage capability of at least six consecutive starts. A second, separate source of starting energy may provide three of the required six starts. If a second source is provided, the system need only provide three consecutive starts.

167. In § 112.50–3, paragraph (a) is revised to read as follows and paragraphs (f) and (g) are removed:

§ 112.50–3 Hydraulic starting.

* * * * *

(a) The hydraulic starting system must be a self-contained system that provides the cranking torque and engine starting RPM recommended by the engine manufacturer. The hydraulic starting

system must be capable of six consecutive starts, unless a second, separate source of starting energy capable of three consecutive starts is provided. A second, separate source of starting energy may provide three of the required six starts. If a second source is provided, the hydraulic system need only provide three consecutive starts.

* * * * *

168. Section 112.50-5 is revised to read as follows:

§ 112.50-5 Electric starting.

An electric starting system must have a starting battery with sufficient capacity for at least six consecutive starts. A second, separate source of starting energy may provide three of the required six starts. If a second source is provided, the electrical starting system need only provide three consecutive starts.

169. In § 112.50-7, paragraphs (c)(1) and (c)(2) are revised to read as follows and paragraph (d) is removed:

§ 112.50-7 Compressed air starting.

* * * * *

(c) * * *

(1) Has a capacity for at least six consecutive starts. A second, separate source of starting energy may provide three of the required consecutive starts. If a second source is provided, the compressed air starting system need only provide three consecutive starts.

(2) Supplies no other system.

* * * * *

170. In § 112.55-15, paragraph (a) is revised to read as follows:

§ 112.55-15 Capacity of storage batteries.

(a) A storage battery for an emergency lighting and power system must have the capacity—

(1) To close all watertight doors two times;

(2) To open all watertight doors once; and

(3) To carry the remaining emergency loads continuously for the time prescribed in § 12.05-5(a), table 112.05-5(a).

* * * * *

PART 113—COMMUNICATION AND ALARM SYSTEMS AND EQUIPMENT

171. The authority citation for part 113 is revised to read as follows:

Authority: 46 U.S.C. 3306, 3703; 49 CFR 1.46.

172. Section 113.05-7 is added to read as follows:

§ 113.05-7 Environmental tests.

Communication, alarm system, control, and monitoring equipment must meet the environmental tests of—

(a) Table 4/11.1 of ABS Rules or the applicable ENV category of Lloyd's Register Type approval System—Test Specification No. 1; and

(b) IEC 553 as appropriate.

173. The heading to subpart 113.10 is revised to read as follows:

Subpart 113.10—Fire and Smoke Detecting and Alarm Systems

174. Section 113.10-7 is revised to read as follows:

§ 113.10-7 Connection boxes.

Each connection box must be constructed in accordance with NEMA 250 Type 6 or 6P or IEC IP 67 requirements.

175. In § 113.10-9, in paragraph (a), following the third sentence, add a sentence to read as follows; paragraph (c) is removed; and paragraph (d) is redesignated as paragraph (c):

§ 113.10-9 Power supply.

(a) * * *. If the other source is an automatically charged battery, the charger must be supplied from the final emergency power source. * * *

* * * * *

176. Section 113.20-3 is revised 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 NEMA 250 Type 6 or 6P or IEC IP 67 requirements.

Subpart 113.25—[Amended]

177. In subpart 113.25, remove the words “general alarm system” in the subpart heading and wherever they appear and add, in their place, the words “general emergency alarm system”; remove the word “wheelhouse” wherever it appears and add, in its place, the words “navigating bridge”; and remove the words “bell” and “alarm bell” wherever they appear and add, in their place, the words “emergency alarm signal”.

178. Section 113.25-6 is revised to read as follows:

§ 113.25-6 Power supply.

(a) The power supply for the general emergency alarm system must meet the requirements of SOLAS 74, regulations III-6.4.2 and III/50.

(b) The emergency power source for the general emergency alarm system must meet the requirements of SOLAS 74, regulation II-1/42 or II-1/43, as applicable.

§ 113.25-8 [Amended]

179. In § 113.25-8, in paragraph (b), remove the word “fuses” and add, in its place, the words “overcurrent protection”; in paragraph (c), remove the words “battery enclosure” and add, in their place, the words “power supply”; in paragraph (f), remove the first sentence; and, in paragraph (g), remove the words “the vessel must be divided into vertical” and add, in their place, the words “the general emergency alarm system must be arranged into vertical service” and remove “150 feet (45.7 meters)” and add, in its place, “40 meters (131 feet)”.

180. In § 113.25-9, paragraph (b) is revised and paragraph (c) is added to read as follows:

§ 113.25-9 Location of general emergency alarm signals.

* * * * *

(b) Be audible in the spaces identified in paragraph (a) of this section with all normally closed doors and accesses closed; and

(c) Be installed in cabins without loudspeaker installation. Other audible devices, such as electronic alarm transducers, are permitted.

81. In § 113.25-10, the introductory text and paragraphs (a), (b), and (c) are redesignated as paragraphs (a), (a)(1), (a)(2), and (a)(3); redesignated paragraph (a)(3) is revised; and new paragraph (b) is added to read as follows:

§ 113.25-10 Location of flashing red lights.

(a) * * *

(3) Is supplied by the general emergency alarm system power supply or the vessel emergency power source through a relay that is operated by the general emergency alarm system.

(b) A flashing red light must be installed so that it is visible in the cargo pump rooms of vessels that carry combustible liquid cargoes. The installation must be in accordance with the requirements of part 111, subpart 111.105, of this chapter.

82. Section 113.25-11 is revised to read as follows:

§ 113.25-11 Contact makers.

Each contact maker must—

(a) Have normally open contacts and be constructed in accordance with NEMA 250 Type 6 or 6P or IEC IP 67 requirements;

(b) Have a switch handle that can be maintained in the “on” position;

(c) Have the “off” and “on” positions of the operating handle permanently marked; and

(d) Have an inductive load rating not less than the connected load or, on large vessels, have auxiliary devices to interrupt the load current.

183. Section 113.25-12 is revised to read as follows:

§ 113.25-12 Alarm signals.

(a) Each general emergency alarm signal must be an electrically-operated bell, klaxon, or other warning device capable of producing a signal or tone distinct from any other audible signal on the vessel.

(b) Electronic devices used to produce the general emergency alarm signal must meet the requirements of subpart 113.50 of this part.

(c) The minimum sound pressure levels for the emergency alarm tone in interior and exterior spaces must be 80 dB(A) and at least 10 dB(A) above ambient noise levels existing during normal equipment operation with the vessel underway in moderate weather.

184. Section 113.25-16 is revised to read as follows:

§ 113.25-16 Overcurrent protection.

(a) Each fuse in a general emergency alarm system must meet the requirements of part 111, subpart 111.53, of this chapter.

(b) Each overcurrent protection device must cause as wide a differential as possible between the rating of the branch circuit overcurrent protection device and that of the feeder overcurrent protection device.

(c) The capacity of the feeder overcurrent device must be as near practicable to 200 percent of the load supplied. The capacity of a branch circuit overcurrent device must not be higher than 50 percent of the capacity of the feeder overcurrent device.

§ 113.25-30 [Amended]

185. In § 113.25-30, in the note to paragraph (a), before the word "bridge", add the word "navigating".

186. The heading to subpart 113.30 is revised to read as follows:

Subpart 113.30—Internal Communications

187. Section 113.30-3 is revised to read as follows:

§ 113.30-3 Means of communications.

(a) An emergency means of communication required by this subpart must—

(1) Be comprised of either fixed or portable equipment; and

(2) Provide common talking means of two-way voice communication and calling among the navigating bridge, emergency control stations, muster stations, embarkation stations, and other strategic positions listed in § 113.30-5.

(b) The means of communication and calling must be a sound-powered

telephone or other reliable voice communication method and must be independent of the vessel's electrical system.

188. In § 113.30-5, in paragraphs (a) through (c), (e), and (f), remove "wheelhouse" and add, in its place, "navigating bridge"; revise paragraphs (a) introductory text, (d), (g), and (h); and add paragraph (i) to read as follows:

§ 113.30-5 Requirements.

(a) *Communication.* Each vessel must have a means of communication among the following:

* * * * *

(d) *Emergency lockers.* If the emergency equipment lockers or spaces used by the emergency squad are not next to the navigating bridge or, on a mobile offshore drilling unit, next to the control room, there must be a means of communication between the navigating bridge or control room and the emergency equipment lockers or spaces.

* * * * *

(g) *Lookout.* Each vessel must have a means of communication between the navigating bridge and the bow or forward lookout station unless direct voice communication is possible.

(h) *Engine room local control station.* Each self-propelled vessel equipped with control from the navigating bridge must have a means of communication between the local station for the control of the speed or direction of thrust of the propulsion machinery and the engine control room, unless an engine order telegraph is installed in accordance with § 113.35-3. Each communication station at a local control station must—

(1) Not be on the same circuit as any other station required by this section; and

(2) Provide the capability of reliable voice communication when the vessel is underway.

(i) *Mobile offshore drilling units.* Each non-self-propelled mobile offshore drilling unit must have a means of communication among the control room, drill floor, machinery space, and silicon controlled rectifier (SCR) room (if installed). Each column-stabilized mobile offshore drilling unit must have a means of communication between the ballast control room and the spaces that contain the ballast pumps and valves.

§ 113.30-10 [Removed]

189. Section 113.30-10 is removed.

190. Section 113.30-20 is revised to read as follows:

§ 113.30-20 General requirements.

(a) The communications stations listed in § 113.30-5(a) through (d), (f), (g), and (i) and other communications

stations for the operation of the vessel, such as the captain's and chief engineer's offices and staterooms, emergency power room, carbon dioxide (or other extinguishing agent) control room, and firepump room, must not be on the same circuit as communications stations installed to meet the requirements of §§ 113.30-5(e) and 113.30-5(h).

(b) If a communications station is in the weather and on the same circuit as other required stations, there must be a cut-out switch on the navigating bridge that can isolate this station from the rest of the stations, unless the system possesses other effective means of station isolation during a fault condition.

(c) Jack boxes or headsets must not be on a communications system that includes any station required by this subpart, except for a station installed to meet §§ 113.30-5(h) or 113.30-25(d).

191. Section 113.30-25 is revised to read as follows:

§ 113.30-25 Detailed requirements.

(a) Each sound-powered telephone station must include a permanently-wired handset with a push-to-talk button and a hanger for the handset, except those stations detailed in paragraph (d) of this section. The hanger must be constructed so that it holds the handset away from the bulkhead and so that the handset will not be dislodged by the motion of the vessel.

(b) Each voice communication station device in the weather must be in a proper enclosure as required in § 111.01-9 of this chapter. The audible signal device must be outside the station enclosure.

(c) Each station in a navigating bridge or a machinery space must be in an enclosure meeting at least NEMA 250 Type 2 or IEC IP 32 requirements.

(d) In a noise location, such as an engine room, there must be a booth or other equipment to permit reliable voice communication during vessel operation.

(e) In a location where the voice communication station audible signal device cannot be heard throughout the space, there must be an additional audible signal device or visual device, such as a light, which is energized from the vessel's electric system.

(f) If two or more voice communication stations are near each other, there must be a means that indicates the station called.

(g) Each voice communication talking circuit must be electrically independent of each calling circuit. A short circuit, open circuit, or ground on either side of a calling circuit must not affect a talking

circuit. Circuits must be insulated from ground.

(h) Each connection box must meet at least NEMA 250 Type 6 or 6P or IP 67 requirements.

(i) Voice communication cables must be run as close to the fore and aft centerline of the vessel as practicable. The cable must not run through high fire-risk spaces, such as machinery rooms and galleys, unless the cable meets the requirements of IEC 331.

192. In § 113.35-3, remove the word "wheelhouse" wherever it appears and add, in its place, the words "navigating bridge" and revise paragraph (e)(3) to read as follows:

§ 113.35-3 General requirements.

* * * * *

(e) * * *

(3) Reliable voice communication and calling that meets the requirements of § 113.30-5(h) is not provided.

* * * * *

193. In § 113.35-5, the section heading and paragraphs (b) through (e) are revised to read as follows and paragraphs (f) through (g) are removed:

§ 113.35-5 Electric engine order telegraph systems.

* * * * *

(b) Each engineroom indicator must be capable of acknowledgment of orders.

(c) There must be an audible signal at each instrument. The signal at both locations must sound continuously when the transmitter and the indicator do not show the same order.

(d) Each telegraph instrument must meet the protection requirements of § 111.01-9 of this chapter.

(e) Each system must have an alarm which—

(1) Automatically sounds and visually signals a loss of power to the system;

(2) Is on the navigating bridge; and

(3) Has a means to reduce the audible signal from 100 percent to not less than 50 percent.

§ 113.35-7 [Removed]

194. Section 113.35-7 is removed.

195. In § 113.35-9, the section heading is revised; in paragraph (a) following "other", add ", as"; paragraph (b) is revised to read as follows; and paragraphs (c) through (g) are removed:

§ 113.35-9 Mechanical engine order telegraph systems.

* * * * *

(b) Each transmitter and each indicator must have an audible signal device to indicate, in the case of an indicator, the receipt of an order, and in the case of a transmitter, the

acknowledgment of an order. The audible signal device must not be dependent upon any source of power for operation other than that of the movement of the transmitter or indicator handle.

§ 113.35-11 [Removed]

196. Section 113.35-11 is removed.

§ 113.35-17 [Amended]

197. In § 113.35-17, remove the word "pilothouse" wherever it appears and add, in its place, the words "navigating bridge".

§ 113.35-19 [Amended and Redesignated as § 113.35-7]

198. In § 113.35-19, in paragraph (a), remove the words "in the wheelhouse, the wings of the navigating bridge, or the top of the wheelhouse" and add, in their place, the words "on or on top of, or on the wings of, the navigating bridge"; in paragraphs (c) and (d), remove the word "wheelhouse" and, in its place, add the words "navigating bridge"; and redesignate this section as § 113.35-7.

§ 113.37-5 [Amended]

199. In § 113.37-5, remove the words "in the wheelhouse" wherever they appear and add, in their place, the words "on the navigating bridge".

200. In § 113.37-10, paragraph (b) is revised to read as follows and paragraphs (c) and (d) are removed:

§ 113.37-10 Detailed requirements.

* * * * *

(b) Each electric component or its enclosure must meet NEMA 250 Type 4 or 4X or IEC IP 56 requirements.

201. In § 113.40-10, in paragraph (a), the second sentence is revised and a third sentence is added; paragraph (b) is revised; and paragraphs (c) through (f) are removed as follows:

§ 113.40-10 Detailed requirements.

(a) * * *. This system must be independent of all other systems and not receive power or signal from the steering gear control, autopilot, or dynamic positioning systems. However, the indicator may be physically located on a control console, such as an integrated bridge system, if it is readily visible by the helmsman at the steering stand.

(b) Each electric component or its enclosure must meet NEMA 250 Type 6 or 6P or IEC IP 67 requirements.

202. The heading to subpart 113.50 is revised to read as follows:

Subpart 113.50—Public Address Systems

203. Sections 113.50-1 and 113.50-5 are revised to read as follows:

§ 113.50-1 Applicability.

This subpart applies to each vessel required to have a general emergency alarm system in accordance with § 113.25-1.

§ 113.50-5 General requirements.

(a) Each vessel must have an amplifier-type announcing system that will supplement the general emergency alarm. This system must provide for the transmission of orders and information throughout the vessel by means of microphones and loudspeakers connected through an amplifier. If a decentralized-type system is used, its overall performance must not be affected by the failure of a single call station. This system may be combined with the general emergency alarm and fire detecting and alarm systems. The public address system must be protected against unauthorized use.

(b) The announcing station must be located adjacent to the general emergency alarm contact maker on the navigating bridge.

(c) There must be a means to silence all other audio distribution systems at the announcing station.

(d) The system may be arranged to allow broadcasting separately to, or to any combination of, various areas on the vessel. If the amplifier system is used for the general emergency alarm required by subpart 113.25 of this part, the operation of a general emergency alarm contact maker must activate all speakers in the system, except that a separate crew alarm may be used as allowed by § 113.25-5(e)(2).

(e) The amplifier, and any device used to produce the general emergency alarm signal, must be provided in duplicate.

(f) The power supply must be in accordance with the requirements of §§ 113.25-6 and 113.25-7.

(g) Each electrical subsystem in a weather location must be watertight or in a watertight enclosure (NEMA 250 Type 6 or 6P or IEC IP 67).

204. Section 113.50-10 is added to read as follows:

§ 113.50-10 Additional requirements for passenger vessels.

Each passenger vessel must have a public address system capable of broadcasting separately or collectively to the following stations:

(a) Survival craft stations, port.

(b) Survival craft stations, starboard.

(c) Survival craft embarkation stations, port.

(d) Survival craft embarkation stations, starboard.

(e) Public spaces used for passenger assembly points.

(f) Crew quarters.

(g) Accommodation spaces and service spaces.

205. In § 113.50–15, the section heading and paragraphs (a) through (d) are revised to read as follows and paragraph (e) and table 113.50–15 are removed:

§ 113.50–15 Loudspeakers.

(a) Loudspeakers must be located to eliminate feedback or other interference which would degrade communications.

(b) Loudspeakers must be located to provide intelligible and audible one-way communication throughout the vessel. Weatherdeck loudspeakers must be watertight and suitably protected from the effects of the wind and seas.

(c) There must be a sufficient number of loudspeakers throughout the vessel. The public address system must be installed with regard to acoustically marginal conditions and not require any action from the addressee. With the vessel underway in normal conditions, the minimum sound pressure levels for broadcasting emergency announcements must be—

(1) In interior spaces, 75 dB(A) or, if the background noise level exceeds 75 dB(A), then at least 20 dB(A) above maximum background noise level; and

(2) In exterior spaces, 80 dB(A) or, if the background noise level exceeds 80 dB(A), then at least 15 dB(A) above maximum background noise level.

(d) Loudspeakers must not have external volume controls or local cutout switches.

206. Section 113.50–20 is revised to read as follows:

§ 113.50–20 Distribution of cable runs.

(a) Each system must have a feeder distribution panel to divide the system into the necessary number of zone feeders. Where, because of the arrangement of the vessel, only one zone feeder is necessary, a branch circuit distribution panel must be used.

(b) The feeder distribution panel must be in an enclosed space next to the public address system power supply.

(c) Each system must have at least one feeder for each vertical fire zone.

(d) Each system must have one or more branch circuit distribution panels for each zone feeder, with at least one branch circuit for each deck level. The distribution panel must be above the uppermost continuous deck, in the zone served, and there must be no disconnect switches for the branch circuits.

(e) A branch circuit must not supply speakers on more than one deck level,

except for a single branch circuit supplying all levels of a single space if all other requirements of this section are met.

(f) On a vessel not divided into vertical fire zones by main vertical fire bulkheads, the vessel must be divided into vertical zones not more than 40 meters (131 feet) long. There must be a feeder for each of these zones.

(g) Feeders and branch circuit cables must be in passageways. They must not be in staterooms, lockers, galleys, or machinery spaces, unless it is necessary to supply public address speakers in those spaces.

§ 113.50–25 [Removed]

207. Section 113.50–25 is removed.

§ 113.65–5 [Amended]

208. In § 113.65–5, remove the words “Section 37.25” and add, in their place, the words “section 37.19” and remove the note to the section.

§ 113.70–5 (Subpart 113.70) [Removed]

209. Subpart 113.70 consisting of § 113.70–5 is removed.

PART 161—ELECTRICAL EQUIPMENT

210. The authority citation for part 161 is revised to read as follows:

Authority: 46 U.S.C. 3306, 3703, 4302; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; 49 CFR 1.46.

211. Section 161.002–1 is revised to read as follows:

§ 161.002–1 Incorporation by reference.

(a) Certain material is incorporated by reference into this subpart 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 paragraph (b) of 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 Office of the Federal Register, 800 North Capitol Street NW., suite 700, Washington, DC, and at the U.S. Coast Guard, (G–MSE), 2100 Second Street SW., Washington, DC 20593–0001, and is available from the sources indicated in paragraph (b) of this section.

(b) The material approved for incorporation by reference in this subpart and the sections affected are as follows:

American Bureau of Shipping (ABS)

American Bureau of Shipping, Two World Trade Center, 106th Floor, New York, NY 10048.

Rules for Building and Classing Steel Vessels, 1995–161.002–4(b).

American Society for Testing and Materials (ASTM)

American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428–2959.

ASTM B 117–95, Standard Practice for Operating Salt Spray (Fog) Apparatus, 1996–161.002–4(b).

Factory Mutual Engineering and Research (FMER)

Factory Mutual Engineering and Research, ATTN: Librarian, 1151 Boston-Providence Turnpike, Norwood, MA 02062.

Class Number 3150: Audible Signal Devices, December, 1974–161.002–4(b).

Class Number 3210: Thermostats for Automatic Fire Detection, July, 1978–161.002–4(b).

Class Number 3230–3250: Smoke Actuated Detectors for Automatic Fire Alarm Signaling, February, 1976–161.002–4(b).

Class Number 3260: Flame Radiation Detectors for Automatic Fire Alarm Signaling, September, 1994–161.002–4(b).

Class Number 3820: Electrical Utilization Equipment, September, 1979–161.002–4(b).

International Electrotechnical Commission (IEC)

International Electrotechnical Commission, 1, Rue de Varembe, Geneva, Switzerland.

IEC 533, Electromagnetic Compatibility of Electrical and Electronic Installations in Ships, 1977–161.002–4(b).

International Maritime Organization (IMO)

International Maritime Organization, 4 Albert Embankment, London SE1 7SR, England.

International Convention for the Safety of Life at Sea, 1974 (SOLAS 74) Consolidated Edition (Including 1992 Amendments to SOLAS 74, and 1994 Amendments to SOLAS 74), 1992–161.002–4(b).

National Fire Protection Association (NFPA)

National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02269.

NFPA 72, National Fire Alarm Code, 1993–161.002–4(b).

Lloyd's Register of Shipping (LR)

Lloyd's Register of Shipping, ATTN: Publications, 17 Battery Place, New York, NY 10004–1195.

LR Type Approval System; Test Specification Number 1, 1990–161.002–4(b).

Underwriters Laboratories, Inc. (UL)

Underwriters Laboratories, Inc., ATTN: Publication Stock, 333 Pfingsten Road, Northbrook, IL 60062–2096.

UL 38, Standard for Manually Actuated Signaling Boxes for Use with Fire-Protective Signaling Systems, 1994–161.002–4(b).

UL 268, Standard for Smoke Detectors for Fire Protective Signaling Systems, 1989 (including revisions through June 1994)–161.002–4(b).

UL 521, Standard for Heat Detectors for Fire Protective Signaling Systems, 1993 (including revisions through October 1994)–161.002–4(b).

UL 864, Standard for Control Units for Fire-Protective Signaling Systems, 1991

(including revisions through May 1994)—161.002–4(b).

§ 161.002–2 [Amended]

212. In § 161.002–2, in paragraph (a), remove the words “smoke detector systems” and add, in their place, the words “sample extraction smoke detection systems”; in paragraphs (a) and (b), remove the words “fire detecting” and add, in their place, the words “fire and smoke detecting”; in paragraph (b), following “fire detectors,” add “smoke detectors,”; in paragraphs (b) and (c), remove the words “vibrating bells” and add, in their place, the words “audible and visual alarms distinct in both respects from the alarms of any other system not indicating fire”; and, in paragraph (d), remove the words “smoke detector systems” and add, in their place, the words “sample extraction smoke detection systems”.

§ 161.002–3 [Amended]

213. In § 161.002–3, paragraphs (c), (d), and (e) are removed.

214. In § 161.002–4, paragraph (b) is added to read as follows:

§ 161.002–4 General requirements.

* * * * *

(b) *Standards.* (1) All fire-protective systems must be designed, constructed, tested, marked, and installed according to the applicable standards under § 161.002–1 and subchapter J (Electrical Engineering) of this chapter.

(2) All systems must be listed or certified as meeting these standards by an independent laboratory that is accepted by the Commandant under part 159 of this chapter for the testing and listing or certification of fire detection equipment and systems.

(3) All parts of the system must pass the environmental tests for control and monitoring equipment in either ABS Rules Table 4/11.1 or pass the Category ENV3 tests of Lloyd's Register Type Approval System, Test Specification Number 1, as appropriate.

(4) Those parts of the system that are to be installed in locations requiring exceptional degrees of protection must also pass the salt spray (mist) test in either ABS Rules Table 4/11.1; Category ENV3 of Lloyd's Register Type Approval System, Test Specification No. 1; or ASTM B–117 with results as described in corrosion-resistant finish in § 110.15–1 of this chapter.

§§ 161.002–5, 161.002–6, and 161.002–7 [Removed]

215. Sections 161.002–5, 161.002–6, and 161.002–7 are removed.

§ 161.002–8 [Amended]

216. In § 161.002–8, paragraph (b) is removed.

217. In § 161.002–10, in paragraph (b), revise the paragraph heading and paragraph (b)(1) to read as follows; in paragraph (b)(2), remove the word “signal” wherever it appears and add, in its place, the word “alarm”; in paragraphs (b)(3), (b)(4), (c)(3), (d), (e) paragraph heading, and (e)(2) through (e)(4), remove the words “alarm bell”, “alarm signal”, “audible signal”, and “bell” wherever they appear and add, in their place, the words “audible alarm”; in paragraph (e)(1), remove the words “audible trouble alarm bell or buzzer” and, in their place, add the words “audible alarm”; and paragraphs (i) through (m) are removed:

§ 161.002–10 Automatic fire detecting system control unit.

* * * * *

(b) *Fire alarms*—(1) *General.* The operation of a fire detecting and alarm system must cause automatically—

(i) The sounding of a vibrating type fire bell with a gong diameter not smaller than 15 cm (6 inches) or other audible alarm that has an equivalent sound level and that is mounted at the control unit and at the remote annunciator panel, when provided;

(ii) The sounding of a vibrating type fire bell with a gong diameter not smaller than 20 cm (8 inches) or other audible alarm that has an equivalent sound level and that is located in the engine room; and

(iii) An indication of the fire detecting zone from which the signal originated, visible at the control unit and at the remote annunciator panel, when provided;

* * * * *

§§ 161.002–11 and 161.002–13 [Removed]

218. Sections 161.002–11 and 161.002–13 are removed.

§ 161.002–12 [Amended]

218a. In § 161.002–12(a), remove the words “signaling devices” and add, in their place, the word “alarms”.

219. Section 161.002–15 is revised to read as follows:

§ 161.002–15 Sample extraction smoke detection systems.

The smoke detecting system must consist of a means for continuously exhausting an air sample from the protected spaces and testing the air for contamination with smoke, together with visual and audible alarms for indicating the presence of smoke.

§ 161.002–16 [Removed]

220. Section 161.002–16 is removed.

221. Section 161.002–17 is revised to read as follows:

§ 161.002–17 Equivalents.

The Commandant may approve any arrangement, fitting, appliance, apparatus, equipment, calculation, information, or test that provides a level of safety equivalent to that established by specific provisions of this subpart. Requests for approval must be submitted to Commandant (G–MSE). If necessary, the Commandant may require engineering evaluations and tests to demonstrate the equivalence of the substitute.

222. Section 161.002–18 is added to read as follows:

§ 161.002–18 Method of application for type approval.

(a) The manufacturer must submit the following material to Commandant (G–MSE), U.S. Coast Guard Headquarters, 2100 Second Street SW., Washington, DC 20593–0001:

(1) A formal written request that the system be reviewed for approval.

(2) Three copies of the system's instruction manual, including information concerning installation, programming, operation, and troubleshooting.

(3) One copy of the complete test report generated by an independent laboratory accepted by the Commandant under part 159 of this chapter for the testing and listing or certification of fire-protective systems. A current list of these facilities may be obtained from the address in this section.

(4) Three copies of a list prepared by the manufacturer that contains the name, model number, and function of each major component and accessory, such as the main control cabinet, remote annunciator cabinet, detector, zone card, isolator, central processing unit, zener barrier, special purpose module, or power supply. This list must be identified by the following information assigned by the manufacturer:

(i) A document number.

(ii) A revision number (the original submission being revision number 0).

(iii) The date that the manufacturer created or revised the list.

(b) The Coast Guard distributes a copy of the approved instruction manual to the manufacturer and to the Coast Guard Marine Safety Center (MSC).

(c) The manufacturer shall maintain an account of the equipment offered for approval. The list identification information in paragraphs (a)(4)(i) through (a)(4)(iii) of this section appears on the Certificate of Approval and indicates the official compilation of components for the approved system. If

the manufacturer seeks to apply subsequently for the approval of a revision (because of, for example, additional accessories becoming available, replacements to obsolete components, or a change in materials or standards of safety), changes to the approved list must be submitted for review and approval.

(d) To apply for a revision, the manufacturer must submit—

- (1) A written request under paragraph (a) of this section;
- (2) An updated list under paragraph (b) of this section; and

(3) A report by an independent laboratory accepted by the Commandant under part 159 of this chapter for the testing and listing or certification of fire-protective systems indicating compliance with the standards and compatibility with the system.

(e) If the Coast Guard approves the system or a revision to a system, it issues a certificate, normally valid for a 5-year term, containing the information in paragraphs (a)(4)(i) through (a)(4)(iii) of this section.

§§ 161.004–2—161.004–7 (Subpart 161.004)
[Removed]

223. Subpart 161.004, consisting of §§ 161.004–2 through 161.004–7, is removed.

Dated: May 22, 1996.

J.C. Card,

*Rear Admiral, United States Coast Guard,
Chief, Marine Safety and Environmental
Protection.*

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