

**DEPARTMENT OF TRANSPORTATION****Coast Guard****46 CFR Parts 108, 110, 111, 112, 113, and 161****[CGD 94-108]****RIN 2115-AF24****Electrical Engineering Requirements for Merchant Vessels****AGENCY:** Coast Guard, DOT.**ACTION:** Notice of proposed rulemaking.

**SUMMARY:** As part of the President's Regulatory Reinvention Initiative, the Coast Guard proposes to amend its electrical engineering regulations to reduce the regulatory burden on the marine industry, purge obsolete and out-of-date regulations, and eliminate requirements that create an unwarranted differential between domestic rules and international standards.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 proposed rulemaking would harmonize, 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 proposed rulemaking would dramatically revise certain prescriptive electrical equipment design, specification, and approval requirements and replace them with performance-based requirements that incorporate international standards.

**DATES:** Comments must be received on or before March 18, 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 preamble is available for inspection at room 1300, U.S. Coast Guard Headquarters.

**FOR FURTHER INFORMATION CONTACT:**

Mr. Gerald P. Miente, Project Manager, or LTJG Jacqueline M. Twomey, Project Engineer, Design and Engineering Standards Division (G-MMS), (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. Persons submitting comments should include their names and addresses, identify this rulemaking (CGD 94-108) and the specific section of the proposal 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 acknowledgment 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 proposal in view of the comments.

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

**Background and Purpose**

On March 30, 1995, the Coast Guard published a notice of a public meeting in the Federal Register (60 FR 16423) and solicited written comments on the President's recently announced Regulatory Reinvention Initiative as well as the Coast Guard's regulatory development process. The meeting was held on April 20, 1995, with a written comment period extended from May 1 to December 8, 1995.

On May 31, 1995, the Coast Guard published a notice in the Federal Register (60 FR 28376) that stated that the Coast Guard has established a goal of eliminating any regulatory differential between requirements that apply to U.S. vessels in international trade and those that apply to similar vessels in international trade that fly the flag of responsible foreign nations. To the maximum extent possible, requirements that create an unwarranted differential between U.S. and

internationally recognized standards will be eliminated. This revision of the electrical engineering regulations is, in part, part of this project.

The Coast Guard's electrical safety regulations are based on statutory authority provided in 46 U.S. Code (U.S.C.) 3306 and 3703. The existing regulations for inspected vessels are contained in chapter I, subchapter J, of title 46 of the Code of Federal Regulations (46 CFR chapter I, subchapter J). This proposal is mainly concerned with changes to this subchapter but associated changes in subchapters I-A and Q also are being proposed. All cites in this proposal, unless otherwise indicated, are to title 46 CFR.

This project proposes to revise technical areas of subchapter J to address comments received from Coast Guard field and inspection offices and the marine industry; to clarify requirements where confusion has been shown to exist; to delete or significantly modify obsolete requirements; to reflect experiences with vessel reflaggings; and to more closely parallel international standards. The revision also proposes to incorporate the latest International Convention for the Safety of Life at Sea, 1974 (SOLAS 74) amendments (up to and including 1992), elements of the Coast Guard Regulatory Reform (CGRR) initiative, and industry standards.

The increased frequency of overseas construction of U.S. flag vessels has created a need for the Coast Guard to recognize equipment designed and installed in accordance with international standards. The implementation of SOLAS 74 by the international maritime community has promulgated requirements which closely parallel existing Coast Guard regulations. Subchapter J will be revised to facilitate U.S. acceptance of electrical equipment constructed in accordance with other international standards.

To eliminate needless regulatory burden, the Coast Guard is proposing to delete and extensively revise obsolete or confusing regulations. For example, the entries for Engine Order Telegraphs are proposed to be consolidated and updated. Additionally, the necessary degree of safety and reliability for sound powered telephones can be maintained with minor additions to subchapter J. This proposal would encompass the changes which would make type approval by the Government unnecessary. Therefore, in conjunction with these proposed changes, the Coast Guard would remove the approval requirement for sound powered telephone equipment (now in subchapter Q) and adopt minimum

performance requirements in subchapter J. Similar treatment is being given Fire Protective Systems. A wide variety of national and international standards covering different types of equipment are also proposed for incorporation by reference. Also under the proposal, the equipment manufacturer would be afforded a choice of Independent Laboratories versus the old single-point of testing. Modification of current requirements is allowed under existing U.S. statutes, as 46 U.S.C. 3306 and 3703 provide broad authority to the Secretary to prescribe safety regulations. Presently in the regulations, a Fire Protection Equipment manufacturer is required to provide a sample of its system, built only to the rigid specifications in part 161, subpart 161.002, to the National Bureau of Standards for testing. The Coast Guard would allow equipment to be constructed to several domestic and an internationally recognized standards. Also, the Coast Guard continues to process applications from a variety of third party testing institutions and Commandant (G-MMS) maintains a list at Coast Guard headquarters of Independent Laboratories recognized by the Commandant.

The use of large industrial systems independent of a traditional ship's service and propulsion functions are becoming increasingly popular. These types of systems provide power to systems that are vital to a vessel's mission but not necessarily to its safety. Industrial systems would include drilling, manufacturing and scientific research. Due to the industrial nature of these systems, it is not necessary for them to meet the requirements in subchapter J which are intended to provide for reliable ship's service and electrical propulsion systems. New requirements, therefore, are being proposed which would permit the use of standard industrial equipment without requiring them to meet many of the requirements of subchapter J. Electrical installations in hazardous locations will continue to meet explosion-proof/intrinsically-safe requirements. This action serves the needs of industry while ensuring a comparable level of safety.

On November 1, 1974, the Assembly of the International Maritime Organization (IMO) adopted the International Convention for the Safety of Life at Sea, 1974 (SOLAS 74). To date, IMO has adopted seven sets of amendments to the convention pursuant to Article VIII of SOLAS 74. The United States has played an instrumental role in the development of the Convention and its amendments. As a signatory

to this international treaty, the United States has embraced these amendments and periodically upgrades existing regulations, as necessary, to bring it into alignment with the SOLAS 74 requirements.

The Coast Guard's electrical engineering regulations were last updated in 1982. In that rulemaking, the Coast Guard reorganized its regulations and incorporated the first set of amendments to SOLAS 74. This rulemaking proposes incorporating the second through seventh sets of amendments to SOLAS 74 (those of 1983, 1988, 1989, 1990, 1991, and 1992.) In doing so, the Coast Guard inspected vessels' electrical safety regulations would be aligned with the international standards for safety which are accepted for merchant ships around the world.

#### Discussion of Proposed Rules

The proposed revisions to 46 CFR chapter I, subchapter J, would clarify and condense, in technically correct language, the Electrical Engineering Regulations applicable to U.S. Coast Guard certificated vessels. The objective of these revisions is to further reduce the regulatory burden on the industry, eliminate misinterpretation of the regulations by all affected parties, and bring the regulations in line with the state of the art technology in the industry as well as with standards accepted by the international maritime community.

The major changes to subchapter J are discussed below. Other changes which are editorial and do not affect the technical content of this subchapter are not addressed. The editorial corrections are to help the reader understand the intent of the requirements.

As part of the associated changes, the Coast Guard is also proposing to revise 46 CFR 108.170, Definitions, and § 108.181, Ventilation for enclosed spaces, to refer to the appropriate sections of subchapter J.

In addition to updating subchapter J to reflect the most recent amendments to SOLAS 74, the Coast Guard is also proposing to revise subchapter J to incorporate by reference numerous internationally recognized marine electrical standards which address construction, installation, testing, and safety.

#### Part 110—General Provisions

*Section 110.01-1.* The Coast Guard would revise § 110.1-1, General, to add 46 CFR chapter I, subchapter K, Small Passenger Vessels Carrying more than 150 Passengers or with Overnight Accommodations for more than 49

Passengers, subchapter L, Offshore Supply Vessels, subchapter R, Nautical School Vessels, and subchapter W, Lifesaving Appliances and Arrangements, to the list of subchapters which require electrical installations in accordance with subchapter J. This is not additional regulation; but an entry to correct a prior omission such as with subchapter R since § 167.40-1(a)(2) already requires such compliance; and cross-reference to new subchapters.

*Section 110.01-3.* The Coast Guard would revise § 110.01-3, Repairs, to address alterations as well as repairs. It is proposed that minor alterations on vessels meet the requirements of the regulations in effect on the contract date for the original installation, or the contract date for the alteration. Unlike minor repairs and alterations, major conversions, such as adding a large section to the midbody of the vessel or changing the type or size of the main propulsion engine are considered, under Coast Guard policy, on a case-by-case basis by Commandant (G-MCO). Having a single point of review for these situations ensures consistency in application of statutes and regulations.

*Section 110.10-1.* The Coast Guard would update § 110.10-1, Incorporation by reference, to reflect new standards and to update the editions of references already incorporated. This section provides the addresses of organizations which publish the referenced standards. Additionally, the sections affected by the incorporation of standards are identified in § 110.10-1.

*Section 110.15-1.* The Coast Guard would revise § 110.15-1, Definitions, to reflect new and modified terms and definitions used in the subchapter. These minor word changes would bring our regulation terminology in line with internationally accepted language. The proposed changes would remove the reference from "lifeboats" and replace it with the SOLAS 74 term "survival craft" and would replace the current definition for dead ship with the SOLAS 74 definition, (i.e., remove reference from "ship service generators" and replace it with "auxiliaries"). The definition for "flashpoint" would be revised to reflect the current industry definition. Definitions for "waterproof", "watertight", and "dripproof" would be modified with reference to the text in the National Electrical Manufacturers Association (NEMA) and the International Electrotechnical Commission (IEC) enclosure categories for the proposed § 111.01-9, Degree of protection. Proper training and licensing would be added to the list of criteria under the definition for qualified person. This is proposed in order to

quantify the definition since Certificates of Inspection require a vessel to be manned by personnel holding certain licensed and unlicensed ratings. Parts 10 and 12 of 46 CFR detail the training, experience and testing procedures needed to obtain these licenses and documents. On the face of the merchant marine license it states that the holder has been duly examined and found competent.

*Section 110.20-1.* The Coast Guard would revise § 110.20-1, Conditions under which equivalencies may be used, to allow the Commanding Officer, Marine Safety Center (MSC) to accept equivalencies for fittings, materials, apparatus, equipment, or arrangements required by this subchapter. With the consolidation of the Coast Guard's three former merchant marine technical offices into one central location, the opportunity for different interpretations of equivalencies by different Coast Guard offices no longer presents a problem. Allowing the Marine Safety Center to accept equivalencies enables the submitter to send all plans to one point of contact within the Coast Guard. This procedural change would not alter the appeal procedures already contained in 46 CFR 1.03, Rights of appeal.

*Subpart 110.25.* The Coast Guard would revise various paragraphs of subpart 110.25, Plan Submittal, to remove Commandant (G-MMS) as one of the offices to which plans may be submitted. Commandant (G-MMS) does not perform plan review for specific vessels. All vessel plan review is now conducted by the U.S. Coast Guard Marine Safety Center (MSC). Also, several terms in § 110.25-1(c) will be changed to reflect the wording found in SOLAS 74 and other international standards.

*Section 110.30-7.* The Coast Guard would revise § 110.30-7, Repairs or alterations, to clarify the material. This section complements § 110.01-3, Repairs, regarding minor and major repairs and alterations. This has been the long-standing regulation in subchapter D: 46 CFR 30.01-10, Application of regulations governing alterations or repairs. Although the application of these regulations has become standard practice for all types of vessels, the Coast Guard now proposes to repeat it in the electrical engineering regulation subchapter to remove any misunderstanding and clarify that this requirement applies to electrical systems on all vessels subject to subchapter J.

*Subpart 110.35.* The Coast Guard would add a new subpart 110.35, Independent Laboratories, which would define Independent Laboratories. An

Independent Laboratory will be a laboratory which has been accepted by the Commandant under part 159 of this chapter for the testing of electrical and electronic equipment and other related apparatus. Paragraph (j) of § 110.25-1 would be changed to refer to an Independent Laboratory instead of specifically named laboratories.

#### Part 111—Electric Systems—General Requirements

*Section 111.01-5.* The Coast Guard would add electrical cable to the list of equipment in § 111.01-5, Protection from bilge water. In addition to being sound engineering practice, the American Bureau of Shipping (ABS) Rules for Building and Classing Steel Vessels prohibit generator cable installation in the bilge and the Institute of Electrical and Electronic Engineers (IEEE) Standard 45 (Recommended Practice for Electric Installations on Shipboard) recommend not installing any cable in the bilge.

*Section 111.01-7.* The Coast Guard would revise § 111.01-7, Accessibility, to remove specific references, throughout the subchapter, to detailed construction requirements. A new paragraph (b) would be added which would provide general performance and safety guidelines. These revisions would set standards for equipment based on performance criteria and therefore allow the removal of more detailed construction specifications.

*Section 111.01-9.* The Coast Guard would change the title of § 111.01-9, Watertight, waterproof, and drip-proof equipment, to Degrees of protection, and revise the section to reflect the revision of § 110.15-1, Definitions. These changes now bring the regulations on enclosures in line with IEC standards while allowing the option of National Electrical Manufacturers Association (NEMA) enclosure selection.

*Section 111.01-15.* The Coast Guard would revise § 111.01-15, Temperature ratings, to require an ambient temperature of 45 °C for most electrical equipment in machinery spaces instead of the currently required 50 °C. The international community has established 45 °C as the standard ambient temperature for these shipboard applications. Rotating machinery would still be required to be rated for 50 °C because of its inherent heating characteristics, but cable installed in machinery spaces would be rated at 45 °C. Control and instrumentation equipment would be rated at 55 °C in order to comply with the international requirements. The proposed changes would still allow for derating equipment

based on the actual ambient temperature of the space.

*Section 111.01-17.* The Coast Guard would revise § 111.01-17, Nature of electric supply, by renaming the section, Voltage and frequency variations, and deleting specific reference to restrictive standard voltages and frequency as well as deleting table 111.01-17(b), Standard Voltages. The revision would instead reference industry standard operating parameters for electrical machines and apparatus.

*Sections 111.01-19, 111.01-21, and 111.01-23.* The Coast Guard would add three new sections: § 111.01-19, Inclination of the ship, § 111.01-21, Vibration, and § 111.01-23, Humidity. These sections would include requirements for the electrical systems in relation to the inclination of a vessel and those for conditions of vibration and humidity.

*Section 111.05-1.* The Coast Guard would revise § 111.05-1, Purpose, with a minor addition to include "systems" as stated in the subpart title.

*Section 111.05-07.* The Coast Guard would revise § 111.05-7, Armored and metallic-sheathed cable, in order to align installation requirements of armor sheathed cable with international standards.

*Section 111.05-9.* The Coast Guard would revise § 111.05-9, Masts, to address lightning protection for vessels with nonmetallic masts. This proposed revision would account for the expanded use of lighter weight composite materials for masts.

*Section 111.05-19.* The Coast Guard would revise § 111.05-19, Tank vessels; grounded distribution systems, to align the systems' voltage limits with the IEC (1000 volts) vice 3000 volts currently mandated in the regulations. This gives the designer of nominal 2400 volt plants the option of a grounded distribution system.

*Section 111.05-23.* The Coast Guard would revise § 111.05-23, Location of ground indicators, to include requirements for branch circuit detection indicators where the circuit is isolated from the main source by a transformer or other device. Normal ground detector indication at the distribution switchboard is required in paragraph (a) for conventional feeder circuits. This proposal extends indication coverage to the load side of isolation devices whose circuits would not be otherwise monitored. Also, this proposal brings to one central location all ground detection device requirements and relieves the engineer of the burden, especially in an emergency, of visiting each transformer

or isolation device to ascertain the ground condition of the branch circuit.

*Sections 111.05-25, 111.05-27, and 111.05-29.* The Coast Guard would revise § 111.05-25, Ungrounded systems, § 111.05-27, Grounded neutral alternating-current systems, and § 111.05-29, Dual voltage direct-current systems, to offer a greater number of options in ground detection circuitry. The proposed revision would remove restrictive wattage and current limitations on detection circuit components thereby allowing for innovative design and would replace them with performance parameters.

*Section 111.05-33.* The Coast Guard would revise § 111.05-33, Equipment grounding conductors, to require that each equipment grounding conductor be insulated and be of a size at least equal to current carrying conductor. This proposal would align our regulations with the National Electrical Code (NEC).

*Sections 111.05-37 and 111.05-39.* The Coast Guard would consolidate § 111.05-39, Switches and circuit breakers, into § 111.05-37, Overcurrent device. Both sections presently address overcurrent protection devices.

*Section 111.10-1.* The Coast Guard would revise paragraph (a) of § 111.10-1, Definitions, to remove certain cargo refrigeration systems from the list of ship's service electrical loads. These loads are industrial in nature and are not directly related to the safety of the vessel. These refrigeration systems are added to the list of industrial type loads in the same section.

*Section 111.10-3.* The Coast Guard would revise § 111.10-3, Two generating sets, to add the requirement that a Mobile Offshore Drilling Unit (MODU) must have at least two ship's service generating sets. This is presently a requirement of the International Maritime Organization (IMO) MODU Code. The Coast Guard proposes the inclusion since subchapter I-A for MODU Inspection and Certification references subchapter J for their electrical systems.

*Section 111.10-4.* The Coast Guard would revise § 111.10-4, Power requirements; generating sets, to define the required generating capacity. The changes would result in regulations which mirror the requirements of SOLAS 74. The Coast Guard would revise paragraph (b) to clarify the fact that the capacity of the ship's service generating set or sets must be sufficient to carry the ship's service loads with the largest ship's service generator stopped. The Coast Guard would revise paragraph (d) to ensure that propulsion-plant loads do not impact on ship's service loads when these loads are

supplied by a common generator. New paragraphs (e) and (f) would be added specifically to address main-engine-dependent generators. The proposed regulation reflects a harmonization with international standards, recognized classification society requirements, and present industry practice for these types of generators.

*Section 111.10-7.* The Coast Guard would revise paragraph (b) of § 111.10-7, Dead ship, by adding a sentence referencing additional existing requirements contained in § 112.05-3 of this chapter. These requirements refer to the main and emergency bus-tie.

*Sections 111.10-9 and 111.10-11.* The Coast Guard would revise § 111.10-9, Ship's service supply transformers; 2 required, to clarify the intent of the requirement and bring the requirements of § 111.10-11, Power requirements; transformers under this one section.

*Section 111.12-1.* The Coast Guard would revise paragraph (a) of § 111.12-1, Prime movers, to incorporate American Bureau of Shipping (ABS) Rules for prime movers, paragraph (b) to clarify that all generator prime movers need a governor, and paragraph (c) to remove the exemption from the automatic shut down in case of loss of lubricating oil.

*Section 111.12-5.* The Coast Guard would revise paragraph (a) of § 111.12-5, Generator construction and testing, to reflect a change in the ABS Rules numbering system and would remove the designation "(a)" from the paragraph. Paragraphs (b), (c), and (d) would be removed.

*Section 111.12-7.* The Coast Guard would revise paragraph (a) of § 111.12-7, Voltage regulation and parallel operation, to reflect a change in ABS Rules numbering system.

*Sections 111.15-1, 111.15-2, and 111.15-3.* The Coast Guard would revise § 111.15-1, General § 111.15-2, Battery construction, and § 111.15-3, Battery categories, to eliminate restrictive construction details and to allow the use of different types of batteries, including sealed batteries and other designs. The specific size requirement in paragraph (c) of § 111.15-2 would be removed and reclassification would be allowed under paragraph (d) of § 111.15-3.

Additionally, the Coast Guard proposes a new paragraph (d) in § 111.15-2 be added as a performance measure to address a battery's suitability for installation in the marine environment.

*Section 111.15-5.* The Coast Guard would revise paragraph (a) in § 111.15-5, Battery installations, by deleting the reference to specific test laboratories. All electrical equipment and laboratory testing requirements for

hazardous locations would be addressed in subpart 111.105, Hazardous Locations. Additionally, the Coast Guard would allow for the expanded use of internationally available electrical equipment by providing reference to IEC hazardous location classifications. The Coast Guard would amend § 111.15-5(c), Small batteries, to allow liberal storage of small-size sealed batteries. This is possible due to the reduced hazard associated with sealed equipment. The Coast Guard would eliminate paragraph 111.15-5(e), Tiers. This requirement is redundant with the spacing requirement specified in paragraph 111.15-5(d), Battery trays. The remaining paragraphs (f), (g) and (h) would be renamed (e), (f) and (g).

*Section 111.15-10.* The Coast Guard would revise paragraph (g) of § 111.15-10, Ventilation, to explain the intent of ventilation requirements for small battery installations. If the battery box were in a non-environmentally-controlled location, simple vent openings may allow the ingress of water. A statement on preventing ingress would be added.

*Section 111.15-20.* The Coast Guard would revise § 111.15-20, Conductors, to put the accepted installation practices presently included in this section into proper terminology. The requirements in paragraphs (b) and (c) would be combined into one paragraph.

*Section 111.15-30.* The Coast Guard would revise § 111.15-30, Battery chargers, to eliminate specific construction requirements for battery chargers. In their place, the Coast Guard proposes certain performance requirements.

*Section 111.20-1.* The Coast Guard would revise § 111.20-1, General requirements, to reflect internationally accepted practices for transformer construction, installation and protection by allowing not only the winding but also the enclosure to provide the necessary protection.

*Section 111.20-15.* The Coast Guard would revise § 111.20-15, Transformer overcurrent protection, to reflect internationally accepted practices for transformer overcurrent protection by allowing a choice of standards.

*Section 111.25-5.* The Coast Guard would revise paragraph (a) of § 111.25-5, Marking, to allow nameplate markings in accordance with the practices of the IEC as an alternative to the present National Electrical Code requirement.

*Section 111.30-1.* The Coast Guard would revise § 111.30-1, Location and installation, to require switchboard installation to follow industry practice by removing specific construction

detailed regulatory language and instead referring to the appropriate guidance of IEEE Standard 45.

*Section 111.30-4.* The Coast Guard would revise § 111.30-4, Circuit breakers removable from front, to allow an alternative method of circuit breaker installation. This would permit the circuit breaker to be hard-wired to the switchboard if: (1) The switchboard is divided into two or more sections that can be split by disconnecting a link between a section of the switchboard, and (2) the connection of generators and duplicated equipment is equalized between the sections of the main bus. This allows for the capability of de-energizing a section of the switchboard without shutting down the power supply or degrading the continuity of power supply to vital loads.

*Section 111.30-5.* The Coast Guard would revise § 111.30-5, Construction, to remove detailed switchboard construction requirements and incorporate international consensus standards (IEEE Standard 45 and IEC Publications 92-302/92-503).

*Sections 111.30-9, 111.30-11, and 111.30-13.* The Coast Guard would eliminate § 111.30-9, Mechanical protection, § 111.30-11, Mats or gratings, and § 111.30-13, Grounding. The requirements of these sections are included in the industry practices of the IEEE Standard 45 and the IEC Publications.

*Section 111.30-19.* The Coast Guard would revise § 111.30-19 Buses and wiring. Paragraph (a) would be revised to allow for the guidance of international performance standards instead of the present detailed technical requirements. Paragraphs (b) through (e) would be deleted because the information they contain is covered by proposed paragraph (a). Paragraph (f) would be renamed paragraph (b) and would be revised to allow for the use of small-conductor-size cable, such as ribbon cable, for instrumentation and control circuitry, as is common industry practice.

*Section 111.30-21.* The Coast Guard would eliminate § 111.30-21, High temperature devices. This design specification would be addressed in the requirements of the appropriate industry standards of the IEEE and IEC and need not be repeated here.

*Section 111.30-23.* The Coast Guard would eliminate § 111.30-23, Medium voltage switchboards. These requirements will be part of the proposed revision of § 111.30-5, Construction.

*Section 111.30-24.* The Coast Guard would revise § 111.30-24, Generation systems greater than 3000 kw, to modify

the exemption for MODUs to split the switchboard when the total generator power exceeds 3000 kw. The IMO MODU Code requires self-propelled MODUs to have a split switchboard when the total installed generator capacity exceeds 3 Megawatts (3000 kw). Therefore the exemption will apply only to nonself-propelled MODUs.

*Section 111.30-29.* The Coast Guard would revise § 111.30-29, Emergency switchboards, by adding paragraphs (g), (h) and (i). These paragraphs are presently contained in part 112. The purpose of this change is to consolidate all of the requirements for the emergency-switchboard instrumentation and equipment into one section.

*Section 111.30-31.* The Coast Guard would delete § 111.30-31, Tests. Presently this section requires switchboards to be tested to an American Bureau of Shipping requirements. American Bureau of Shipping Rules do not address the testing of switchboards.

*Section 111.33-3.* The Coast Guard would replace the descriptive nameplate requirements of § 111.33-3, Nameplate data, for semiconductor rectifier systems with industry practice according to international standards.

*Section 111.33-5.* The Coast Guard would replace the descriptive installation requirements of § 111.33-5, Installation, for semiconductor rectifier systems with industry practice according to international standards.

*Section 111.33-11.* The Coast Guard would revise § 111.33-11, Propulsion systems, to reflect the current American Bureau of Shipping numbering system regarding semiconductor rectifier systems.

*Section 111.35-1.* The Coast Guard would revise § 111.35-1, Electrical propulsion installations, to reflect the current American Bureau of Shipping numbering system.

*Section 111.40-1, 111.40-5, and 111.40-7.* The Coast Guard would remove § 111.40-1, Panelboard, standard, to eliminate the requirement of meeting a specific standard and thereby allowing the use of panelboards which are designed and constructed according to sound engineering practice. Likewise, the Coast Guard would revise § 111.40-5, Enclosure, and § 111.40-7, Location, to allow the installation of panelboards with a suitable degree of protection to be installed in the weather. This change allows more latitude in the electrical arrangement on the ship without reducing personnel safety requirements.

*Section 111.50-2.* The Coast Guard would add a new § 111.50-2, Systems integration. This new section would

reflect the need to consider component compatibility within each overcurrent protection system.

*Section 111.50-3.* The Coast Guard would revise paragraphs (c), (d), (f) and (h)(2) of § 111.50-3, Protection of conductors, to allow the use and incorporate the requirements of the IEC for fuses, circuit breakers, thermal devices and ground conductors.

*Section 111.52-1.* The Coast Guard would correct § 111.52-1, General, to identify the physical unit (i.e., "current") needed to be calculated when performing short-circuit current calculations.

*Section 111.52-5.* The Coast Guard would revise § 111.52-5, Systems 1500 kilowatts or above, to allow several additional methods of short-circuit current calculations. This would ensure that the appropriate method of short-circuit current calculation is available to the designer as well as the plan reviewer.

*Section 111.53-1.* The Coast Guard would revise paragraph (a)(1) of § 111.53-1, General, to eliminate specific reference to parts E and F of the National Electrical Code relative to fuses. The revision would add the option of meeting the general provisions of IEC internationally recognized standards. Additionally, the Coast Guard would revise paragraph (a)(3) to eliminate restrictive reference to Underwriters Laboratories, Inc. This would expand industry's options to list fuses with any Independent Laboratory. The Coast Guard would revise paragraph (b) to eliminate prohibitive reference to Edison-base fuses. The Coast Guard recognizes that systems designed and built to IEC and/or CEN standards may contain these fuses. It is also recognized that many Maritime Administration (MARAD) Ready Reserve Force reflagged vessels have been operating with such equipment for years. The Coast Guard, however, maintains its prohibition of renewable-link cartridge fuses because it is considered a severe safety hazard in that a link of a higher than recommended current value might be placed in a jacket marked with a lower value and the fault be undetectable. The Coast Guard would add a new paragraph (c) to provide for the ability to test for fuse condition, particularly for installations utilizing Edison-base fuses, since the glass or plastic link protector inhibits the readily available test points offered by a more common cartridge fuse.

*Section 111.54-1.* The Coast Guard would revise § 111.54-1, Circuit breakers, to include reference to and the allowance of internationally recognized standards and at the same time

eliminate reference to restrictive and specific construction standards.

*Section 111.55-1, 111.55-5, 111.55-7, and 111.55-9.* The Coast Guard would delete § 111.55-5, Knife switches, § 111.55-7, Snap switches, and § 111.55-9, Enclosed switches. These requirements do not provide an additional level of safety beyond that ensured by compliance with § 111.55-1, General.

*Subpart 111.57.* The Coast Guard would eliminate subpart 111.57, Current-Limiting Devices. The operating and design characteristics of current limiting devices would be included in the revision of subpart 111.53, Fuses, and subpart 111.54, Circuit Breakers. This, in turn, reduces repetitive and unnecessary regulation.

*Section 111.59-1.* The Coast Guard would rewrite § 111.59-1, General, to eliminate paragraph (b) and the requirement that busways meet a specific construction standard, as the performance of the component is established by compliance with paragraph (a).

*Section 111.59-3.* The Coast Guard would revise § 111.59-3, No mechanical cooling, to correct an omission. In the present version, the regulations state that "A busway must need mechanical cooling \* \* \*" which is opposite to the intent of this section.

*Section 111.60-1.* The Coast Guard would revise § 111.60-1, Cable construction and testing, to align our regulation language with that of the 1983 edition of IEEE Standard 45. Additionally, the Coast Guard would propose to include, as acceptable, cable that is designed, constructed, tested and installed in accordance with the international standards of IEC Publications 92-3 and certain 92-350 series as well as several MIL Specification cables.

*Sections 111.60-2 and 111.60-6.* The Coast Guard would add new § 111.60-2, Specialty cable for communication and RF applications, and § 111.60-6, Fiber optic cable, to include requirements for specialty electrical cables and optical fiber cables. The proposed requirements address installation and flammability characteristics for these cables. The Coast Guard feels this is necessary because of the present lack of guidance for this relatively new equipment now on board or contemplated for installation on board certificated vessels and because of the larger fire load the cable represents.

*Section 111.60-3.* The Coast Guard would revise § 111.60-3, Cable application, to include the applicable requirements of IEC Publication 352 and

to assure proper derating of cables according to type construction.

*Section 111.60-4.* The Coast Guard would revise § 111.60-4, Minimum cable conductor size, to include instrumentation cable with the thermocouple and pyrometer group. Mention of general instrumentation cable was unintentionally omitted from the regulations during the last revision.

*Section 111.60-5.* The Coast Guard would revise § 111.60-5, Cable installation, to include reference to the installation of cables constructed in accordance with the international standard IEC Publication 92-3 and the IEC 92-350 series.

*Section 111.60-11.* The Coast Guard would revise § 111.60-11, Wire, to expand the choices available for shipboard wiring. The current requirements are too restrictive and do not constitute an appreciable increase in safety beyond the proposed reduction in those requirements.

*Section 111.60-13.* The Coast Guard would revise paragraph (a) of § 111.60-13, Flexible electric cord and cables, to remove the restrictions presently governing the use of flexible cord and cables. The proposed change allows compliance with a larger number of nationally-recognized standards.

*Section 111.60-17.* The Coast Guard would revise § 111.60-17, Connections and terminations. The current regulations are merely a narrative describing standard marine practice. The proposed revision would outline specific installation criteria for connectors and terminals.

*Section 111.60-19.* The Coast Guard would revise § 111.60-19, Cable splices, to reflect current industry practice as outlined in the internationally accepted IEEE Standard 45.

*Section 111.60-21.* The Coast Guard would revise § 111.60-21, Cable insulation tests, to reflect a change in numbering system of the referenced IEEE standard.

*Section 111.60-23.* The Coast Guard would add a new § 111.60-23, Type MC cable, to address the lack of requirements primarily on offshore production platforms. However, the installation of this cable is not limited to offshore platform applications and may be used as shipboard cable provided certain installation requirements are followed.

*Subpart 111.70.* The Coast Guard would revise subpart 111.70, Motor Circuits, Controllers and Protection, to reflect internationally recognized classification society standards, practices and requirements which do not rely solely on the shoreside code of the National Electrical Code.

Additionally, the revision will eliminate obsolete requirements.

*Section 111.75-1.* The Coast Guard would revise paragraph (a) of § 111.75-1, Lighting feeders, to replace the term "fire screen" with the term "fire" to agree with SOLAS 74, and include reference to low location egress lighting. The Coast Guard would eliminate paragraph (c). This requirement does not elevate the overall safety level of the vessel. The Note, however, is part of the section and is retained.

*Section 111.75-5.* The Coast Guard would delete the voltage specific requirements of lighting circuits by deleting paragraph (b), Voltages, in § 111.75-5, Lighting branch circuits, and the remaining paragraphs would be re-lettered and re-numbered accordingly. The Coast Guard would redesignate paragraph (c), Connected load, as paragraph (b) and revise the narrative concerning connected loads. The removed narrative is standard electrical practice and need not be specified in the regulations. The Coast Guard would redesignate paragraph (e), overcurrent protection, as paragraph (d), redesignate paragraph (f), 25 or 30 ampere lighting branch circuits, as paragraph (e), and revise the new paragraph (d) to remove the specifications for the minimum conductor sizes. The requirements for these loads required by proposed revisions of § 111.60-3, Cable application, and § 111.60-4, Minimum cable conductor size, are adequate. The Coast Guard would eliminate paragraph (g), connections to screw-shell lampholders, as it is considered standard practice and need not appear in regulation.

*Section 111.75-15.* The Coast Guard would revise paragraph (c), Illumination of passenger and crew spaces, in § 111.75-15 to eliminate restrictive wording and replace this requirement with a performance requirement concerning normal habitability and safe egress under emergency conditions.

*Section 111.75-16.* The Coast Guard would revise § 111.75-16, Lifeboat and liferaft floodlights, to replace the terms "lifeboat" and "liferaft" with the term "survival craft" to agree with SOLAS 74 terminology.

*Section 111.75-17.* The Coast Guard would delete paragraph (d)(1) of § 111.75-17, Navigation lights, which requires navigation light fixtures to be approved by the Commandant, as this would no longer be required. The Coast Guard proposes instead that paragraph (d) be further revised to incorporate labeling requirements to show compliance with UL 1104 by an Independent Laboratory. The Coast

Guard would delete paragraph (f), Light screens. This requirement is clearly stated in the COLREGS Annex I Rule 5 and in 33 U.S.C. 1602 and need not be repeated here.

*Section 111.75-18.* The Coast Guard would revise § 111.75-18, Signaling lights, to reflect SOLAS 74 Regulation V/11 for applicability and to reduce specific construction details.

*Section 111.75-20.* The Coast Guard would revise § 111.75-20, Lighting fixtures, to modify paragraph (a) to include UL's deleting UL 595 (Marine-Type Electric Lighting Fixtures) and incorporating specific Marine requirements into the respective fixture type standards (i.e., UL 1570 is for Fluorescent Lighting Fixtures, UL 1571 is for Incandescent Lighting Fixtures, etc.). Also, the Coast Guard would add an additional paragraph (e) which would address the installation of non-emergency interior and decorative lighting in environmentally-controlled spaces. Also, requirements related to shock and vibration which may be encountered in the marine environment will be addressed. Both paragraphs will reference additional international standard options.

*Sections 111.77-3, 111.77-5, 111.77-7, 111.77-9, and 111.77-11.* The Coast Guard would eliminate § 111.77-3, Electric cooking equipment, § 111.77-5, Electric motor-operated appliances, § 111.77-7, Dishwashers, § 111.77-9, Refrigerators, and § 111.77-11, Refrigerated drinking water coolers, and replace them with internationally recognized safety standards. Selection of safe appliances, based on industry construction and testing standards for use on commercial vessels, is at the option of the vessel owner.

*Section 111.79-1.* The Coast Guard would revise § 111.79-1, Receptacle outlets; general, to remove specific construction requirements and to allow for more flexibility in installations.

*Section 111.79-5.* The Coast Guard would eliminate § 111.79-5, Damp or wet locations and weather locations, and incorporate more general industry standards and practices under § 111.79-1, Receptacle outlets; general, in the proposed revision of paragraphs (c) and (d).

*Section 111.79-7.* The Coast Guard would remove the detailed construction requirements for receptacle components in § 111.79-7, No live parts, and replace them with performance requirements.

*Section 111.79-13.* The Coast Guard would revise and rename § 111.79-13, Different potentials on a vessel, to read, Different voltages and power types, to remove any ambiguity and more clearly explain the intent of the regulation.

*Sections 111.81-1 and 111.81-5.* The Coast Guard would delete § 111.81-5, National Electrical Code, and the text, which addresses the NEC requirements for outlet boxes and junction boxes, would be relocated to new paragraph (d) in § 111.81-1, Outlet boxes and junction boxes: General. The new § 111.81-1(d) would address the general requirements for junction boxes in terms of U.S. national standards and introduce the option of international standards as well. This change would also consolidate the requirements for junction boxes into one section.

*Section 111.81-7.* The Coast Guard would rename § 111.81-7, Degree of protection. The Coast Guard would also propose to revise this section by incorporating industry accepted standards and terminology, both domestic and international.

*Section 111.81-9.* The Coast Guard would revise § 111.81-9, Mounting, to remove specific installation restrictions and replace them with performance requirements.

*Section 111.81-11.* The Coast Guard would eliminate § 111.81-11, Penetration of walls. This regulation is unnecessary since, by definition, a watertight enclosure must retain its integrity to be considered watertight.

*Section 111.81-13.* The Coast Guard would eliminate § 111.81-13, Construction. General construction requirements for outlet and junction boxes are now addressed in proposed paragraphs 111.81-7(a) and (b).

*Section 111.83-3.* The Coast Guard would remove § 111.83-3, Spacing: Live parts and live parts and ground, as the subject is addressed in § 111.01-7, Accessibility.

*Subpart 111.85.* The Coast Guard would revise subpart 111.85, Electric Oil Immersion Heaters, to exempt oil immersion heaters where it can be shown that the operating temperature of the heater can never reach the ignition temperature of the oil or vapor with which it is in contact.

*Section 111.87-3.* The Coast Guard would revise paragraph (a) of § 111.87-3, General requirements, to remove construction requirements to specific standards and replace them with reference to more general safety related requirements.

*Subpart 111.89.* The Coast Guard would eliminate subpart 111.89, Motion Picture Projectors. This regulation references a standard that is no longer pertinent to the marine environment. State-of-the-art technology has substituted video tape and laser disk players which do not present the same level of risk as projectors.

*Section 111.91-1.* The Coast Guard would revise and rename § 111.91-1, Control and interlock circuits, to require elevator and dumbwaiter power, control, interlock, and switch circuitry to meet the requirements of American National Standards Institute, Inc. (ANSI A17.1).

*Section 111.91-3.* The Coast Guard would eliminate § 111.91-3, Control switches. This design standard is not pertinent to the performance of the device.

*Section 111.95-3.* The Coast Guard would eliminate the detailed construction requirements of paragraphs (a) through (e) of § 111.95-3, General requirements. Paragraph (f) would be renamed (b) and retained. New general requirements will be set forth in a proposed revision to reference industry accepted standards (both national and international) and other proposed requirements of Degree of Protection and Accessibility.

*Section 111.95-5.* The Coast Guard would eliminate the detailed requirements of § 111.95-5, Detail construction requirements. Sufficient guidance is afforded in the proposed revision of § 111-95-3, General requirements.

*Section 111.95-7.* The Coast Guard would delete figures 111.95-7 (e)(1) through (e)(5), which address typical boat winch wiring diagrams and arrangement drawings. The figures create confusion in the application of lifeboat davit switches and serve no useful or safety purpose.

*Section 111.97-5.* The Coast Guard would revise paragraph (c) of § 111.97-5, Electric and hydraulic power supply, to reduce the required capacity of an accumulator tank on a hydraulic system common to more than one power-operated watertight door. The present regulation requires the tank to have sufficient capacity to open and close all doors three times. Consistent with SOLAS 74, the proposed requirement states that the capacity must be sufficient to close all doors two times and open all doors once.

*Subpart 111.99.* The Coast Guard would revise subpart 111.99, Firescreen Door Holding and Release Systems, to replace the term "fire screen" with the term "fire" to provide consistency with the terminology of SOLAS 74, Regulation II-2/47.

*Section 111.99-1.* The Coast Guard would expand the scope of § 111.99-1, Applicability, to address fire doors installed on all vessels which require fire doors. The subchapters in 46 CFR containing requirements for specific vessel types all require fire doors to meet subpart 111.99.

*Subpart 111.105.* The Coast Guard would add, delete and revise sections of subpart 111.105, Hazardous Locations, to reflect current national standards and recognized classification society rules. Additionally, means of alternative compliance to these particulars will be provided by incorporating by reference international standards (i.e., IEC, CEN and IEEE). Specific paragraphs and sections affected follow.

*Section 111.105-1.* The Coast Guard would revise § 111.105-1, Applicability, to remove the restriction to the National Electrical Code references to hazardous locations and provide options from IEC Publication 79 series.

*Section 111.105-3.* The Coast Guard would add a new § 111.105-3, General requirements, to provide basic guidance to hazardous location information and to set forth the appropriate standards.

*Section 111.105-5.* The Coast Guard would rename the section and delete the subject material of § 111.105-5, National Electrical Code, whose guidance has been superseded by proposed new § 111.105-3. Proposed § 111.105-5, System integrity, would now address the prohibition of mixing the requirements of the NEC with IEC equipment and systems since, although equivalent in level of safety, they differ in the manner by which this is achieved.

*Section 111.105-7, 111.105-9, 111.105-11, and 111.105-23.* The Coast Guard would revise § 111.105-7, Approved equipment, § 111.105-9, Explosionproof equipment, § 111.105-11, Intrinsically safe systems, and § 111.105-23, Fan motors, to replace the specifically mentioned test facilities with phraseology that will provide industry with a greater number of options for product testing.

*Section 111.105-10.* The Coast Guard would eliminate § 111.105-10, Purged and pressurized equipment. Its content, with options, would be sufficiently presented in proposed § 111.105-7, Approved equipment.

*Section 111.105-11.* The Coast Guard would revise paragraph (a) of § 111.105-11, Intrinsically safe systems, to remove the restriction of specific test laboratories and to add additional accepted international standards to which equipment may be tested.

*Section 111.105-11.* The Coast Guard would add paragraphs (b)(3) and (b)(4) in § 111.105-11, Intrinsically safe systems, as an additional safety measure and to conform with accepted industry practices as stated in the IEEE Standard 45. Also, the requirements in § 111.105-11(e) are to be relocated to proposed § 110.25-1(c)(12) to consolidate the requirements relating to plan submittal.

*Sections 111.105-15 and 111.105-17.* The Coast Guard would delete § 111.105-15, Wiring methods for Class I hazardous locations, and § 111.105-17, Wiring methods for Class II and Class III hazardous locations. A new § 111.105-15 entitled, Additional methods of protection, and a new § 111.105-17 entitled, Wiring methods for hazardous locations, are proposed. These would permit the use of conduit systems as allowed by the National Electrical Code and afford a greater variety of equipment complying with internationally accepted standards.

*Section 111.105-19.* The Coast Guard would revise § 111.150-19, Switches, to conform with reference to proposed revisions which reflect the acceptance of equipment meeting international standards.

*Sections 111.105-21, 111.105-23, and 111.105-25.* The Coast Guard would revise the title and text of § 111.105-21, Fans, to consolidate the guidance in § 111.105-23, Fan motors, and § 111.105-25, Ventilation ducts, thereby eliminating those two sections.

*Section 111.105-29.* The Coast Guard would revise paragraph (a) In § 111.105-29, Combustible liquid cargo carriers, to include requirements for submersible pumps on vessels with combustible liquid cargoes having flashpoints 60 °C or higher. This reflects the requirements of the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code), which allows for submersible cargo pumps to be used on vessels with a cargo having a flashpoint exceeding 60 °C. The Coast Guard would add paragraph (c) to include hazardous area classification requirements for vessels carrying a cargo with a flashpoint of 60 °C or higher which is heated to within 15 °C of its flashpoint. This reflects the requirements of the IBC Code.

*Section 111.105-31.* The Coast Guard would revise § 111.105-31, Flammable or combustible cargo with a flashpoint below 60 degrees C (140 degrees F), liquid sulfur and inorganic acid carriers, to include information in agreement with the wording and guidance in 33.14 (Electrical Installations on Tank Vessels) of IEEE Standard 45. The Coast Guard would revise paragraph (e) to include internationally accepted terminology of the IEC concerning zone descriptions of hazardous locations. The Coast Guard would revise paragraph (l) by adding new paragraphs (l)(3) and (l)(4) to include requirements for electrical installations in hazardous locations on board vessels with cargoes with flashprints below 60 °C in accordance with international standards.

*Section 111.105-32.* The Coast Guard would revise the title of § 111.105-32, Bulk liquefied gas and ammonia carriers, and paragraph (e), which addresses the requirements for submersible cargo pumps in bulk liquefied flammable gas and ammonia carriers, and would reference the requirements of § 111.105-31(d) for submersible pumps.

*Section 111.105-35.* Presently, when a vessel is issued a Certificate of Inspection to carry coal, the certificate does not differentiate between the types of coal. This allows a vessel to carry both types, bituminous and anthracite coal. The Coast Guard would revise § 111.105-35 to require that vessels carrying coal of any type be subject to the same hazardous area classification requirements. Therefore, the vessel's hazardous area plan should address the worst case scenario.

*Section 111.105-37.* The Coast Guard would revise § 111.105-37, Flammable anesthetics, to reflect a change in name and number of the referenced NFPA standard.

*Section 111.105-39.* The Coast Guard would revise and rename § 111.105-39, Gasoline or other highly volatile motor fuel carried in vehicles, to reflect current recognized classification society rules regarding requirements for vessels carrying vehicles with fuel in their tanks. Additionally, means of alternative compliance to classification society rules is provided by citing IEC Zone classification.

*Section 111.105-40.* The Coast Guard would introduce a new § 111.105-40, Additional requirements for RO/RO vessels, to reflect current international classification society rules regarding RO/RO vessels. Additionally, means of alternative compliance is provided by citing IEC Zone classification.

*Section 111.105-41.* The Coast Guard would revise § 111.105-41, Battery rooms, to incorporate the provisions of internationally recognized IEEE Standard 45.

*Section 111.105-45.* The Coast Guard would add § 111.105-45, Vessels carrying agricultural products, to identify hazardous locations on vessels carrying certain agricultural products in bulk due to the hazards associated with grain dust. The proposed requirements are identical to the information published in Navigation and Vessel Inspection circular (NVIC) 9-84 "Electrical Installations in Agricultural Dust Locations" which has been Coast Guard policy since this subchapter was last revised.

*Section 111.105-47.* The Coast Guard would add a new § 111.105-47, Duct keel ventilation or lighting, to reflect



international practice by citing recognized classification society rules for ventilation, lighting and gas detection in special areas such as pipe tunnels, double bottoms and duct keels.

*Subpart 111.107.* The Coast Guard would revise subpart 111.107, Industrial Systems, to define the subject term. The proposed definition would expand the applicability of industrial systems to vessel types other than Mobile Offshore Drilling Units. Additionally, the Coast Guard proposes the general safety requirements of §§ 111.12-1(b) and 111.12-1(c) for generator prime movers be applied to industrial system prime movers.

#### Part 112—Emergency Lighting and Power Systems

*Section 112.05-1.* The Coast Guard would revise paragraph (a) in § 112.05-1, Purpose, to remove ambiguity with regard to the purpose and intent of ensuring a dependable, independent and dedicated emergency power source. The Coast Guard would add a new paragraph (c) to allow the Commanding Officer, Marine Safety Center, to authorize certain electrical loads be connected to the emergency power source. These include loads that may be required in an emergency due to the particular mission or configuration of the vessel. When these additional loads are connected to the emergency power source, the emergency power source must be sized to handle these loads using a unity (1.0) service factor or an automatic load shedding scheme which removes these loads before overloading the emergency source of power.

*Section 112.05-5.* The Coast Guard would revise paragraph (a) of § 112.05-5, Emergency power source, to reference possible additional loads allowed by the Commanding Officer, Marine Safety Center in accordance with the proposed addition of § 112.05-1(c) above. The Coast Guard would revise note 1 of Table 112.05-5(a) to be consistent with ABS rule 4/5.40.4. The Coast Guard would revise paragraph (c), which addresses the requirements for emergency power installations, to incorporate a reference to subchapter S (Stability). This would require a vessel's emergency power installation to function at specific angles of heel and trim, depending on the vessel type. The Coast Guard would revise paragraph (d), which addresses the requirements for the emergency power source, by adding associated transforming equipment and the emergency switchboard to the list of equipment required to be located aft of the collision bulkhead, outside the machinery space, and above the uppermost continuous deck. The Coast

Guard interprets SOLAS 74 as requiring the "emergency source of power" to include the power source, any associated transforming equipment, and the emergency switchboard. This proposed change also prohibits any other equipment from being located in the same space as the emergency power source and its associated equipment. The Coast Guard would revise paragraph (e) to conform with the requirements imposed by SOLAS 74 II-1/43-1.3.

*Section 112.15-1.* The Coast Guard would revise paragraphs (c), (g), (j), and (k) of § 112.15-1, Temporary emergency loads, to incorporate the semantics used in SOLAS 74. Paragraph (p) would be revised to include gas detection systems. New paragraph (q) would be added to include lighting for helicopter operations, if installed. New paragraph (r) would be added to include general emergency alarm power, reflecting SOLAS 74 requirements in Regulation III/50.

*Section 112.15-5.* The Coast Guard would revise paragraph (b) in § 112.15-5, Final emergency loads, to identify the circuits of a passenger elevator that must be powered from the final emergency power source regardless of the type of vessel. The Coast Guard would also revise paragraph (f) to require electrically-driven sprinkler systems, water-spray extinguishing systems, and the foam system pump to be powered from the final emergency source of power, paragraph (g) to include a geared diesel's lube oil pump which was unintentionally omitted at the last revision of this section, and paragraph (i) to specifically mention new Global Marine Distress Safety System installations (GMDSS). The Coast Guard would combine paragraphs (j), (k), (l), (m), and (n) into a single paragraph concerning navigation aids, all of which are either required or recommended by international practice. This change will allow a degree of latitude in eliminating unnecessary navigation equipment from that required to be powered from the final emergency power source. As a result of this change, paragraphs (o), steering gear feeders, (p), general alarm, (q), blow-out preventer, (r), diving systems, (s), emergency generator starting air compressor, and (t), steering gear failure alarm, of this section would be re-lettered as paragraphs (k), (l), (m), (n), (o), and (p). The Coast Guard would add paragraphs (q), (r), (s), (t), (u), and (v) to require that the following be powered from the final emergency source: the ballast control systems on column-stabilized MODUs, the automation loads required by part 62 of this chapter,

motor-operated valves for cargo and fuel oil systems if the emergency source of power is their source of power to meet § 56.50-60(d), stabilizer wing positioning motors and indicators and smoke extraction fans and CO<sub>2</sub> exhaust fans.

*Section 112.39-1 and 112.39-3.* The Coast Guard would eliminate paragraph (a)(4) of § 112.39-1, General, as § 112.39-3, Operations, sufficiently defines the performance requirements of the lanterns. The Coast Guard would revise paragraph (a) of § 112.39-3, Operation, to conform with SOLAS 74 Regulation II-1/42-1.

*Section 112.43-1.* The Coast Guard would revise paragraph (b) of § 112.43-1, Switches, to change a reference from a deleted section to an active section.

*Sections 112.43-3 and 112.43-7.* The Coast Guard would delete § 112.43-3, Controls; general, and rename § 112.43-7, Navigating bridge distribution panel. The Coast Guard would revise certain entries in paragraph (a) to make terminology consistent with SOLAS 74. The present § 112.43-3 repeats the requirements of § 112.43-7.

*Section 112.43-5.* The Coast Guard would revise § 112.43-5, Controls on island type vessels, to replace the terms "lifeboat" and "liferaft" with the term "survival craft" to agree with SOLAS 74.

*Section 112.43-11.* The Coast Guard would revise § 112.43-11, Illumination for launching operations, to replace the terms "lifeboat" and "liferaft" with the term "survival craft" to agree with SOLAS 74.

*Section 112.43-15.* The Coast Guard would revise § 112.43-15, Emergency lighting feeders, to replace the term "firescreen" with the term "fire" to agree with SOLAS 74.

*Section 112.43-17.* The Coast Guard would delete § 112.43-17, Emergency light markers. The requirement that all emergency lights be individually marked is overly restrictive and does not provide a significant safety feature.

*Section 112.45-5.* The Coast Guard would relocate the requirements of § 112.45-5, Test switch, to subpart 111.30, Switchboards. This proposed change would consolidate the requirements for equipment required to be on the emergency switchboard in one section.

*Section 112.50-1.* The Coast Guard would combine paragraphs (d) and (e) in § 112.50-1, General, to clarify that diesel or gas turbine engines used to power emergency generators must not have any starting aids, except a thermostatically-controlled electric water-jacket heater connected to the final emergency bus. Additionally, the

time for the emergency generator to be capable of carrying its full load is increased from 20 to 45 seconds to agree with SOLAS 74.

*Sections 112.50-1, 112.50-3, 112.50-5, and 112.50-7.* The Coast Guard would add new paragraph (k) of § 112.50-1 to include requirements for starting devices on emergency generating sets. SOLAS 74, Regulation II-1/44, requires that "Each emergency generating set arranged to automatically start shall be equipped with starting devices approved by the administration with a stored energy capability of at least three consecutive starts. A second source of energy shall be provided for an additional three starts within 30 minutes unless manual starting can be demonstrated to be effective." The proposed change parallels the International Association of Classification Societies (IACS) interpretation and affects § 112.50-3, Hydraulic starting; § 112.50-5, Electric starting; and § 112.50-7, Compressed air starting which are therefore being revised.

*Section 112.55-15.* The Coast Guard would revise § 112.55-15, Capacity of storage batteries, to reflect the requirements of SOLAS 74 regarding opening and closing of watertight doors. This is similar to the change proposed to subpart 111.97, Electric Power-Operated Watertight Door Systems, which addresses hydraulic opening and closing of watertight doors.

#### Part 113—Communication and Alarm Systems and Equipment

*Subpart 113.10.* The Coast Guard would revise the title of subpart 113.10, Fire Detecting and Alarm Systems and Manual Fire Alarm Systems, to include smoke detecting systems.

*Section 113.10-7.* The Coast Guard would revise § 113.10-7, Connection boxes, to introduce alternative methods of compliance by referencing standards of construction of the IEC.

*Section 113.10.9.* The Coast Guard would revise paragraph (a) of § 113.10-9, Power supply, to align fire detection system equipment requirements according to international practice, and remove paragraph (c).

*Section 113.20-3.* The Coast Guard would change the title of § 113.20-3, Watertight equipment, to a more general term, Connection boxes, to introduce alternative methods of compliance by referencing the construction standards of the IEC.

*Section 113.25-6.* The Coast Guard would revise paragraphs (d) and (e) of § 113.25-6, Power supply. In view of technological advances in electronic simulation and our acceptance of IEC

voltages, the 6-120 volt requirement is unnecessarily restrictive. Additionally, since SOLAS 74 Regulation III/50 requires the general emergency alarm to be powered from the main and emergency source, the Coast Guard proposes to refer to that regulation in this paragraph instead. Paragraph (e) would contain wording to retain battery, temporary emergency bus and communication switchboard options.

*Section 113.25-8.* The Coast Guard would revise paragraphs (b), (c), (f) and (g) in § 113.25-8, Distribution of general alarm system feeders and branch circuits, to remove the restriction of having only five general alarm bells on a branch circuit. The existing regulation used an arbitrary number to ensure that the branch circuit was not overloaded. The specific reference to fuses will be replaced by a general statement regarding overcurrent protection. The remaining requirements ensure that a circuit is not compromised by a fault in another part of the vessel. Additionally, the size of vertical zones, mentioned in paragraph (g), is changed to meet the accepted main vertical fire zone dimension.

*Section 113.25-9.* The Coast Guard would revise paragraph (b) of § 113.25-9, Location of general alarm bells, to remove the detailed acoustic specifications. These specifications are replaced with more general performance requirements in proposed new paragraph (c).

*Section 113.25-10.* The Coast Guard would revise § 113.25-10, Location of flashing red lights, to include existing policy that only general alarm beacons, used in high noise areas, be red. This is required so that personnel are not confused by the use of the same visual signal to indicate a number of conditions.

*Section 113.25-11.* The Coast Guard would revise § 113.25-11, Contact makers, to remove the detailed construction requirements for the general alarm contact maker. The performance requirements for this component remain in effect.

*Section 113.25-12.* The Coast Guard would revise § 113.25-12, Vibrating bells, to allow the use of electronic devices to simulate the sound produced by a vibrating bell.

*Section 113.25-16.* The Coast Guard would revise § 113.25-16, Fuses, to have this regulation apply to circuit breakers and fuses, both of which are allowable overcurrent devices.

*Subpart 113.30.* The Coast Guard would revise subpart 113.30, Sound Powered Telephone and Voice Tube Systems. Voice tubes will be eliminated and, owing to today's technology, the

Coast Guard will allow for choices by recognizing systems of communications other than sound powered phones that are accepted by recognized classification society rules.

*Section 113.30-1.* The Coast Guard would revise § 113.30-1, Applicability, to require self-propelled Mobile Offshore Drilling Units meet the same requirements as other self-propelled vessels.

*Section 113.30-5.* The Coast Guard would revise paragraphs (a), (d), (g), (h), and (i) of § 113.30-5, Requirements, to generalize communication systems and to incorporate the necessary clarifications pertinent to Mobile Offshore Drilling Unit applications. The Coast Guard would add new paragraph (j) to the list of locations where common means of voice communication and calling are required. This requirement increases the level of safety aboard the vessel and is consistent with the requirements of SOLAS 74.

*Section 113.30-20.* The Coast Guard would revise paragraphs (a), (b), and (d) (paragraph (d) will be relettered as (c)) of § 113.30-20, Sound-powered telephone systems: General requirements, to correct the semantics of referencing "communications systems" versus only "sound-powered phones".

*Section 113.30-25.* The Coast Guard would revise paragraph (a) of § 113.30-25, Sound-powered telephone system; detailed requirements, to remove the requirement that sound-powered telephones be approved by the Commandant. The remaining regulations are sufficient to ensure proper installation and operation of sound-powered telephones, or other reliable means of voice communications and calling.

*Section 113.35-3.* The Coast Guard would revise paragraph (e)(3) of § 113.35-3, General requirements, to reflect the above change in interior communications terminology.

*Sections 113.35-5 and 113.35-7.* The Coast Guard would revise § 113.35-5, Electric engine order telegraph systems; general requirements, and § 113.35-7, Electric engine order telegraph systems; detailed requirements, to eliminate the detailed design specifications for electric engine-order telegraph systems. These two sections are combined under § 113.35-5 to produce a single section addressing performance requirements.

*Sections 113.35-9 and 113.35-11.* The Coast Guard would revise § 113.35-9, Mechanical engine order telegraph systems; general requirements, and § 113.35-11, Mechanical engine order telegraph systems; detailed requirements, to eliminate the detailed design specification for mechanical

engine-order telegraph systems. These two sections are combined under § 113.35–9 to produce a single section addressing performance requirements.

*Section 113.37–5.* The Coast Guard would correct semantics concerning “navigating bridge” versus “wheelhouse” in § 113.37–5, General requirements.

*Section 113.37–10.* The Coast Guard would remove paragraphs (b), (c), and (d) in § 113.37–10, Detailed requirements. Most of these requirements represent standard marine practice, thereby making regulation unnecessary. New paragraph (b) would restate present paragraph (c)’s watertight requirement with international standard option.

*Section 113.40–10.* The Coast Guard would revise § 113.40–10, Detailed requirements, to add clarifying language that rudder-angle indicator circuits must be separate and independent from the autopilot and the dynamic positioning system as well as the steering gear control system. The Coast Guard would also remove paragraphs (b), (c), (d), (e), and (f) in this section. Most of these requirements represent standard marine practice, thereby making regulation unnecessary. New paragraph (b) would restate present paragraph (e)’s watertight requirement with international standard options.

*Sections 113.43–3 and 113.43–5.* The Coast Guard would revise paragraph (a) of § 113.43–3, Alarm system, and (b) of § 113.43–5, Power supply, by substituting “navigating bridge” for “pilothouse” or “wheelhouse”.

*Subpart 113.50.* The Coast Guard would revise and rename subpart 113.50, Emergency Loudspeaker Systems, to read, Public Address Systems, in order to incorporate performance requirements which are now in subchapter Q, subpart 161.004. The Coast Guard would eliminate subchapter Q, subpart 161.004. These proposals are consistent with SOLAS 74 III/6.4.

*Subpart 113.65.* The Coast Guard would revise subpart 113.65, Whistle Operators, to correct the reference to IEEE Standard 45.

*Subpart 113.70.* The Coast Guard would eliminate subpart 113.70, Smoke Detector Systems. This equipment is now included with Fire Detecting Systems in the proposed revision to § 113.10.

#### Part 161—Electrical Equipment

*Subpart 161.002.* The Coast Guard would extensively revise subpart 161.002, Fire-Protective Systems, in order to eliminate overly restrictive construction requirements and to

provide for options in the manufacture and testing of fire and smoke detecting and alarm systems via internationally accepted standards.

*Subpart 161.004.* The Coast Guard would delete subpart 161.004, Emergency Loudspeaker System. The performance requirements would be incorporated into subpart 113.50, which would be renamed Public Address Systems. SOLAS 74 Regulation III/6–4.2 requires every vessel that has a general alarm to have a public address system (or other suitable means of communications) to supplement the general alarm.

#### Incorporation by Reference

Material that would be incorporated by reference throughout subchapter J is listed in § 110.10–1. Copies of the material are available for inspection where indicated under **ADDRESSES**. Copies of the material are available from the sources listed in § 110.10–1.

Before publishing a final rule, the Coast Guard will submit this material to the Director of the Federal Register for approval of the incorporation by reference.

#### Regulatory Evaluation

This proposal 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).

The Coast Guard expects the economic impact of this proposal to be so minimal that a full Regulatory Evaluation under paragraph 10e of the regulatory policies and procedures of DOT is unnecessary.

The Coast Guard has found that most of the changes to the Electrical Engineering Regulations are either editorial or they update technical specifications to reflect the latest practices. There are some regulatory changes that will require different construction. Although some of these changes will cause minor cost increases for shipbuilders, others will result in substantial savings. Many of the proposed rulemaking changes causing cost increases are already current marine industry practice. The remaining changes causing cost increases are more than offset by the cost savings offered by several relaxations in the regulations.

Overall, it is anticipated that there will be a net cost reduction offered for vessels constructed under these rules,

but the exact impact is difficult to determine accurately since it may vary from vessel to vessel. For certain vessels, new requirements may increase costs, but the application of national and international industry consensus standards should enhance performance and thus increase the level of safety. Additionally, due to cost decreases that may result from the removal of the requirements for armor on cable, allowance of the use of NEC and IEC motors, and a variety of circuit breakers conforming to international standards in panelboards, it may be possible to significantly lower costs for each vessel. Actual savings will depend upon the industry practices followed by each vessel designer/shipyard before and after the effective date of these regulations.

In addition to the savings in material costs, there are several intangible benefits. Due to the increased reference to national and international standards other than the National Electrical Code and Underwriters Laboratories Inc., certain equipment items will now be more readily available “off the shelf” for marine use. The proposed regulations will 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.

The Coast Guard expects that significant economic savings will result from the ability of equipment manufacturers, in many cases, to meet performance specifications instead of design standards and the elimination of the need to submit to the U.S. Coast Guard detailed plans and specifications for approval for equipment such as sound powered telephones, emergency loudspeaker systems, and navigation lights.

The Coast Guard solicits cost data and comments regarding the economic impact of these proposed requirements from all interested parties.

#### Small Entities

Under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), the Coast Guard must consider whether this proposal, if adopted, will have a significant economic impact on a substantial number of small entities. “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 Coast Guard believes it has addressed the concerns of many small

entities by the adoption of wide variety of national and international standards regarding system arrangement. Additionally, the proposed regulations will dramatically revise certain prescriptive electrical equipment design, specification, and approval requirements, and replace them with performance-based requirements that incorporate international standards.

Whenever possible, requirements have been adjusted to the size of the vessel and in some cases a relaxation of requirements for smaller vessels has been offered. Due to the flexibility of requirements in these proposed rules and the eliminating of regulatory burden, small entities involved in the building or ownership of vessels should experience increasing business opportunities.

#### Collection of Information

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

This proposed rule contains collection-of-information requirements in the following subparts: subpart 110.25 in subchapter J and subparts 161.002 and 161.010 in subchapter Q. The following particulars apply to subpart 110.25:

DOT No.: 2115.

OMB Control No.: 2115-0115.

Administration: U.S. Coast Guard.

Title: Electrical Engineering

Regulations—Subchapter J.

Need for Information: This proposed rule would require amendments to the regulations, clarify the regulations, bring them up to date, and delete unnecessary requirements. The revisions to subchapter J will reduce the reliance on domestic standards and will adopt SOLAS 74 and other international standards developed through consensus by the international maritime community.

Proposed § 110.25-1 would require industry to complete electrical engineering plans to meet performance requirements on new-built vessels and modifications of current vessels. These requirements will help resolve much of the confusion during inspections which has risen due to the complexity of electrical system arrangements on modern merchant vessels.

Proposed Use of Information: The reporting of this information is

necessary to ensure compliance with electrical engineering safety regulations. Through the review of the design plans prior to construction, the vessel owner or builder may be assured that the vessel, if built in accordance with the plans, will meet regulatory standards.

Frequency of Response: The various information called for in § 110.25 would be reported on occasion. Design plans will only be submitted when there is construction of new-built vessels or modification of current vessels.

Burden Estimate: 478 hours.

Respondents: 175 owners or operators.

Average Burden Hours per Respondent: 1 hour per submission.

The following particulars apply to subparts 161.002 and 161.010:

DOT No.: 2115.

OMB Control No.: 2115-0121.

Administration: U.S. Coast Guard.

Title: Equipment, Construction, and Materials: Specifications and Approval—Subchapter Q.

Need for Information: This proposed rule would require amendments to the regulations, clarify the regulations, bring them up to date, and delete unnecessary requirements. The revisions to subchapter Q will require industry to maintain records of production tests for some fire protection systems. These plans consist mainly of system/material tests that are necessary to determine that the equipment being used in the construction of a fire protection system meets the minimum performance requirements.

The following is a section-by-section justification of the collection requirements.

Proposed subpart 161.002 would require manufacturers to complete electrical specifications to meet performance requirements for fire protection systems. This requirement will help identify specific equipment approved and to permit the production of equipment identical to the equipment samples originally tested.

Proposed Use of Information: The reporting of this information is necessary to ensure compliance with electrical system arrangement/equipment and fire protection system regulations. Through the review of approval plans, the manufacturer may be assured that the material or device, if manufactured in accordance with the material specifications, will meet regulatory standards.

Frequency of Response: The various information called for in subpart 161.002 would be reported on occasion. Approval for equipment will only be submitted when production tests are required.

Burden Estimate: 60 hours.

Respondents: 6 manufacturers.

Average Burden Hours Per Respondent: 10 hours per respondent.

The Coast Guard has submitted the requirements to OMB for review under section 3504(h) of the Paperwork Reduction Act. Persons submitting comments on the requirements should submit their comments both to OMB and to the Coast Guard where indicated under ADDRESSES.

#### Federalism

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

#### Environment

The Coast Guard has considered the environmental impact of this rule and concluded that, under paragraphs 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 any impact to 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

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, Marine safety, Reporting and recordkeeping requirements.

For the reasons set forth in the preamble, the Coast Guard proposes to amend 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:

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

**§ 108.170 Definitions.**

\* \* \* \* \*

Notes: 1. Hazardous atmospheres are further defined 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.

\* \* \* \* \*

**PART 110—GENERAL PROVISIONS**

4. 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.

5. In § 110.01-1, paragraphs (a), (b), and (d) are revised to read as follows:

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

Rules for Building and Classing Steel Vessels, 1994 .....

control system; or the replacement of extensive amounts of cabling, work must comply with any regulations in effect at the time such major alterations are made. Determinations on major conversions are considered on a case-by-case basis by the Commandant (G-MCO).

7. In § 110.10-1, paragraphs (a) and (b) are 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-MMS), 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:

**§ 110.01 General.**

(a) This subchapter applies to all electrical equipment and systems wherever subchapters D, H, I, I-A, K, L, O, R, T, U, and W of this chapter requires an installation to be in accordance with this subchapter.

(b) This subchapter applies to vessels and installations contracted for or major alternations contracted for after [Insert date 90 days after date of publication in the Federal Register].

\* \* \* \* \*

(d) Requirements in this subchapter revised or added after [Insert date 90 days after date of publication in the Federal Register] apply to installation contracted for after the effective date of the requirements or as specified in the regulation.

\* \* \* \* \*

6. Section 110.01-3 is revised to read as follows:

**§ 110.01-3 Repairs and alterations.**

(a) Minor alterations may comply with the regulations in effect when the vessel was built; major modifications must comply with any regulations in effect at the time such major alterations are made.

(b) When repairs or alterations are major, such as the addition of a midbody; re-engining; re-powering; upgrading of the main propulsion

111.12-1(a); 111.12-3; 111.12-5; 111.12-7(a); 111.33-11(a); 111.35-1; 111.70-1(a); 111.105-39(a); 111.105-39 (Note); 111.105-40(a); 111.105-47(a).

*American National Standards Institute (ANSI)*, 1430 Broadway, New York, NY 10018:

ANSI/IEEE C37.04, Rating Structure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis, 1979. 111.54-1(c).

ANSI C37.12, AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis—Specifications Guide, 1991. 111.54-1(c).

ANSI/IEEE C37.13, Standard for Low-Voltage AC Power Circuit Breakers Used in Enclosures, 1990. 111.54-1(c).

ANSI/IEEE C37.14, Low-Voltage DC Power Circuit Breakers Used in Enclosures, 1993 .. 111.54-1(c).

ANSI/ASME A17.1, Safety Code for Elevators and Escalators, 1993 ..... 111.91-1.

ANSI/ASME A17.1A, Safety Code for Elevators and Escalators (Addenda to ANSI/ASME A17.1-1993), 1994. 111.91-1.

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

ASTM B 117, Standard Method of Salt Spray (Fog) Testing, 1990 ..... 110.15-1(b).

ASTM D 789, Standard Specification for Nylon Injection Molding and Extrusion Materials, 1978. 111.60-1(a).

*International Electrotechnical Commission (IEC)*, 1, Rue de Varembe; Geneva, Switzerland:

IEC 68-2-52, Basic Environmental Testing Procedures, Part 2; Tests. Test KB: Salt Mist, Cyclic (Sodium Chloride Solution), 1984. 110.15-1(b).

IEC 79-0, Electrical Apparatus for Explosive Gas Atmospheres, Part 0: General Requirements, 1983 (Including Amendment 2, 1991). 111.105-1; 111.105-3; 111.105-5; 111.105-7; 111.105-15(b); 111.105-17(b).

IEC 79-1, Electrical Apparatus for Explosive Gas Atmospheres, Part 1: Construction and Test of Flameproof Enclosures of Electrical Apparatus, 1990 (Including Amendment 1, 1993). 111.105-3; 111.105-5; 111.105-9; 111.105-15(b); 111.105-17(b).

IEC 79-2, Electrical Apparatus for Explosive Gas Atmospheres, Part 2: Electrical Apparatus—Type of Protection "P", 1983. 111.105-3; 111.105-5; 111.105-7(b); 111.105-15(b); 111.105-17(b).

IEC 79-5, Electrical Apparatus for Explosive Gas Atmospheres, Part 5: Sand-Filled Apparatus. First Edition (1967) Incorporating the First Supplement, (1969). 111.105-3; 111.105-5; 111.105-15(a); 111.105-15(b); 111.105-17(b).

IEC 79-6, Electrical Apparatus for Explosive Gas Atmospheres—Part 6: Oil-Immersion "O", 1995. 111.105-3; 111.105-5; 111.105-15(a); 111.105-15(b); 111.105-17(b).

IEC 79-7, Electrical Apparatus for Explosive Gas Atmospheres—Part 7: Increased Safety (“E”), 1990.	111.105-3; 111.105-5; 111.105-15(a); 111.105-15(b); 111.105-17(b).
IEC 79-11, Electrical Apparatus for Explosive Gas Atmospheres—Part 11: Intrinsic Safety “I”, 1991.	111.105-3; 111.105-5; 111.105-11(a); 111.105-15(b); 111.105-17(b).
IEC 79-15, Electrical Apparatus for Explosive Gas Atmospheres—Part 15: Electrical Apparatus, With Type of Protection “N”, 1987.	111.105-3; 111.105-5; 111.105-15; 111.105-17(b).
IEC 79-18, Electrical Apparatus for Explosive Gas Atmospheres—Part 18: Encapsulation “M”, 1992.	111.105-3; 111.105-5; 111.105-15(a); 111.105-15(b); 111.105-17(b).
IEC 92-3 Electrical Installation In Ships, Part 3: Cables (construction, testing and installations) Second Edition, 1965 as amended.	111.60-1(a); 111.60-3(a); 111.60-3(c); 111.81-1(d).
IEC 92-101, Electrical Installations in Ships, Part 101: Definitions and General Requirements, 1994.	110.15-1(a); 111.81-1(d).
IEC 92-101—Amendment No. 1, Electrical Installations in Ships—Part 101: Definitions and General Requirements, 1995 (Including Amendment 1, 1995).	110.15-1(a); 111.81-1(d).
IEC 92-201, Electrical Installations in Ships, Part 201: System Design-General, 1994 .....	111.70-3(a); 111.81-1(d).
IEC 92-202, Electrical Installations in Ships Part 202: System Design-Protection, 1994 ..	111.50-3(c); 111.50-3(e); 111.50-3(g); 111.53-1(a); 111.54-1(a); 111.81-1(d); 111.25-5(a); 111.70-1(a); 111.81-1(d).
IEC 92-301—Amendment No. 1, Electrical Installations in Ships, Part 301: Equipment—Generators and Motors, 1994.	
IEC 92-302—Amendment No. 2, Electrical Installations, Part 302: Equipment Switchgear and Controlgear Assemblies, 1994.	111.30-5(a); 111.30-19(a); 111.81-1(d).
IEC 92-303, Electrical Installations in Ships, Part 303: Equipment—Transformers for Power and Lighting, 1980.	111.20-15; 111.81-1(d)
IEC 92-304, Electrical Installations in Ships, Part 304: Equipment—Semiconductor Convertors, 1980.	111.33-3(a); 111.33-5(b); 111.81-1(d).
IEC 92-306, Electrical Installations in Ships, Part 306: Equipment-Luminaires and Accessories, 1980.	111.75-20(a); 111.81-1(d).
IEC 92-352, Electrical Installations in Ships, Part 352: Choice and Installation of Cables for Low-Voltage Power Systems, 1979.	111.05-7; 111.81-1(d).
IEC 92-352—Amendment No. 2, Electrical Installations in Ships—Part 352: Choice and Installations of Cables for Low-Voltage Power Systems, 1994.	111.05-7; 111.60-3(a); 111.60-3(c); 111.60-5; 111.81-1(d).
IEC 92-501, Electrical Installations in Ships, Part 501: Special Features—Electrical Propulsion Plant, 1984.	111.81-1(d).
IEC 92-502, Electrical Installations in Ships, Part 502: Tankers—Special Features 1994	111.81-1(d).
IEC 92-503, Electrical Installations in Ships, Part 503: Special Features—A.C. Supply Systems with Voltages in the Range Above 1KV up to and Including 11KV, 1975.	111.30-5(a); 111.81-1(d).
IEC 92-504, Electrical Installations in Ships, Part 504: Special Features: Control and Instrumentation, 1994.	111.81-1(d).
IEC 332-1, Tests on Electric Cables Under Fire Conditions, Part 1: Test on a Single Vertical Insulated Wire or Cable, 1993.	111.30-19(b).
IEC 332-3, Tests on Electric Cables Under Fire Conditions, Part 3: Test on bunched wires or cables, 1992.	111.60-1(a); 111.60-2(a); 111.60-6(a); 111.107-1(c).
IEC 363, Short Circuit Current Evaluation with Special Regard to Rated Short-Circuit Capacity of the Circuit Breakers in Installations in Ships, 1972.	111.52-5(c).
IEC 529, Degrees of Protection Provided by Enclosures (IP Code), 1989 .....	111.01-9(a); 111.01-9(b); 111.01-9(c); 111.01-9(d); 111.01-9 (Note); 113.10-7; 113.20-3; 113.25-11; 113.30-25(c); 113.30-25(h); 113.40-10(b).
IEC 533, Electromagnetic compatibility of Electrical and Electronic Installations in Ships, 1977.	111.81-1(d).
IEC 947-2, Low-Voltage Switchgear and Controlgear, Part 2: Circuit Breakers, 1989 .....	111.54-1(b); 111.54-1(c).
<i>Institute of Electrical and Electronic Engineers (IEEE)</i> , IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854:	
IEEE Std 45, IEEE Recommended Practice for Electric Installations on Shipboard, 1983	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(a); 111.60-3(a); 111.60-3(b); 111.60-3(c); 111.60-5; 111.60-6(a); 111.60-11(c); 111.60-13(a); 111.60-19; 111.60-21; 111.105-3; 111.105-31(e); 111.105-41; 111.107-1(c); 113.65-5.
IEEE Std 100, Dictionary of Electrical and Electronics Terms, 1992 .....	110.15-1(a).
IEEE Std 320, Application Guide for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis (ANSI/IEEE C37.010-79), 1979.	111.54-1(c).
IEEE Std 331, Low-Voltage AC Non-Integrally Fused Power Circuit Breakers (Using Separately Mounted Current-Limiting Fuses) (ANSI/IEEE C37.27-72), 1972.	111.54-1(c).
IEEE Std 383, Type Test of Class 1E Electric Cables, Field Splices, and Connections of Nuclear Power Stations, 1974.	111.107-1(c).
IEEE Std 538, Low-Voltage Integrally Fused Power Circuit Breakers (ANSI/IEEE C37.13a-75), 1976.	111.54-1(c).
IEEE Std 1202, IEEE Standards on Flame Testing of Cables for Use in Cable Tray and Industrial and Commercial Occupancy, 1991.	111.60-1(a); 111.60-2(a); 111.60-6(a).
<i>International Society of Measurement and Control (ISA)</i> , 67 Alexander Drive, P.O. Box 12277, Research Triangle Park, NC 27709:	
RP 12.6, Installation of Intrinsically Safe Instruments Systems in Class I Hazardous Locations, 1976.	111.105-17(c).

<i>International Association of Drilling Contractors (IADC)</i> , P.O. Box 4287, Houston, TX 77210:		
IADC-DCCS-1, Guidelines for Industrial System DC Cable for Mobile Offshore Drilling Units.	111.60-1(a).	
<i>International Maritime Organization (IMO)</i> , 4 Albert Embankment, London SE1 7SR:		
Consolidated Text of the International Convention for the Safety of Life at Sea, 1974 (SOLAS 74) (Including Amendments through 1994), 1994.	111.93-9(k); 112.15-1(r); 113.25-6(d).	
<i>National Electrical Manufacturers Association (NEMA)</i> , 2101 L Street, NW, Washington, DC 20036:		
NEMA WC 30, Color Coding of Wires and Cables, 1976 .....	111.70-3(a).	
NEMA 250, Enclosures for Electrical Equipment (1000 Volts Maximum), 1991 .....	111.01-9(a); 111.01-9(b); 111.01-9(c); 111.01-(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).	
WC-3, Rubber Insulated Wire and Cable for Transmission of Electrical Energy, 1980 .....	111.60-13(a); 111.60-13(c).	
WC-8, Ethylene-Propylene-Rubber-Insulated Wire and Cable for the Transmission of Electrical Energy, 1980.	111.60-13(a); 111.60-13(c).	
<i>National Fire Protection Association (NFPA)</i> , Batterymarch Park, Quincy, MA 02269:		
NFPA 99, Standards for Health Care Facilities, 1993 .....	111.105-37.	
NFPA 70, The National Electrical Code, 1996 .....	111.05-33(b); 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(b); 111.60-13(c); 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; 111.105-17(b); 111.105-39(b); 111.107(a); 111.107-1(b).	
NFPA 77, Recommended Practice for Static Electricity, 1977 .....	111.105-27.	
NFPA 496, Standard for Purged and Pressurized Enclosures for Electrical Equipment in Hazardous Locations, 1986.	111.105-7(b).	
<i>Naval Publications and Forms Center (NPFCC)</i> , Customer Service—Code 1052, 5801 Tabor Ave Philadelphia, PA 19120:		
MIL-W-76B, Wire and Cable, Hook-up, Electrical, 1962 .....	111.60-11(e).	
MIL-C-915, Cable and Cord for Shipboard Use (including Amendment 2), 1980 .....	111.60-1(a); 111.60-13(a).	
MIL-W-16878D, Wire Electrical (Insulated High Temperature), 1967 .....	111.60-11(e).	
MIL-C-24640, Cable, Electrical, Lightweight, For Shipboard Use, General Specification For, 1984.	111.60-1(a);	
MIL-C-24643, Cable and Cord, Electrical, Low Smoke, For Shipboard Use, General Specification For, 1984.	111.60-1(a).	
<i>Naval Sea Systems Command (NAVSEA)</i> , Code 55Z, Department of Navy, Washington, DC 20362:		
DDS 300-2, A.C. Fault Current Calculations, 1988 .....	111.52-5.	
MIL-HDBK-299 (SH), Cable Comparison Handbook, Data Pertaining to Electric Shipboard Cable, 1989.	111.60-1(a); 111.60-3(c).	
<i>Underwriters Laboratories Inc. (UL)</i> , Standards Department, 333 Pfingsten Rd., Northbrook, IL 60062-2096:		
UL 44, Rubber-Insulated Wire and Cable, 1983 .....	111.60-11(e).	
UL 50, Electrical Cabinets and Boxes, 1980 (revisions through Feb. 1982) .....	111.81-13(a).	
UL 62, Flexible Cord and Fixture Wire, 1983 (revisions through Sept. 1984) .....	111.13(a)(1).	
UL 83, Thermoplastic-Insulated Wires, 1991 .....	111.60-1(a); 111.60-11(e).	
UL 489, Molded Case Circuit Breakers and Circuit Breaker Enclosures, 1991 .....	111.54-1(b).	
UL 514, Electrical Outlet Boxes and Fittings, 1983 (revisions through October 1984) .....	111.81-13(a).	
UL 595, Marine Type Electric Lighting Fixtures, 1985 .....	111.60-11(c); 111.75-20(a); 111.75-20(e).	
UL 913, Intrinsically Safe Apparatus and Associated Apparatus for Use in Class 1, 2, and 3 Division 1 Hazardous Classified Locations, 1988.	111.105-11(a).	
UL 1042, Electric Baseboard Heating Equipment, 1994 .....	111.87-3(a).	
UL 1072, Medium-Voltage Cables, 1986 .....	111.60-1(a).	
UL 1096, Electrical Central Air Heating Equipment, 1986 .....	111.87-3(a).	
UL 1104, Marine Navigation Lights, 1981 (revisions through Jan. 1984) .....	111.75-17(d).	
UL 1203, Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations, 1994.	111.105-9.	
UL 1570, Fluorescent Lighting Fixtures, 1988 .....	111.75-20(a); 111.75-20(e).	
UL 1571, Incandescent Lighting Fixtures, 1991 .....	111.75-20(a); 111.75-20(e).	
UL 1572, High Intensity Discharge Lighting Fixtures, 1991 .....	111.75-20(a); 111.75-20(e).	
UL 1573, Stage and Studio Lighting Units, 1994 .....	111.75-20(a); 111.75-20(e).	
UL 1574, Track Lighting Systems, 1987 .....	111.75-20(a); 111.75-20(e).	
ANSI/UL 1581 (VW-1), Reference Standard for Electrical Wires, Cables, and Flexible Cords, 1991.	111.30-19(b); 111.60-2(a); 111.60-6(a).	

\* \* \* \* \*

**§ 110.15-1 Definitions.**

8. Section 110.15-1 is revised to read as follows:

As used in this subchapter—

(a) The electrical and electronic terms are defined in IEEE Std 100 or IEC Publication 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 U.S. Coast Guard.

*Commandant* means the Commandant of the U.S. Coast Guard (see § 1.01 of this chapter for delegation of authority).

*Corrosion resistant material or finish* means any material or finish which 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 any location exposed to the weather on vessels operating in salt water or locations onboard which may be exposed to the corrosive effects of the cargo carried or by any 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.

*Drip-proof* means enclosed so that equipment meets at least a NEMA Type 1 with dripshield, NEMA Type 2 or an IEC IP 32 rating.

*Embarkation deck* means a deck 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.

*Exterior location requiring an exceptional degree of protection* means a location exposed to the weather.

*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.

*Interior location requiring an exceptional degree of protection* means a location requiring equipment to meet the protection requirements of § 111.01-9(a) of this chapter and include—

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

*Location not requiring an exceptional degree of protection* means a location which is not exposed to the

environmental conditions outlined in the previous definition. 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.

*Marine inspector or inspector* means any person from the Coast Guard assigned under an Officer in Charge, Marine Inspection, or any other person who is designated for the duties of inspection, enforcement, and administration of Title 46 U.S.C. and the rules and regulations promulgated under its authority.

*Nonsparking fan* means a fan that cannot produce sparks that ignite an ignitable mixture with air and has—

- (1) Blades or housing of nonmetallic construction;
- (2) Blades and housing of nonferrous material;
- (3) Blades and housing of corrosion resistant steel;
- (4) Ferrous blades and a housing with 13 mm (0.5 inch) or more design tip clearance; or
- (5) Blades of aluminum or magnesium alloy and a ferrous housing with a nonferrous insert ring at the peripheral of the impeller. The term *nonsparking fan* does not include any combination of aluminum alloy or a magnesium alloy component and a ferrous component which is considered by the Coast Guard to be a sparking hazard regardless of the material that is used as the fixed or rotating component.

*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 U.S. 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 duties or functions.

*Waterproof* means enclosed so that equipment meets at least a NEMA Type 6, 6P, or an IEC IP 56 rating.

*Watertight* means enclosed so that equipment meets at least a NEMA Type 4, 4X, or an IEC IP 66 or 67 rating.

#### § 110.20-21 [Amended]

9. In § 110.20-1, remove the words "Commandant (G-MTH)" and add, in their place, the words "Commanding Officer of the Marine Safety Center (MSC)".

10. In § 110.25-1, paragraphs (c)(8) through (c)(11) are revised; paragraph

(c)(12) is added; and paragraphs (j), (l), and the notes to paragraphs (m) and (n) are revised to read as follows:

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

\* \* \* \* \*

(c) \* \* \*

- (8) Fire door holding systems;
- (9) Public address system;
- (10) Manual alarm system;
- (11) Supervised patrol system; and
- (12) Each electrical component installed in a hazardous location defined in part 111, subpart 111.105, of this chapter, with the following information identified as appropriate:
  - (i) System identification by manufacturer's model number;
  - (ii) System use;
  - (iii) Cable parameters;
  - (iv) Equipment locations;
  - (v) Installation details; and
  - (iv) Independent laboratory certificate of testing.

\* \* \* \* \*

(j) Plans and installation instructions for each intrinsically safe system approved by an independent laboratory as indicated in subpart 110.35 of this part (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, and outlet and junction boxes. Items required to meet an IEEE, IEC, NEMA, UL, ANSI, other industry standard, or a military specification are considered acceptable if manufacturer's certification of compliance is indicated on a material list or plan.

#### § 110.25-3 [Amended]

11. In § 110.25-3, remove "(G-MS-C)" in paragraph (a)(1) and add, in its place, "(MSC)"; and paragraph (a)(3) is removed.

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

#### § 110.30-7 Repairs or alterations.

(a) The Officer in Charge, Marine Inspection must be notified prior to—



(1) Modifications or minor alterations that deviate from approved plans,  
(2) Extensive repairs or alterations, and

(3) Any repair or alteration that affects the safety of the vessel.

13. Subpart 110.35, consisting of § 110.35-1, is added to read as follows:

**Subpart 110.35—Independent Laboratories**

**§ 110.35-1 General.**

Independent Laboratories are accepted by the Commandant under part 159 of this chapter for the testing and listing or certification of electrical equipment.

**PART 111—ELECTRICAL SYSTEMS—GENERAL REQUIREMENTS**

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

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

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

**§ 111.01-5 Protection from bilge water.**

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

- (a) Generators.
- (b) Motors.
- (c) Electric coupling.
- (d) Electric cable serving an electrical component in or around the bilge area.

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

**§ 111.01-7 Accessibility.**

(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.

17. 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 Type 2, 12, 12K, or 13 or IEC IP 11, 52, or 54 degree of protection as appropriate for the service intended. For interior locations which may be exposed to water, electrical equipment must be constructed to at least NEMA Type 4 or 4X; or IEC IP 56.

(b) On deck, electric equipment that may be exposed to seas, the weather, splashing, or similar moisture conditions must be enclosed or meet at least a NEMA Type 4, 4X, 6, or 6P or IEC IP 56 or 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 Type 2, 12, or 12K or IEC IP 11 or 52 degree of protection regardless of location.

(d) Equipment for interior locations not requiring exceptional degrees of protection must be manufactured to at least NEMA Type 2 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 Publication 529.

18. 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 boilerrooms, 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 boilerrooms, 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) Electrical equipment utilized in a space in which the equipment's rated ambient temperature is below the assumed ambient temperature of the space, must be used at a derated load. 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).

19. Section 111.01-7 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  $\pm 5$  percent of rated frequency and +6 percent to -10 percent of rated

voltage. This limitation does not address transit conditions.

20. Section 111.01-19 is added to read as follows:

**§ 111.01-19 Inclination of the ship.**

(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 ship is at 22.5 degrees list and 10 degrees trim.

21. Section 111.01-21 is added to read as follows:

**§ 111.01-21 Vibration.**

All electrical control equipment must be designed to operate under the following vibration conditions:

(a) 2 Hz to 13 Hz, displacement amplitude  $\pm 1.5$  mm.

(b) 13 Hz to 100 Hz, maximum acceleration 1 g.

22. Section 111.01-23 is added to read as follows:

**§ 111.01-23 Humidity.**

Electrical control equipment must be designed to operate in 0 to 95 percent noncondensing relative humidity.

23. The text of Section 111.05-1 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 Publication 92-352 (clause 18).

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 for each branch circuit 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% 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 insulated and be at least as large as any conductor supplying the equipment.

(b) Each insulated grounding conductor of a cable must be permanently identified as a grounding conductor in accordance with the requirements of section 310-12(b) of the National Electrical Code (NEC).

(c) Cable armor must not be used as the grounding conductor.

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) *Ship's service loads* mean all auxiliary services necessary for maintaining the ship or drilling unit in 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 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 and section 4/5.21 of the ABS 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.

41. 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.

42. 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.

**§ 111.12-11 [Amended]**

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

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

**§ 111.15-1 General.**

Each battery must meet the requirements of this subpart.

45. 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 (clause 6).

(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.

46. 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 that 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.

47. In § 111.15-5, paragraphs (a), (c), (e), (f), and (g) 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 subpart 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.

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

48. 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.

49. 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) The current carrying capacity of a connecting cable must be sized to carry the maximum charging current or maximum discharge current, whichever is greater.

50. 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 battery charger must be suitable for the size and type of battery installation which it serves. Except for rectifiers, battery chargers with a voltage exceeding 20 percent of the line voltage must be provided with automatic protection against reversal of current.

51. 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.

52. 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 Publication 92-303.

53. In § 111.25-5, paragraph (a) is revised to read as follows:

**§ 111.25-5 Marking.**

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

\* \* \* \* \*

54. 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 (clause 7.1) of IEEE Std 45.

55. 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).

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

**§ 111.30-5 Construction.**

(a) All low voltage and medium voltage switchboards must meet the requirements of either—

(1) Section 17.2 or 17.3 (clause 7.2 or 7.3) of IEEE Std 45, respectively; or

(2) IEC Publication 92-302 (clause 6) and IEC Publication 92-503; medium voltage).

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

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

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

58. 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 (clause 7.11) of IEEE Std 45; or

(2) IEC Publication 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. 18 AWG (0.82 mm<sup>2</sup>) or larger or be ribbon cable or similar smaller conductor size cable recommended for use in low-power instrumentation, monitoring, or control circuits by the equipment manufacturer;

(4) Flame retardant meeting 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]**

59. Sections 111.30-21 and 111.30-23 are removed.

60. In § 111.30-24, the introductory text is revised to read as follows:

**§ 111.30-24 Generation systems greater than 3,000 kW.**

Except on a non-self-propelled mobile offshore drilling unit (MODU), when the total installed electric power of the ship's service generation system is more than 3,000 kW, the switchboard must have the following:

\* \* \* \* \*

61. In § 111.30-29, paragraphs (g), (h), and (i) are added to read as follows:

**§ 111.30-29 Emergency switchboards.**

\* \* \* \* \*

(g) 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.

(h) 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.

(i) If the emergency power source is a generator, the emergency switchboard must be in the same space as the generator.

**§ 111.30-31 [Removed]**

62. Section 111.30-31 is removed.

63. 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 which meets the requirements of—

(1) Section 45.11 (clause 34.11) of IEEE Std 45; or

(2) IEC Publication 92-304 (clause 8).

\* \* \* \* \*

64. Section 111.33-5 is revised to read as follows:

**§ 111.33-5 Installation.**

Each semiconductor rectifier system must meet the installation requirements of—

(a) Sections 45.2, 45.7 and 45.8 (clauses 34.2, 34.7 and 34.8) of IEEE Std 45; or

(b) IEC Publication 92-304 as appropriate.

65. 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 the ABS Rules.

66. 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 of the ABS Rules.

**§ 111.40-1 [Removed]**

67. Section 111.40-1 is removed.

68. Section 111.40-5 is revised to read as follows:

**§ 111.40-5 Enclosure.**

(a) Each panelboard must have a noncombustible enclosure that meets § 111.01-7.

(b) Each panelboard must meet either of the following:

(1) Section 111.01-9(a), if installed in an interior location.

(2) Section 111.01-9(b), if installed in the weather.

69. Section 111.40-7 is revised to read as follows:

**§ 111.40-7 Location.**

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

70. 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.

71. In § 111.50-3, paragraph (c) is revised to read as follows; paragraph (d) is removed; paragraphs (e), (f), (g), and (h) are redesignated as paragraphs (d), (e), (f), and (g); and, at the end of redesignated paragraphs (e) and (g)(2), add the words "or in IEC Publication 92-202":

**§ 111.50-3 Protection of conductors.**

\* \* \* \* \*

(c) *Fuses and circuit breakers.* If the available current carrying capacity of the conductor does not correspond to a standard fuse or circuit breaker rating which meets section 240-6 of the NEC or IEC Publication 92-202 and the next larger rating is used, it must be larger than 150 percent of the current carrying capacity of the conductor. The effect of heat on the operation of fuses and thermally controlled circuit breakers must be taken into consideration in the application of these devices if they are subjected to extremely low or extremely high temperatures.

\* \* \* \* \*

72. 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—

\* \* \* \* \*

73. Section 111.52-5 is revised to read as follows:

**§ 111.52-5 Systems 1500 kilowatts or above.**

Detailed 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 the IEC Publication 363.

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

74. 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 Publication 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 accepted by the Commandant under § 110.35-1 of this chapter.

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

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

75. 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 Publication 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 Publication 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) ANSI/IEEE Std C37.13;

(ii) IEEE Std 538;

(iii) IEEE Std 331; or

(iv) IEC Publication 947-2, part 2.

(2) A direct current system of 3,000 volts or less must meet ANSI C37.14 or IEC Publication 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 C37.04 including all referenced supplements, IEEE Std 320 including all referenced supplements, and ANSI C37.12; or

(ii) IEC Publication 947-2, part 2.

\* \* \* \* \*

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

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

**§ 111.57-1 (Subpart 111.5) [Removed]**

77. Subpart 111.57, consisting of § 111.57-1, is removed.

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

**§ 111.59-1 General.**

Each busway must meet article 364 of the NEC.

79. 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.

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

**§ 111.60-1 Cable construction and testing.**

(a) Each cable must meet the construction and identification requirements of IEEE Std 45, IEC Publication 92-3, MIL-C-915 (Amendment 2), MIL-C-24640 or MIL-C-24643 and the flammability tests contained therein and be of a copper stranded type.

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

(c) Electric cable constructed in accordance with Military Specification MIL-C-915 (amendment 2) must—

(1) Pass the flammability test contained in IEEE Std 45, IEEE Std 1202 as modified by IEEE Std 45, or IEC Publication 332-3, Category A; and

(2) Be sized to ensure the maximum current for any conductor does not exceed the current carrying capacities specified in NAVSEA MIL-HDBK-299(SH).

(d) 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 (clause 8) 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 D789 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, at intervals not exceeding 610 mm (24 inches), gives the information required by section 18.8 (clause 8.8) of IEEE Std 45; and

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

(e) Each cable regardless of construction must meet, as a minimum, the physical testing requirements of section 18 (clause 8) of IEEE Std 45.

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

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

81. 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 as modified by IEEE Std 45, VW-1 or IEC Publication 332-3, Category A due to unique construction properties, such as certain coaxial cable's 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) Be installed in a cableway that has an A-60 fire rating.

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

**§ 111.60-3 Cable application.**

(a) Cable constructed in accordance IEEE Std 45 must meet the cable application section 19 (clause 9) of IEEE Std 45. Cable constructed in accordance with IEC Publication 92-3 must meet the requirements of section 19 (clause 9) of IEEE Std 45 except 19.6.1, 19.6.4, and 19.8 (9.6.1, 9.6.4, and 9.8). Cable constructed in accordance with IEC Publication 92-3 must comply with the ampacity values of IEC Publication 352, Table 1.

(b) Type T/N cables must meet section 19 (clause 9) 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 Publication 92-3 must be derated in accordance with IEC Publication 352, paragraph 8. MIL-C-914 cable must be rated in accordance with MIL-HDBK-299(SH).

83. 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 mm<sup>2</sup>) or larger except—

(a) Each power and lighting cable conductor must be #14 AWG (2.08 mm<sup>2</sup>) or larger; and

(b) Each thermocouple, pyrometer, or instrumentation cable conductor must be #22 AWG (0.33<sup>2</sup>) or larger.

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

**§ 111.60-5 Cable installation.**

(a) Each cable installation must meet—

(1) Sections 20 and 22, (clauses 10 and 12), except 20.11 (clause 12.11), of IEEE Std 45; or

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

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

\* \* \* \* \*

85. Section 111.60-6 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 as modified by IEEE Std 45, VW-1, or IEC Publication 332-3 Category A; or

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

86. 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 (clauses 9.6.4 and 9.8) of IEEE Std 45.

(d) Switchboard wire must meet subpart 111.30 of this part.

(e) Wire must be of the copper stranded type.

87. 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 (clause 9.6.1) of IEEE Std 45, NEMA WC 3 and NEMA WC 8.

\* \* \* \* \*

88. 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.

(b) With the exception of the thread-cutting type of connectors, twist-on type of connectors—

(1) May not be used for making joints in cables, facilitating a conductor splice or extending the length of a circuit; and

(2) Must be suitable for copper stranded conductors.

(c) If twist-on type of connectors are used, the connections must be made within an enclosure and secured to prevent loosening due to vibration.

89. 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 (clause 10.11) of IEEE Std 45.

90. 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 paragraph 46.2.1 (36.2.1) of IEEE Std 45.

91. Section 111.60-23 is added to read as follows:

**§ 111.60-23 Type MC cable.**

(a) Type MC cables are allowed in—

(1) All applications aboard vessels, Mobile Offshore Drilling Units (MODUs), Tension Leg Platforms (TLPs) or any other type of Floating Production Systems (FPSs), not exposed to vibration of a destructive nature, festooning, or repeated flexing (typically these applications are associated with all interconnect circuits serving, but not limited to, the drilling portion of the platform, e.g., drill floor, draw works, shaker areas, and pits, etc.); interface installations on MODUs, TLPs or FPSs physically located within the modules, such as generator to switchboard or within living quarters;

(2) Class I, or Zone 0 and 1, hazardous (classified) locations provided cable glands for use with Type MC cable are specifically listed/certified by an US Coast Guard accepted independent testing laboratory as an assembly (consisting of the enclosure, cable gland and cable) for use in the installed Class I, or Zone 0 and 1, hazardous (classified) locations; and

(3) Class II and Zone 2 hazardous (classified) locations provided the associated fittings meet the criteria of the NEC.

(b) The installation of Type MC must—

(1) Follow the sizing and installation criteria of the NEC, and if used in Class I, Class II and Zone 0, 1, and 2 hazardous (classified) locations, follow the applicable installation criteria of the NEC; and

(2) Not allow the metal sheath to be used as the grounding conductor required by § 111.05-7 of this chapter. The system grounding conductors must be of a cross sectional area not less than that of the normal current carrying conductors in the cable. Equipment grounding conductors must be sized in accordance with § 111.05-33(a).

92. 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 the ABS Rules, Part 4/5.87-94 through 4/5.94, or IEC Publication 92-301, except the following circuits:

(1) Each steering gear motor circuit and protection must meet 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.

\* \* \* \* \*

93. 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 the requirements of the NEMA Standard 30 or Table 5 of IEC Publication 92-201, as appropriate, for the location where it is installed, except each enclosure in a hazardous location must meet the requirements of subpart 111.105 of this part.

(b) *Low-voltage release.* Each motor controller for a fire pump, elevator, steering gear, or auxiliary which 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 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.

94. 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 that enclosure which 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 shall be disconnected in the same manner as required by paragraph (a) of this section or as required by § 111.70-7(d).

95. 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 shall be affixed to the vital auxiliary motor controller door which warns that opening of the door will trip a vital auxiliary off-line.

96. In § 111.75-1, paragraph (a) is revised to read as follows and paragraph (c) is 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.

\* \* \* \* \*

97. 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.

\* \* \* \* \*

**§ 111.75-15 [Amended]**

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

\* \* \* \* \*

(c) *Illumination of passenger and crew spaces.* Each space used by passengers or crew must be fitted with lighting which provides for a safe habitable and working environment under normal conditions. Sufficient illumination must be provided by the emergency lighting source under emergency conditions in order to effect damage control procedures and to provide for safe egress from each space.

\* \* \* \* \*

99. In § 111.75-16, the introductory text is revised and paragraph (c) is added to read as follows:

**§ 111.75-16 Survival craft floodlights.**

Each vessel must have floodlights for illumination of survival craft launching that meet the following requirements:

\* \* \* \* \*

(c) The arrangement of circuits must be such that the floodlights at adjacent survival craft locations are supplied by different branch circuits.

100. In § 111.75-17, paragraphs (d) introductory text, (d)(1), (d)(2), and (d)(3) 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.

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

(i) "MEETS UL 1104. TESTED BY \_\_\_\_\_" (Insert the name of the independent laboratory, accepted by the Commandant, which tested the fixture to UL 1104);

(ii) Manufacturers name; and

(iii) Model number.

\* \* \* \* \*

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

**§ 111.75-18 Signaling lights.**

Each self-propelled vessel over 150 gross tons which engaged on an international voyage must have onboard an efficient daylight signaling lamp which may not be solely dependent upon the ship's main source of electrical power and 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.

102. In § 111.75-20, paragraph (a) is revised and paragraph (e) is added to read as follows:

**§ 111.75-20 Lighting fixtures.**

(a) The construction of each lighting fixture must be certified to meet UL 595 or IEC Publication 92-306.

\* \* \* \* \*

(e) Non-emergency and decorative interior lighting fixtures in environmentally protected, non-hazardous locations require only manufacturers' self-certification to the applicable UL type-fixture standard (UL 1570-1574) in addition to the general requirements of its marine supplement, or UL 595, (whichever is in effect at the time of manufacture). Such fixtures must have vibration clamps on fluorescent tubes longer than 102 cm (40 inches), secure mounting of glassware, and rigid mounting ("Listing" is not required).

103. 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 internationally recognized construction and safety 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]**

104. Sections 111.77-5, 111.77-7, 111.77-9 and 111.77-11 are removed.

105. 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 15 meters (50 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. Special attention must be given to outlets in hazardous locations. Receptacles must be suitably protected against corrosion when installed in corrosive environments.

**§ 111.79-5 [Removed]**

106. Section 111.79-5 is removed.

107. Section 111.79-7 is revised to read as follows:

**§ 111.79-7 No live parts.**

A receptacle outlet must not have any exposed live parts with the plug opening uncovered.

108. 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.

109. In § 111.81-1, paragraph (d) is added to read as follows:

**§ 111.81-1 Outlet boxes and junction boxes; general.**

\* \* \* \* \*

(d) Each outlet box and junction box installation must meet section 370 of the NEC or IEC Series 92 Publications (e.g., IEC Publication 92-306) as appropriate.

**§ 111.81-5 [Removed]**

110. Section 111.81-5 is removed.

111. Section 111.81-7 is revised to read as follows:

**§ 111.81-7 Degree of protection.**

(a) Each enclosure or junction box must be suitable for the environment in which it is installed and must be constructed to the appropriate NEMA or IEC construction standard.

(b) Each enclosure or junction box installed in a corrosive environment must be suitably protected against damage by the environment.

112. Section 111.81-9 is revised to read as follows:

**§ 111.81-9 Mounting.**

(a) Each outlet or junction box must be fixed.

(b) Each outlet or junction box must be installed as to maintain its designated degree of protection, as appropriate.

**§§ 111.81-11, 111.81-13, and 111.83-3 [Removed]**

113. Sections 111.81-11, 111.81-13 and 111.83-3 are removed.



114. In § 111.85-1, introductory text and paragraphs (a), (b), and (c) are redesignated as paragraphs (a), (a)(1), (a)(2), and (a)(3); new paragraphs (a)(4) and (b) are added to read as follows; and paragraph (d) is removed:

**§ 111.85-1 Electric oil immersion heaters.**

\* \* \* \* \*

(a) \* \* \*

(4) Either—

(i) 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

(ii) A flow device that opens all conductors to the heater if there is inadequate flow.

(b) If a heater is designed so that it could never reach the ignition temperature of the oil or vapor which it serves, it need not meet the requirements of paragraph (a) of this section.

115. In § 111.87-3, paragraph (a) revised to read as follows:

**§ 111.87-3 General requirements.**

(a) Each electric heater must be tested to a recognized national or international safety standard by an independent laboratory.

\* \* \* \* \*

**§ 111.89 (Subpart 111.89) [Removed]**

116. Subpart 111.89, consisting of § 111.89-1, is removed.

**§ 111.91-1 [Amended]**

117. In § 111.91-1 and the section heading, add the word "power," before the word "control".

**§ 111.91-3 [Removed]**

118. Section 111.91-3 is removed.

119. 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]**

120. Section 111.95-5 is removed.

**§ 111.95-7 [Amended]**

121. In § 111.95-7, the Note and Figures 111.95-7(e)(1) through 111.95(e)(5) are removed.

**§ 111.97-5 [Amended]**

122. 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".

**§ 111.97-5 Electric and hydraulic power supply.**

\* \* \* \* \*

(c) The power supply for each hydraulically-operated watertight door system which uses a hydraulic system common to more than one watertight door must be an accumulator tank with enough capacity to open all doors once and to close all doors two times and must be supplied by one or more motor-driven hydraulic pumps which can operate from the final source of the emergency lighting and power system.

\* \* \* \* \*

**Subpart 111.99 [Amended]**

123. In subpart 111.99, in the subpart heading, remove the word "Firescreen" and add, in its place, the word "Fire".

**§ 111.99-1 [Amended]**

124. In § 111.99-1, remove the words "firescreen doors on passenger vessels" and add, in their place, the words "fire doors".

125. Section 111.99-3 is revised to read as follows:

**§ 111.99-3 Definitions.**

As used in this subpart—

*Central control station* 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 station* 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.

126. In § 111.99-5, remove the word "firescreen" wherever it appears and add, in its place, the word "fire" and revise paragraphs (a), (b), (d), and (e) to read as follows:

**§ 111.99-5 General.**

(a) Each fire door holding and release system must have a central control station and the following for each fire door:

(1) One or more fire door holding magnets.

(2) A self-aligning armature plate on the door to be seized and held by the

magnet(s) when the fire door is fully open.

(3) A local control station.

(b) Each fire door holding circuit must be arranged so that loss of power for any cause releases the door, except that a momentary interruption of the circuit that results from the operation of an automatic bus-transfer device in connection with the emergency power and lighting system must not release the door.

\* \* \* \* \*

(d) The local control station must be an enclosed, externally-operable, overcurrent-protected switching device having a rating of not less than 125 percent of rated system current and voltage, and may be either the momentary contact type or the maintaining contact type. The holding magnet(s) for a single fire door must be connected to the overcurrent-protected end of this local control except that, if several doors are near each other, a single local control station switch of ample rating may be used to release these doors simultaneously.

(e) Each fire door's holding magnet(s) must be designed to hold with an aggregate pull of 90 kg (200 pounds). If the arrangement of the electrical supply involves transfer relays to transfer the supply from a normal to a temporary source, the fire door holding magnet(s) must be designed so that, with a pull on the armature of 50 kg (110 pounds), the armature is held in the sealed position for at least one-fourth of a second after the circuit to the magnet is opened. Each fire door holding magnet must be designed for continuous duty in an ambient temperature of 40°C with a total temperature rise that does not exceed the insulation rating. The electromagnet coil must be vacuum-pressure impregnated and the magnet enclosure must meet the NEMA or IEC requirements for the environment in which it is installed.

\* \* \* \* \*

127. 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 the IEC Publication 79-0.

Note to § 111.105-1: Chemicals and materials in addition to those listed in Table 500-2 of the NEC and IEC Publication 79-12 are listed in subchapter O of this chapter.

128. 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 (clause 33) of IEEE Std 45 and either 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 part may be used instead of rigid metal conduit, if installed fittings are approved for the specific hazardous location and the cable type.

129. Section 111.105–5 is revised to read as follows:

**§ 111.105–5 System integrity.**

In order to maintain system integrity, electrical installations in a hazardous location must comply specifically with NEC articles 500–505, as amended by § 111.105–3, or the IEC series 79 publications, but not a combination of both. Non-approved equipment or hazardous equipment not approved for the specific system installed is also prohibited.

130. Section 111.105–7 is revised to read as follows:

**§ 111.105–7 Approved equipment.**

If the NEC states that an item of electrical equipment must be approved or if IEC Publication 79–0 states that an item of electrical equipment must be tested in order to comply with the IEC 79 series publications, that item must be—

(a) Listed or certified by an independent laboratory recognized by the Commandant for use in the hazardous location in which it is installed; or

(b) Purged and pressurized equipment which meets NFPA No. 496 or IEC Publication 79–2.

131. Section 111.105–9 is revised to read as follows:

**§ 111.105–9 Explosionproof and flameproof equipment.**

Each item of electric equipment that is required under this subpart to be explosionproof is defined by the NEC as tested to meet UL 1203. Each item of electrical equipment that is required under this subpart to be flameproof is defined as tested to comply with IEC Publication 79–1. Each explosionproof or flameproof device must meet the requirements of § 111.105–7(a).

**§ 111.105–10 [Removed]**

132. Section 111.105–10 is removed.

133. 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 is defined as meeting UL 913 or IEC Publication 79–11. Each intrinsically

safe system must also meet § 111.105–7(a) for use in the hazardous location in which it is installed.

(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;

(2) Be partitioned by a grounded metal barrier from other non-intrinsically safe electric cables, or be a shielded cable;

(3) Not contain conductors for non-intrinsically safe systems; and

(4) Not contain conductors for other intrinsically safe circuits unless specifically approved for that arrangement.

(c) The manufacturer must submit installation instructions and restrictions on the approved system. Typical restrictions include—

(1) Voltage limitations;

(2) Allowable cable parameters;

(3) Maximum length of cable permitted; and

(4) Ability of system to accept passive devices.

(d) Intrinsically safe systems must not be interconnected unless the systems were approved for the particular combined arrangement.

(e) Each intrinsically safe system must meet ISA RP 12.6, "Installation of Intrinsically Safe Instruments in Class I Hazardous Locations," except Appendix A.1.

134. Section 111.105–15 is revised to read as follows:

**§ 111.105–15 Additional methods of protection.**

(a) Each item of electrical equipment that is—

(1) A sand-filled apparatus must meet IEC Publication 79–5;

(2) An oil-immersed apparatus must meet IEC Publication 79–6;

(3) Type of protection "e" must meet IEC Publication 79–7;

(4) Type of protection "n" must meet IEC Publication 79–15; and

(5) Type of protection "m" must meet IEC Publication 79–18.

(b) When suitable for installation in certain hazardous locations, each item of electrical equipment identified in paragraph (a) of this section must also comply with—

(1) Section 111.105–7;

(2) Section 111.105–17; and

(3) The general guidance provided by IEC 79 series publications.

135. Section 111.105–17 is revised to read as follows:

**§ 111.105–17 Wiring methods for hazardous locations.**

(a) Marine shipboard cable meeting subpart 111.60 of this part is required

for all location installations, except where MI or SI type or other specialty cable or wire is required by this subpart.

(b) Where conduit is installed, the applicable requirements of either the NEC or IEC Publication 79 must be followed.

(c) Each cable entrance into explosionproof or flameproof equipment must be made with a fitting, termination, or gland which meets the requirements of § 111.105–9.

(d) Each cable entrance into a Class II or Class III or Zone 10 or Zone 11 equipment must be made with a fitting, termination, or gland approved for the installation.

136. Section 111.105–19 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 § 111.105–9 must have a pole for each ungrounded conductor.

137. 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]**

138. Sections 111.105–23 and 111.105–25 are removed.

139. 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 § 111.105–31(1).

140. In § 111.105–31, paragraphs (e) and (l) introductory text are revised and paragraphs (l)(3) and (l)(4) 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, Appendix B. Cargo tanks must not contain any electrical equipment except the following:

- (1) Intrinsically safe equipment; and
- (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 explosionproof electrical equipment, purged and pressurized equipment, and through runs of armored or MI type cable 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.

\* \* \* \* \*

141. In § 111.105–32, the section heading and paragraph (e) are revised to read as follows:

**§ 111.105–32 Bulk liquefied flammable gas and ammonia carriers.**

\* \* \* \* \*

(e) A submerged cargo pump motor, if installed in a cargo tank, must meet § 111.105–31(d).

\* \* \* \* \*

142. Section 111.105–35 is revised to read as follows:

**§ 111.105–35 Vessels carrying coal.**

(a) The following are Class II, Division 1 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 conveyor on a vessel that carries coal is a Class II, Division 2 space.

(c) A space that has a coal conveyor on a vessel that carries coal must have electrical equipment approved for Class II, Division 2 hazardous locations, except watertight general alarm bells.

**§ 111.105–37 [Amended]**

143. In § 111.105–37, remove the words “NFPA No. 56A” and add, in their place, the words “NFPA No. 99”.

144. 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 which 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.

Note to § 111.105–39: The term “explosionproof” is internationally recognized as meaning electrical equipment certified suitable for a Class I, Division 1; Zone 0; or Zone 1 hazardous location.

145. 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 I, Division 2; Zone 0; Zone 1; or Zone 2 hazardous location when installed 450 mm (18 inches) or more above the deck.

Electrical equipment installed within 450 mm (18 inches) of the deck must be suitable for either a Class I, Division 1; Zone 0; or Zone 1 hazardous location.

(c) Where the ventilation requirement as ABS Rule 4/5.160 is not met—

(1) All installed electrical equipment must be suitable for a Class I, 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 I, Division 2; Zone 0; Zone 1; or Zone 2 hazardous location.

146. 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 section 43.11 (clause 33.11) of IEEE Std 45.

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, 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, 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 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 111.105–47 is added to read as follows:

**§ 111.105–47 Duct keel ventilation or lighting.**

(a) Each pipe tunnel, double bottom or duct keel ventilation and lighting system must meet ABS Rule 4/5.151.7.

(b) If a fixed gas detection system is installed, it must meet the requirements of SOLAS 74 and ABS Rules section 4/5.

149. 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 meet the following:

- (1) Be installed in accordance with § 111.60-5.
- (2) Meet the flammability test requirements of—
  - (i) Section 18.13.5 (clause 8.13.5) of IEEE Std 45 and IEEE Std 383; or
  - (ii) IEC Publication 332-3, Category A.
- (3) Be specialty cable installed in accordance with § 111.60-2.

**PART 112—EMERGENCY LIGHTING AND POWER SYSTEMS**

150. The authority citation for part 112 is revised to read as follows:

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

151. 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 only those services that are necessary for the safety of the passengers, crew, and other persons in an emergency.

(c) Other loads may be authorized by the Commanding Officer, U.S. Coast Guard 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.

152. 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)

\* \* \* \* \*

<sup>1</sup> A 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 ship is upright or inclined to the maximum angle of heel which results from the assumed damage defined in 33 CFR part 155 or by 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, 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, associated transforming equipment, and the emergency switchboard must be readily accessible from the open deck and must not contain any other machinery.

(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.

153. 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. Lights must meet the requirements of § 111.75-16 of this chapter, § 112.43-7 and § 112.43-11.

\* \* \* \* \*

(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.

154. In § 112.15-5, paragraphs (b), (f), (q), 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.

\* \* \* \* \*

(f) A 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 marine distress safety system (GMDSS).

(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) A steering gear feeder if required by part 58, subpart 58.25, of this chapter.

(l) General alarm flashing lights required by § 113.25-10 of this chapter.

(m) Each electric blow-out-preventer control system on a mobile offshore drilling unit.

(n) Any permanently installed diving equipment that is dependent upon the vessel's or drilling unit's power.

(o) An 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 a column-stabilized mobile offshore drilling unit.

(r) The vital system automation loads required by part 62 of this chapter.

(s) Motor-operated valves for the cargo oil and fuel oil systems if the emergency power source is the source of power to meet § 56.50-60(d) of this chapter.

(t) The ship's stabilizer wings, unless a separate source of emergency power is supplied.

(u) The indicator which shows the position of the stabilizer wings, if the emergency power source is their emergency source of power.

(v) Smoke extraction fans (not including smoke detector sampling), and CO<sub>2</sub> exhaust fans for spaces.

115. 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.

(a) \* \* \*

(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 its place, the words "for at least 3".

§ 112.43-1 [Amended]

157. In § 112.43(b), remove "§ 112.43-3" and add, in its place, "§ 112.43-7".

§ 112.43-3 [Removed]

158. Section 11243-3 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 and word "wheelhouse" and add, in its place, the words "navigating bridge".

160. In § 112.43-7, paragraphs (a) introductory text, (a)(1), (a)(2), (a)(4)(ii), 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) Floodlights for survival craft launching operations, except as followed in § 112.43-5.

\* \* \* \* \*

(4) \* \* \*

(ii) On the navigating bridge;

\* \* \* \* \*

(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 for floodlights for survival craft launching operations must supply no other equipment and meet § 111.75-16(c) of this chapter.

§ 112.43-15 [Amended]

162. In § 112.43-15, remove the word "firescreen" and add, in its place, the word "fire".

§ 112.43-17 and 112.45-5 [Removed]

163. Sections 112.43-17 and 112.45-5 are removed.

164. The heading to subpart 112.45 is revised to read as follows:

Subpart 112.45—Visible Indicators

165. 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 a 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 is to 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.

166. In § 112.50-3, paragraph (a) is revised to read as follows:

§ 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 shall 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.

\* \* \* \* \*

167. 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.

168. In § 112.50-7, paragraph (c)(1) is 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;

\* \* \* \* \*

169. 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 table 112.05-5(a).

\* \* \* \* \*

PART 113—COMMUNICATION AND ALARM SYSTEMS AND EQUIPMENT

170. The authority citation for part 113 is revised to read as follows:

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

171. The heading to subpart 113.10 is revised to read as follows:

Subpart 113.10—Fire and Smoke Detecting and Alarm Systems and Manual Fire Alarm Systems

172. 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 Type 4 or 4X or IEC IP 56 requirements.

173. In § 113.10-9, in paragraph (a), the third sentence is revised, paragraph (c) is removed; and paragraph (d) is redesignated as paragraph (c):

§ 113.10-9 Power supply.

(a) \* \* \*. The other source must be an automatically charged battery from

the final emergency power source.

\* \* \*

\* \* \* \* \*

174. 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 Type 4 or 4X, or IEC IP 56 requirements.

175. In § 113.25-6, paragraph (d) and paragraph (e) introductory text are revised to read as follows:

**§ 113.25-6 Power supply.**

\* \* \* \* \*

(d) Meet the requirements of SOLAS 74;

(e) If using one of the following methods, be—

\* \* \* \* \*

**§ 113.25-8 [Amended]**

176. 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 alarm system must be arranged into vertical service” and remove “150 feet (45.7 meters)” and add, in its place, “40 meters (131 feet)”.

177. In § 113.25-9, paragraph (b) is revised and paragraph (c) is added to read as follows:

**§ 113.25-9 Location of general alarm bells.**

\* \* \* \* \*

(b) The general alarm must be audible in the spaces identified in paragraph (a) of this section with all normally closed doors and accesses closed.

(c) The general alarm’s sound pressure levels one meter (3 feet) from the source must be 10 dB(A) above normal ambient noise levels. The audible general alarm sound pressure level in any space must not exceed 120 dB(A).

178. 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); in redesignated paragraph (a), remove the word “light” and add, in its place, the word “beacon”; redesignated paragraph (a)(3) is revised; and new paragraphs (b) and (c) are added to read as follows:

**§ 113.25-10 Location of flashing red beacons.**

(a) \* \* \*

\* \* \* \* \*

(3) Is supplied by the general alarm system power supply or the vessel emergency power source through a relay that is operated by the general alarm system.

(b) A flashing red beacon 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 in part 111, subpart 111.105, of this chapter.

(c) A flashing or rotating red beacon must not be used for any other purpose.

179. Section 113.25-11 is revised to read as follows:

**§ 113.25-11 Contact makers.**

Each contact maker must—

(a) Be normally open and be constructed in accordance with NEMA Type 4 or 4X, or IEC IP 56 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.

180. Section 113.25-12 is revised to read as follows:

**§ 113.25-12 Bells.**

(a) Each general alarm bell must produce a signal or tone distinct from any other audible signal on the vessel.

(b) For the purpose of this subpart, a device that produces a bell-like general alarm signal is accepted instead of a bell.

(c) Electronic devices used to produce the general alarm signal must meet the requirements of subpart 113.50 of this part.

181. Section 113.25-16 is revised to read as follows:

**§ 113.25-16 Overcurrent protection.**

(a) Each fuse in a general 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 as 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.

**§ 113.30-1 [Amended]**

182. In § 113.30-1, at the end of the sentence, add the words “and each self-propelled mobile offshore drilling unit”.

183. Section 113.30-3 is revised to read as follows:

**§ 113.30-3 Means of communications.**

The common talking means of communication and calling required by this subpart must be a sound-powered telephone or other reliable voice communication method. These systems must be independent of the ship’s electrical system.

184. In § 113.30-5, paragraphs (a) introductory text, (d), (g), (h), and (i) are revised and paragraph (j) is added to read as follows:

**§ 113.30-5 Requirements.**

(a) *Communication.* Each vessel must have a reliable, common talking means of voice communication and calling among the following:

\* \* \* \* \*

(d) *Emergency lockers.* If the emergency equipment lockers or spaces are not next to the navigating bridge, or control room on a mobile offshore drilling unit, there must be a reliable, common talking system between the navigating bridge or control room and the emergency equipment lockers or spaces.

\* \* \* \* \*

(g) *Lookout.* Each vessel must have a reliable means of voice communication and calling between the navigating bridge and the bow or forward lookout station unless direct voice communication is possible.

(h) *Engine room local control station.* On a self-propelled vessel equipped with pilothouse control, each local station for the control of the speed or direction of thrust of the propulsion machinery must have a reliable means of voice communication and calling for communication to the engine control room or maneuvering platform, unless an engine order telegraph is installed in accordance with § 113.35-3. Each communications 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 during vessel operations.

(i) *Mobile offshore drilling units.* Non-self-propelled mobile offshore drilling units must have a reliable common talking means of voice communication and calling system interconnecting the control room, drill floor, machinery space, and silicon controlled rectifier (SCR) room (if installed). Each column-

stabilized mobile offshore drilling unit must have such communication between the ballast control room and the spaces which contain the ballast pumps and valves.

(j) *Survival craft.* Each vessel must have a reliable common talking means of voice communication for calling between the navigating bridge, each survival craft location, and each muster station.

**§ 113.30-10 [Removed]**

185. Section 113.30-10 is removed.

186. 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), (i), and (j), and other 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 which can isolate this station from the rest of the stations.

(c) Jack boxes or headsets must not be on a communications system which includes any station required by this subpart, except for a station installed to meet §§ 113.30-5(h) or 113.30-25(d).

187. 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 § 113.30-25(d). The hanger must be constructed in such a way to hold the handset away from the bulkhead and such 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 Type 2 or IP 11 requirements.

(d) In a noisy 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 which 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 Type 4 or 4X, or IP 56 requirements.

(i) Voice communication cables must be run as close to the fore and aft centerline of the vessel as practicable. Cables must not run through high fire risk spaces such as machinery rooms and galleys.

188. Section 113.35-3(e)(3) is revised to read as follows:

**§ 113.35-3 General requirements.**

\* \* \* \* \*

(e) \* \* \*

(3) Reliable voice communication and calling which meets the requirements of § 113.30-5(h) is not provided.

\* \* \* \* \*

189. 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 silence the audible signal.

**§ 113.35-7 [Removed]**

190. Section 113.35-7 is removed.

191. In § 113.35-9, the section heading is revised; in paragraph (a) following the word "other", add the

word "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]**

192. Section 113.35-11 is removed.

**§ 113.37-5 [Amended]**

193. In § 113.37-5, remove the words "in the wheelhouse" wherever they appear and add, in their place, the words "on the navigating bridge".

194. 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 electrical component or its enclosure must meet NEMA Type 4 or 4X or IP 56 requirements.

195. In § 113.40-10, in paragraph (a), the second sentence is revised; paragraph (b) is revised; and paragraphs (c) through (f) are removed as follows:

**§ 113.40-10 Detailed requirements.**

(a) \* \* \*. This system must be electrically and otherwise independent of all other systems, including the steering gear control system, autopilot, or dynamic positioning system.

(b) Each electric component or its enclosure must meet NEMA Type 4 or 4X or IP 56 requirements.

**§ 113.43-3 [Amended]**

196. In § 113.43-3(a) introductory text, remove the words "in the pilothouse" and add, in their place, the words "on the navigating bridge"; and remove the words "§ 58.25-45 and § 111.93-9" and add, in its place, the words "subpart 58.25".

**§ 113.43-5 [Amended]**

197. In § 113.43-5(b), remove the words "in the wheelhouse" and add, in their place, the words "on the navigating bridge".

198. The heading to subpart 113.50 is revised to read as follows:

**Subpart 113.50—Public Address Systems**

199. Section 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 alarm system in accordance with § 113.25-1.

**§ 113.50-5 General requirements.**

(a) Each vessel must have a central-amplifier-type announcing system that will supplement the general alarm. This system must provide for the transmission of orders and information throughout the vessel by means of microphones and loudspeakers connected through a central amplifier.

(b) The announcing station must be located adjacent to the general 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 alarm required by subpart 113.25 of this part, the operation of a general 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 the devices used to produce the general alarm signals if used, 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 Type 4, 4X or IP 56).

200. Section 113.50-10 is added to read as follows:

**§ 113.50-10 Additional requirements for passenger vessels.**

(a) Each passenger vessel must have a public address system that enables an officer on the bridge to broadcast separately or collectively to the following stations:

- (1) Survival craft stations, port.
- (2) Survival craft stations, starboard.
- (3) Survival craft embarkation stations, port.
- (4) Survival craft embarkation stations, starboard.
- (5) Public spaces used for passenger assembly points.
- (6) Crew quarters.
- (7) Accommodation spaces and service spaces.

(b) Each loudspeaker at a survival craft or embarkation station must allow

for two-way conversation with the navigating bridge.

201. In § 113.50-15, the section heading and paragraphs (a) through (d) are revised to read as follows, and Table 113.50-15 is transferred to the end of the section.

**§ 113.50-15 Location of loudspeakers.**

(a) Loudspeakers must be located to eliminate feedback or other interference which would degrade communication.

(b) Loudspeakers must be located to provide intelligible and audible one-way communication throughout the vessel. Weatherdeck loudspeakers must be watertight and directed aft.

(c) There must be a sufficient number of loudspeakers throughout the vessel to provide the sound level prescribed in table 113.50-15.

(d) Loudspeakers must not have external volume controls or local cutout switches.

\* \* \* \* \*

202. 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, except where, because of the arrangement of the vessel, only one zone feeder is necessary; then 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 containing more than one deck level 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, and there must be a feeder for each of these zones.

(g) Feeders and branch circuit cables must be in passageways and 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]**

203. Section 113.50-25 is removed.

**§ 113.65-5 [Amended]**

204. In § 113.65-5, remove the words "Section 37.25" and add, in their place, the words "section 37.19 (clause 27.19)".

**Subpart 113.70 [Removed]**

205. Subpart 113.70 is removed.

**PART 161—ELECTRICAL EQUIPMENT**

206. 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.

207. In § 161.002-1, paragraphs (a)(1) through (a)(4) are revised, paragraphs (a)(5) through (a)(9) are added, and paragraph (c) is revised to read as follows:

**§ 161.002-1 Applicable specifications, standards, and regulations.**

(a) \* \* \*

(1) American Society for Testing and Materials (ASTM) Test Method of Salt Spray (Fog) Testing; B 117-94.

(2) Coast Guard Regulations: Electrical Engineering Regulations, (46 CFR (subchapter J) parts 110 to 113 inclusive).

(3) Comité European de Normalisation (CEN) standard:

EN54 series: Components of automatic fire detection systems—

EN54 Part 1 (1987) Introduction.

EN54 Part 2 (1992) Control and indicating equipment.

EN54 Part 3 (1995) Alarm devices.

EN54 Part 4 (1989) Power supply equipment.

EN54 Part 5 (1994) Heat sensitive detectors: Point detectors, including Amendment 1 (1988).

EN54 Part 6 (1982) heat-Sensitive detectors; Rate-of-Rise point detectors without a static element; including Amendment 1 (1988).

EN54 Part 7 (1994) Smoke detectors: Point detectors using scattered light transmitted light or ionisation.

EN54 Part 8 (1988) High temperature heat detectors.

EN54 Part 9 (1982) Fire sensitivity test.

EN54 Part 10 (1991) Flame detectors.

EN54 Part 11 (1991) Manual call points.

(4) Factory Mutual Engineering and Research standards:

Class Number 3230-3250 (1976): Smoke Actuated Detectors for Automatic Fire Alarm Signaling.

Class Number 3210 (1978): Thermostats for Automatic Fire Detection.

Class Number 3260 (1994): Flame Radiation Detectors for Automatic Fire Alarm Signaling.

Class Number 3820 (1974): Electrical Utilization Equipment.



Class Number 3150 (1974): Audible Signal Devices.

(5) International Electrotechnical Commission (IEC) IEC 533: Electromagnetic Compatibility of Electrical and Electronic Installations in Ships and of Mobile and Fixed Offshore Units, First Edition, (1977).

(6) International Maritime Organization: International Convention for the Safety of Life at Sea, 1974 (SOLAS); (as amended through 1994).

(7) National Fire Protection Association standard: NFPA 72: national Fire Alarm Code (1993).

(8) Lloyd's Register of Shipping: LR Type Approval System; Test Specification Number 1 (1990).

(9) Underwriters Laboratories Inc. standards:

UL 846 (1991)—Control Units for Fire-Protective Signaling Systems.

UL 521 (1993)—Heat Detectors for Fire-Protective Signaling Systems.

UL 268 (1989)—Smoke Detectors for Fire-Protective Signaling Systems.

UL 38 (1994)—Manually Actuated Signaling Boxes for Use with Fire-Protective Systems.

\* \* \* \* \*

(c) The ASTM standard may be purchased from the American Society for Testing and Materials; 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959. The Coast Guard publication may be purchased from the U.S. Government Printing Office; Superintendent of Documents; Mail Stop: SSOP; Washington, DC 20402-9328. The CEN standards may be purchased from the Central Secretariat; Rue de Brederode 2, B-1000 Brussels; Belgium. The Factory Mutual standards may be obtained from Factory Mutual Engineering and Research; ATTN: Librarian; 1151 Boston-Providence Turnpike; Norwood, MA 02062. The IEC Standard may be purchased from the International Electrotechnical Commission; 1, Rue de Varembe, Geneva, Switzerland. SOLAS may be purchased from the International Maritime Organization; 4 Albert Embankment; London, SE1 7SR; U.K. The NFPA standard may be purchased from the National Fire Protection Association; Batterymarch Park; Quincy, MA 02269. The Lloyd's standard may be obtained from Lloyd's Register of Shipping; 17 Battery Place; ATTN: Publications; New York, NY 10004-1195. The UL standards may be purchased from Underwriters Laboratories Inc.; Publications Stock; 333 Pfingsten Road; Northbrook, IL 60062-2096.

**§ 161.002-2 [Amended]**

209. 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 (b) and (c), remove the words "vibrating bells" and add, in their place, the words "suitable annunciating devices"; 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]**

210. In § 161.002-3, paragraphs (c), (d), and (e) are removed.

211. In § 161.002-4, paragraph (b) is added to read as follows:

**§ 161.002-4 General requirements.**

\* \* \* \* \*

(b) *Standards.* (1) All fire protection systems must be designed, constructed, tested, and marked according to the applicable standards under § 161.002-1.

(2) All systems must be listed or certified as meeting these standards by an independent laboratory accepted by the Commandant under § 110.35-1 of this chapter.

(3) All parts of the system must pass the environmental tests of Category ENV3 of Lloyd's Register Type Approval System, Test Specification Number 1.

(4) Those parts of the system that are to be installed in interior or exterior locations requiring exceptional degrees of protection must also pass the salt spray test in Category ENV3 of Lloyd's Register Type Approval System, Test Specification No. 1 or in ASTM B-117.

**§§ 161.002-5, 161.002-6, and 161.002-7 [Removed]**

212. Sections 161.002-5, 161.002-6, and 161.002-7 are removed.

**§ 161.002-8 [Amended]**

213. In § 161.002-8, paragraph (b) is removed.

214. In § 161.002-10, paragraphs (b)(1) (i) and (ii) are revised to read as follows; and paragraphs (i) through (m) are removed:

**§ 161.002-10 Automatic fire detecting system control unit.**

(b) \* \* \*

(1) \* \* \* (i) the sounding of a vibrating type fire bell with a gong diameter not smaller than 15 cm (6 inches) or similar annunciating device nipped to or mounted on or within 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 similar annunciating device located in the engine room; and

\* \* \*

\* \* \* \* \*

**§§ 161.002-11 and 161.002-13 [Removed]**

215. Sections 161.002-11 and 161.002-13 are removed.

216. Section 161.002-15 is revised to read as follows:

**§ 161.002-15 Sample extraction smoke detection systems.**

(a) *General.* 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 (alarm indicating lights) and aural (sound signaling device) means for indicating the presence of smoke.

(b) In addition to compliance with § 161.002-1, the system must meet the general, installation, and design requirements of SOLAS, Chapter II-2 regulation 13-1.

**§ 161.002-16 [Removed]**

217. Section 161.002-16 is removed.

218. 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-MMS-3), 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 the independent laboratory recognized by the Commandant for the testing 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 first submission being revision number 0).

(iii) The date the particular revision was issued.

(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 paragraph (a)(4) (i) through (iii) of this section will appear on the Certificate of Approval and will designate the official compilation of components for the approved system. If the manufacturer seeks to apply subsequently for an 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 a written request under paragraph (a) of this section, the updated list under paragraph (b) of this section, and the testing laboratory report of proper compliance with the standards and compatibility with the system. A new certificate, normally valid for a full 5 year term, will be issued bearing the updated list data and a revision number.

**§§ 161.004-2—161.004-7 (Subpart 161.004)  
[Removed]**

219. Subpart 161.004, consisting of §§ 161.004-2 through 161.004-7, is removed.

Dated: January 29, 1996.

Joseph J. Angelo,

*Acting Chief, Office of Marine Safety, Security  
and Environmental Protection.*

[FR Doc. 96-2149 Filed 2-1-96; 8:45 am]

**BILLING CODE 4910-14-M**