



**U.S. SUPPLEMENT
TO**

**ABS RULES FOR BUILDING AND CLASSING
STEEL VESSELS UNDER 90 METERS (295
FEET) IN LENGTH**

1 March 2014

AMERICAN BUREAU OF SHIPPING

USCG Approved 14 April 2014

MISSION STATEMENT

The mission of the American Bureau of Shipping is to serve the public interest as well as the needs of our clients by promoting the security of life and property and preserving the natural environment.

QUALITY & ENVIRONMENTAL POLICY

It is the policy of the American Bureau of Shipping to be responsive to the individual and collective needs of our clients as well as those of the public at large, to provide quality services in support of our mission, and to provide our services consistent with international standards developed to avoid, reduce or control pollution to the environment.

All of our client commitments, supporting actions, and services delivered must be recognized as expressions of Quality. We pledge to monitor our performance as an on-going activity and to strive for continuous improvement.

We commit to operate consistent with applicable environmental legislation and regulations and to provide a framework for establishing and reviewing environmental objectives and targets.

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INTRODUCTION

Those who use this Supplement are asked to review the current ABS Rules for Building and Classing Steel Vessels Under 90 Meters (295 Feet) in Length, 2009 SOLAS and 2006 MARPOL or latest. Please be aware of the “Scope and Conditions of Classification.” This Supplement does not change the scope or conditions of ABS Classification. It is a reference document within the ABS Quality System. The Check Sheets contained in this Supplement are also for reference only and are not to be used in the performance of a Survey. The controlled Check Sheets are available through the normal distribution of controlled documents. The most recent revisions may be obtained from the ABS Surveyor-in-Charge.

Historically, as part of their regulatory reform initiative, the United States Coast Guard (USCG) established a task group consisting of USCG personnel and ABS Engineers to conduct a comparison of the applicable requirements contained within Title 46 of the Code of Federal Regulations (CFR) Subchapters “D” and “I” to the similar applicable regulations contained in 1974 SOLAS (as amended), the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) and the ABS Rules for Building and Classing Steel Vessels. The purpose of this effort was to identify redundancies and to determine if the International Conventions and ABS Class Rules would provide an equivalent level of safety to those regulations contained within 46 CFR Subchapters “D” and “I”. Over 370 separate regulations were examined, and it was determined that many of the CFR requirements were satisfied by either the ABS Rules alone, 1974 SOLAS (as amended) alone, MARPOL 73/78 alone, or a combination of all three of these regulations.

The results of the task group’s study were codified into a document, subsequently modified to include Subchapter “H”, titled “U.S. Supplement to ABS Rules for Steel Vessels for Vessels on International Voyages, dated 1 August 1997.” This supplement has been periodically updated; the most recent version was issued 01 April 2011.

In August 1994 the USCG delegated authority to ABS under a Pilot Program, as defined in USCG Navigation and Vessel Inspection Circular No. 2-95 (NVIC 2-95) to survey ABS-Classed vessels for compliance with the following statutory instruments:

- The International Convention for the Safety of Life at Sea, 1974 (as amended); and
- The International Convention for the Prevention of Pollution from Ships 73/78.

The Pilot Program was completed on 31 July 1997, and NVIC 2-95 was issued on 1 August 1997 as NVIC 2-95, Change-1. Incorporated in Change 1 was the USCG delegation of authority for ABS to review plans and conduct surveys on behalf of the USCG for vessels enrolled in the Alternate Compliance Program (ACP).

Under ACP, a voluntary program, the owner may elect to have ABS conduct surveys on existing vessels on behalf of the USCG. For new construction, a request is required from both the shipyard and the owner since enrollment in this program will affect both parties.

The success of the ACP for steel vessels led industry to request the expansion of the program to include vessels classed under ABS Rules for Building and Classing Steel Vessels Under 90 Meters (295 Feet) in Length. To meet this demand, ABS issued and obtained USCG Approval for the “U.S. Supplement to ABS Rules for Steel Vessels Under 90 meters (295 feet) in Length for Vessels Certificated for International Voyages” in 1997. The supplement has been periodically updated, up to the current revision. Use of the supplement is available to Steel Vessels Under 90 meters in lengths enrolled in the USCG’s

ACP and classed by ABS. The procedures for enrollment in the ACP are addressed on Page 3 of this Introduction.

The controlling documents pertaining to vessels enrolled in ACP are 1974 SOLAS, as amended, MARPOL 73/78, as amended, NVIC 2-95, Change-2 (dated 5 May 2006), Volume II, Section B Chapter 9 of the USCG Marine Safety Manual, the ABS Rules for Building and Classing Steel Vessels Under 90 meters (295 feet) in Length and this Supplement.

A vessel enrolled in the ACP must satisfy all the requirements contained in the applicable sections of the International Conventions, ABS Rules and the U.S. Supplement, prior to the issuance of the Certificate of Inspection (COI).

Applicability of this Supplement is limited to existing vessels that meet the following conditions and new vessels that intend to meet the following conditions:

- A. A cargo vessel over 500 gross tons ITC or a passenger vessel carrying 12 or more passengers;
- B. Greater than 45.7 m (150 ft) in scantling length;
- C. Certificated for international voyage;
- D. Issued ICLL, SOLAS and MARPOL Certificates;
- E. Has electrical plants with an aggregate capacity of 75 kW (101 hp) or greater;
- F. Issued and maintains a valid Certificate of Documentation (US Flag);
- G. Certified under 46 CFR Subchapter D, H, I, or U; and
- H. Classed under ABS Rules for Building and Classing Steel Vessels Under 90 Meters (295 Feet) in Length.

This publication is used in lieu of 46 CFR Subchapters “D,” “H,” “I,” and “U” for plan review and inspections delegated to ABS by the USCG and, if used with a later edition of ABS Rules for Building and Classing Steel Vessels Under 90 Meters (295 Feet) in Length, changes to this Supplement that result from changes between that later edition and the 2014 edition of the ABS Steel Vessels Under 90 Meters (295 Feet) Rules must also be applied. The use of this U.S. Supplement is restricted to those vessels which are enrolled in the USCG’s Alternate Compliance Program (ACP) and classed by ABS.

The Supplement is divided into eight (8) sections:

Section I contains supplemental requirements in areas where there are cites in the ABS Under 90m Rules for which the USCG have additional requirements.

Section II contains USCG SOLAS interpretations not addressed by ABS Rules.

Section III contains additional U.S. requirements not contained in ABS Rules, MARPOL or SOLAS.

Section IV is applicable to vessels that either have a USCG COI listing “Subchapter H” or have submitted an application for inspection to the USCG to obtain one, and are classed by ABS under the Rules for Building and Classing Steel Vessels Under 90 meters (295 feet) in Length.

Section V is applicable to vessels that either have a USCG COI listing “Subchapter U” or have submitted an application for inspection to the USCG to obtain one, and are classed by ABS under the Rules for Building and Classing Steel Vessels Under 90 meters (295 feet) in Length.

Section VI-VII are supplementary and may be used for any vessel to which Sections I-V apply.

Section VIII contains the record of revisions commencing after 1 August 1997.

There are specific cites within this document where U.S. domestic standards are specified as mandatory for certain systems, equipment or components. U.S. Federal law is one of the reasons why many items are mandatory. It is recognized that there exist alternative standards developed by regulatory bodies and industry, both internal and external to the United States, which would define systems, equipment or components that are equivalent to those being specified herein. To the extent authorized by USCG Navigation and Vessel Inspection Circular No. 2-95, Change-2 (NVIC 2-95, Change-2), as amended and supplemented, ABS may evaluate alternatives built to these international/industry standards and forward comments and recommendations to the USCG Marine Safety Center (MSC) for final approval. Under no circumstances is ABS authorized to endorse or issue a Certificate of Inspection, exempt international convention requirements, or approve equivalencies to SOLAS or other international conventions.

In the normal course of technological advancement and application, it is entirely possible that new systems, equipment or components will be available for use onboard vessels covered by this program. In the event that existing design requirements are not applicable, it is incumbent on the owner, builder or his designer to seek from ABS as early as possible a determination by the MSC of the requirements which will be applied in such cases.

PROCEDURES FOR ENROLLMENT AND PARTICIPATION IN ACP

The USCG Marine Safety Manual, Volume II, Section B, Chapter 9 and NVIC 2-95, Change-2 describes the process for enrollment in ACP. The Marine Safety Manual, Volume II, and NVIC 2-95, Change-2 may be accessed using the following links:

http://www.uscg.mil/directives/cim/16000-16999/CIM_16000_7A.pdf
<http://www.uscg.mil/hq/cg5/nvic/pdf/1995/NVIC%2002-95ch2.pdf>

NEW CONSTRUCTION

During new construction, the design, fabrication sequences, and construction cost may be affected by the intended enrollment of a proposed new construction into the ACP by the owner. Therefore it is imperative that the shipyard and owner consult with ABS as early in the design phase as possible to discuss the proposed enrollment in depth to establish the basic fundamentals and administrative clarifications. Upon the completion of such a meeting, both the shipyard and the owner are to forward a written request to ABS to confirm their intentions. For the shipyard, this could be accomplished in concert with the forwarding of the ABS Request for Classification Survey Details (Form A.B.122). For survey purposes, the owner is to forward a separate letter to the local ABS Office or Regional Office (Divisional Assistant Chief Surveyor, ABS Americas) to confirm their intention regarding the enrollment of the vessel. While this will assist in the proper processing within ABS, it is very important to note that the application for enrollment in ACP should be forwarded to the USCG in accordance with NVIC 2-95, Change-2.

EXISTING VESSELS

With existing vessels, the owner or operator applies for enrollment by submitting an Application for Inspection of U.S. Vessel (Form CG-3752) to the Officer in Charge, Marine Inspections (OCMI), indicating their desire to have their vessel participate in the ACP. The USCG will subsequently authorize the ABS Program Manager and the local ABS Survey Office to commence the process. A "Hand Over Survey," discussed later in this text, will be scheduled at a mutually-convenient time. Upon completion of this Survey, the owner/operator will receive official notification from the USCG indicating the enrollment status.

RE-FLAGGING

For vessels intending to re-flag to U.S. Flag, it is envisioned that:

- a) for existing vessels intended to be certificated under the U.S. flag for the first time, the Supplement will apply in a similar manner to other vessels but with additional requirements or changes.
- b) NVIC 10-81, Change -1 is the guiding document for re-flagging.
- c) the USCG accepted Vessel Deficiency Report or “Gap Analysis” augments the definition of the standards applied to the specific vessel.

HOW TO WITHDRAW

In order to withdraw from ACP, the owner is to advise the USCG in writing. If this is agreeable to the USCG, all data applicable to the vessel during the time period the vessel was enrolled in the program will be forwarded to the USCG for incorporation into the USCG computer files. Upon completion of the information transfer, the owner would then continue the required inspections directly under the jurisdiction of the USCG.

HAND OVER SURVEY

For all vessels, a “Hand Over Survey” must take place. The mandatory annual surveys for the SOLAS Cargo Ship Safety Construction Certificate, Safety Equipment Certificate and the MARPOL Certificates are conducted at this time, along with any surveys required for certificates due for renewal or annual classification surveys. The USCG will confirm that the history of the vessel has been properly entered into the ABS Status System. Then the ABS Surveyors and USCG Marine Inspectors will agree on the resolution of any CG-835s and outstanding requirements. At this time, the USCG will confirm to ABS that the vessel is in compliance with all applicable federal regulations or advise on those areas that must be corrected. The ABS Surveyor and the USCG Marine Inspector will then complete the ABS Record of Safety Equipment. This record will ensure that the requirements of the USCG continue. The Record of Safety Equipment is to be a permanent part of the vessel’s documents.

WHAT HAPPENS WITH THE CERTIFICATE OF INSPECTION?

An ACP vessel will still have a COI. However, it will be distinctively different in that it will not contain details of life-saving appliances and fire-extinguishing equipment. The ABS Status will contain the major details of the vessel.

WHAT HAPPENS IF THE VESSEL IS DAMAGED?

It is the responsibility of the vessel’s Master to report a marine casualty or accident, as defined in 46 CFR 4.03 to the cognizant USCG OCMI. ABS takes the lead in determining “Fitness to Proceed” and is obliged to share this with the local OCMI. If the vessel poses a pollution threat to the environment, such as a Class I structural failure, the local OCMI will take precedence. This decision must be coordinated with the ABS Surveyor in Charge.

REPORTABLE CASUALTY

A marine casualty or accident means a casualty or accident involving any vessel within the navigable waters of the U.S., its territories or possessions, or any casualty or accident involving a US Flag vessel anywhere in the world. This definition of marine casualty or accident does not pertain to public vessels. The situations requiring reporting are contained in 46 CFR 4.05-1.

Immediately after addressing all resultant safety concerns, the owner, agent, master, operator, or person in charge, shall notify the nearest OCMI whenever a vessel is involved in a marine casualty as described in 46 CFR 4.05-1.

In addition to the above notification to the USCG, the owner, agent, master, operator or person in charge shall notify the nearest ABS office of any damages, failures, deterioration or repairs to hull, machinery or

equipment, which affects or may affect classification or certification, and request an ABS Surveyor to attend the vessel at the first opportunity.

HOW TO HANDLE FORM CG-835

The USCG may issue deficiencies on Form CG-835 in conjunction with its inspections when there is no ABS surveyor onboard or available to attend in which case the ABS Surveyor would normally issue the deficiency. When the USCG Marine Inspector issues the CG-835, the original will be provided to the vessel's Master or authorized representative, and the USCG Marine Inspector will make a copy available to the local ABS office. The local ABS surveyor will enter the USCG deficiency into the ABS vessel's survey status as an outstanding recommendation when it affects class and statutory certificates, or as a deficiency when it affects only the statutory certificates. The OCMI may accept a report of an ABS surveyor as proof of completion of an outstanding CG-835. The ABS Surveyor will specifically report on clearing of any CG-835 recommendations/deficiencies in a narrative report and forward one copy of the report to the local OCMI to allow USCG records to be updated. Without the written consent of the OCMI, ABS Surveyors cannot extend or modify recommendations/deficiencies that were initially reported on Form CG-835 by USCG Marine Inspectors.

NO SAIL ITEMS

This is a term normally used by the USCG when the condition of a vessel is suspect, has deteriorated, or has sustained excessive damages such that there is a direct and immediate threat to the vessel's crew, the safety of navigation or the marine environment. ABS has the same concerns, however, the ABS terminology differs. ABS defines no sail items in various sections of the ABS Process Instructions. ABS does not use the term "Seaworthy." The term used in ABS is "Fitness to Proceed." A vessel is not considered "Fit to Proceed" if it has suffered structural damage that affects the longitudinal strength of the vessel or its watertight integrity. It also applies if the vessel has lost propulsion, steering or electrical generation capacity, including redundant systems.

Any of the foregoing would generate a report of noncompliance with the ABS Rules and be listed as an "Outstanding Recommendation." Conversely, if the problem lies with SOLAS or MARPOL items, it would be listed as a "Deficiency." Examples of deficiencies that would prevent a vessel from sailing are: (1) Loss of life-saving appliances such as life boats; (2) Lack of life-saving appliances; or (3) Failure of critical parts of the fire-extinguishing system. Examples of "No Sail" items are inoperable fire pumps or depleted fixed fire-extinguishing systems. On occasion, an item that is a deficiency will also be an outstanding recommendation against Class. The emergency fire pump is such an item. A suitable emergency fire pump is required for both Class and SOLAS Safety Equipment Certificates to be issued and/or remain valid.

OUTSTANDING RECOMMENDATIONS (OSR)

This is the term used by ABS to define areas of noncompliance with the Rules. Classification is maintained by a series of Annual Surveys and Periodical Surveys that allow the Class Society an opportunity to survey a vessel and maintain a record of its compliance with the Rules. It also allows ABS to confirm that the owner is maintaining the vessel in a satisfactory condition. A single Outstanding Recommendation may not necessarily affect the Class of the vessel. Consideration is given to allow time to make corrections or to reach a more appropriate port. A number of Outstanding Recommendations or a major Outstanding Recommendation may be sufficient to question the "fitness of the vessel to proceed."

WHAT HAPPENS IF ANNUAL OR SPECIAL SURVEYS MUST BE EXTENDED?

ACP survey extensions must be processed through the Survey Manager, ABS Americas. The maximum survey extension will be three months and shall not alter the baseline date for the survey concerned. Except for the Special Surveys, all other surveys have windows of time in which they are to be completed. A series of letters are sent to the owner advising of due dates and overdue dates. Provided

there are no special circumstances to consider, the Class of the vessel is in jeopardy and will be canceled 90 days after the due date.

DRYDOCKING EXTENSIONS

Regardless of the circumstances, the USCG retains the ultimate authority for granting drydocking extensions of 90 days or more to ACP vessels. Under exceptional circumstances, ABS allows extensions of drydockings. The vessel must have no record of a grounding since the last drydocking, and a Survey must be conducted. For a 30-day extension, a general examination of the vessel is conducted. For extensions of 31 days up to 90 days, a modified Under Water Survey In Lieu of Drydocking (UWILD) is required. In the modified survey, a record of the examination is made on photographs. The diver has a free swim of the bottom. Extensions of 90 days up to one year are normally done to allow the vessel's surveys to be harmonized with IMO requirements, but must be approved by the USCG. A one-year extension requires a full UWILD, including two-way voice and video communications between the Surveyor and the diver. It would be considered unusual to do a one-year extension under any other circumstances.

UNDER WATER SURVEY IN LIEU OF DRYDOCKING

An ACP UWILD guide was developed for vessels enrolled in ACP. Guidance for Underwater Surveys In Lieu of Drydocking for vessels enrolled in the Alternate Compliance Program is included in NVIC 2-95, Change 2, Enclosure (3), which also refers to NVIC 01-89.

DRYDOCKING INSPECTION INTERVALS FOR PASSENGER VESSELS

For passenger vessels on international voyages, the CG has determined that the intervals for drydock inspections will be as specified under 46 CFR 71.50-3(a) which dictates drydocks and internal structural exams be conducted annually. Passenger vessels which have enrolled in the Coast Guard Underwater Survey in Lieu of Drydocking(UWILD) program may undergo drydocks on a twice in five year schedule with annual UWILDs in the intervening years.

For required internal structural exams, all tanks must be inspected annually; however, to accommodate vessel sailing schedules and surveyor availability, the class society may work with the attending Officer in Charge, Marine Inspection to develop a schedule to inspect a percentage of tanks at intervals throughout the year so that all tanks are inspected before the end of that period. At no time shall the period of internal inspection exceed twelve month.

OVERSIGHT

The USCG retains responsibility to ensure that vessels meet all regulatory requirements and maintain an active and viable oversight by the ABS.

The ABS's World Wide ISO 9001:2000 Certified Quality System can aid in this oversight. As with any successful quality system, it is a smoothly functioning in-service process verification scheme. It provides a source of continuous and timely opinion related to the effectiveness of the processes in place to meet customer requirements. An added benefit is the information it provides to both clients and management to prove that controlled work is being accomplished. It provides a framework that can be used in the USCG oversight program for delegated responsibilities.

Oversight will consist of internal and external audits of ABS by the USCG. It will also consist of annual boardings of the vessels to verify continued compliance with the issued certificates. The boardings will be similar to those done in Port State Inspections. A check sheet describing the considerations to expand the boardings is a part of the USCG Marine Safety Manual, Volume II, Section B Chapter 9. USCG oversight activities also include periodic oversight reexaminations, attendance at dockings, new construction visits, attendance at UWILD surveys, evaluation of plan review activities and attendance at ISM Code audits.

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I. SUPPLEMENTAL REQUIREMENTS TO CURRENT ABS RULES

Cite: 1-1-5/1 Other Regulations – General

Cargo Gear is to be certified in accordance with the ABS ‘Requirements for Certification of Construction and Survey of Cargo Gear on Merchant Vessels, 1975 or the Guide for Certification of Cranes, 1991 as applicable for the type of cargo gear being provided.

As an alternative, evidence of approval by the International Cargo Gear Bureau may be submitted.

Cite: 3-3-1/3.1 Intact Stability

Intact stability for cargo and passenger vessels is to comply with the applicable parts of Subchapter S. It has been determined that IMO Resolution MSC.267(85), “International Code on Intact Stability, 2008” (2008 IS Code) is equivalent to the intact stability requirements of Subchapter S. Where the intact stability requirements contained in IMO Resolution MSC.267 (85) are used, the Regulations contained in Subparts B, Lifting, and E, Towing, of Subchapter S are also to be satisfied, where applicable. All recommendations that appear in the 2008 IS Code on Intact Stability are required and considered mandatory.

Cite: 3-3-1/3.3 Damage Stability

Relative to damage stability, please note that all dry cargo vessels over 80 meters in length that change flag to US shall be considered to be new vessels for compliance with the probabilistic damage stability regulations in SOLAS, 1974, as amended, Chapter II-1, regardless of the actual build date.

Cite: 4-1-1/31 Boilers and Pressure Vessels and Heat Exchangers

Boilers, pressure vessels and heat exchangers are to comply with the requirements specified in 4-4-1 of the 2013 ABS Steel Vessels Rules or the ASME Code. Boilers, pressure vessels and heat exchangers manufactured to any other standard will be considered on a case-by-case basis in coordination with the Marine Safety Center (MSC).

Cite: 4-2-1/7.1 Internal Combustion Engines and Reduction Gears – Fuel-Oil Injection System – Strainers

Strainers are to be provided in accordance with 4-6-5/3.3.4 and 4-6-4/13.7.5 of the Steel Vessels Rules.

Cite: 4-2-1/9.9 Internal Combustion Engines and Reduction Gears – Lubricating Oil Systems – Filters

Filters are to be provided in accordance with 4-6-5/5.3.6 and 4-6-4/13.7.5 of the Steel Vessels Rules.

Cite: 4-3-3/11 Steering Gear – Control System

The main steering gear is to be provided with full follow-up control in the pilothouse. Follow-up control means closed-loop (feedback) control that relates the position of the helm to a specific rudder angle by transmitting the helm-angle order to the power actuating system and, by means of feedback, automatically stopping the rudder when the angle selected by the helm is reached.

Cite: 4-3-3/11.9 Steering Gear – Instrumentation and Alarms

This requirement applies to each vessel of 1600 gross tons and over that has power driven main or auxiliary steering gear.

The steering failure alarm system must be independent of each steering gear control system, except for the input received from the steering wheel shaft.

The steering failure alarm system must have audible and visible alarms in the pilothouse when the actual position of the rudder differs by more than 5° from the rudder position ordered by the follow-up control systems for more than:

- (a) 30 seconds for ordered rudder position changes of 70°,
- (b) 6.5 seconds for ordered rudder position changes of 5°, and
- (c) The time period calculated by the following formula for ordered rudder position changes between 5° and 70°:

$$t = (R/2.76) + 4.64$$

Where:

t = maximum time delay in seconds

R = ordered rudder change in degrees (°)

Each steering failure alarm system must be supplied by a circuit that is independent of other steering gear systems and steering alarm circuits.

**Cite: 4-3-5/15 Dynamic Positioning System
(SVR)**

- (a) Dynamic positioning systems on vessels of more than 500 gross tons must comply with the requirements of cite 4-9-1/7 (SVR) of this Supplement.
- (b) Regardless of vessel tonnage, dynamic positioning systems on vessels of more than 500 gross tons must complete the Failure Mode and Effects Analysis (FMEA) in 4-3-5/15.4 (SVR) and the schedule of tests to demonstrate the level of redundancy established in the FMEA must comply with the criteria for Quantitative Failure Analysis (QFA) and Design Verification Test Procedures of Cite 4-9-1/7 (SVR) of this Supplement. The FMEA and the schedule of tests must be submitted, reviewed and approved in advance of the test date.
- (c) Upon completion and installation of the Dynamic Positioning System complete performance test required as per 4-5-3/15.13.2 (SVR) to the Surveyor's satisfaction at the sea trials.

**Cite: 4-4-1/1 Construction and Installation – General Requirements – Vessels Subject to
Damage Stability Requirements**

Vessels subject to damage stability requirements are to comply with 4-6-4/3.11 (Gravity Drain Piping), 4-6-4/5.5.12 (Bilge Piping), 4-6-4/7.5.3 (Ballast Piping) and 4-6-4/9.1.3 (Vents, Sounding and Overflow Piping) of the Steel Vessels Rules, as applicable.

Cite: 4-4-2/7 Pumps and Piping Systems – Plastic Pipes

Pipes and piping components made of thermoplastic or thermosetting plastic materials, with or without reinforcement, are to conform to IMO Res. A.753(18). Piping required to meet flame, fire endurance, and/or smoke generation/toxicity requirements of A.753(18) must be USCG type approved. In lieu of meeting the smoke and toxicity requirements of A.753(18), plastic pipe located in concealed areas of an accommodation, control or service space must meet one of the following: (1) The trunk or duct containing the plastic pipe must be completely surrounded by 'A' class divisions; or (2) the concealed space containing the pipe must be fitted with an approved smoke-detection system, and penetrations of a bulkhead or deck and each draft stop installation shall maintain the integrity of fire divisions.

Cite: 4-4-2/11 Piping Systems – Metallic Piping- Valves

Valves employing resilient materials and installed at the following locations must meet the requirements for a Category A valve:

- (a) Vital piping system manifolds; and
- (b) Closure for any opening in the shell of the vessel.

Cite: 4-4-3/9.5 Pumps and Piping Systems – Vent Pipes – Size

The diameter of each vent pipe must not be less than 38 mm (1-1/2 in) nominal pipe size for fresh water tanks, 51 mm (2 in) nominal pipe size for water ballast tanks, and 64 mm (2-1/2 in) nominal pipe size for fuel oil tanks, except that small independent tanks need not have a vent more than 25% greater in cross-sectional area than the fill line.

Cite: 4-4-4 Fuel Oil and Lubricating Oil Systems and Tanks

Any vessel intending to use natural gas as a fuel, or any fuel cell installation, must receive approval of engineering system plans from the Marine Safety Center.

Cite: 4-4-4/1.3 Pumps and Piping Systems – Piping, Valves and Fittings

The use of heat sensitive materials is prohibited in piping systems conveying flammable or combustible products. Heat sensitive materials are those having a solidus melting point below 927° C (1700° F).

Cite: 4-4-7/3.1 Pumps and Piping Systems – Cargo Piping System

The provisions in 4-4-7/3.1 of the Rules, which permit the unrestricted routing of cargo piping through ballast tanks for vessels less than 5000 tons deadweight, is not be acceptable on U. S. flagged vessels.

The requirements of 4-4-4/3.7 of the Rules for positive closing valves to be fitted on pipes emanating from fuel oil tanks which are subject to a static head of oil are also applicable to pipes from cargo oil tanks which are subject to a static head of oil.

Cite: 4-4-7/5.5 Pumps and Piping Systems – Ballast System

The provisions in 4-4-7.5.5 of the Rules, which permit the unrestricted routing of ballast piping through cargo tanks for vessels less than 5000 tons deadweight, is not be acceptable on U. S. flagged vessels.

Cite: 4-4-7/5.9 Pumps and Piping Systems – Cargo Systems – Cargo Heating Systems

A thermal fluid heater must be fitted with a control which prevents the heat transfer fluid from being heated above its flash point.

Cite: 4-4-7/5.19 Pumps and Piping Systems – Cargo Systems – Cargo Vapor Emission Control Systems**5C-1-7/21
(SVR)**

In addition to meeting the requirements in ABS Steel Vessels Rules 5C-1-7/21 for Cargo Vapor Emission Control Systems:

- (a) Personnel training should be verified.
- (b) Connections on hoses and manifolds must be properly marked with a yellow band 0.8 m (2.64 ft) long between two red bands 0.1 m (.33 ft) long with the word “VAPOR” in black letters at least 50 mm (2 in) high on the yellow band.
- (c) The venting capacity of an installed P/V breaker shall not be included when calculating the maximum venting capacity for a vessel.

Note: Oil Companies International Marine Forum Recommendation for Oil Tanker Manifolds and Associated Equipment, 4th Ed., has an alternative marking arrangement for vessel manifolds that is acceptable. The difference is that reducers on manifolds, where they are used, are lettered (at 2 o'clock and 10 o'clock) with the word “vapor”. That word does not need to be painted on the last meter of pipe that is before the flange.

- (d) Manifold flanges should have a stud and the hose/loading arm flange should have a hole.
- (e) Markings for overfill protection outside the control room should be in 50 mm (2 in) high black letters on a white background.
- (f) Each cargo tank shall have arrangements that allow oxygen measurements to be taken at a point 1m (3.3 ft) below the tank top and from a point at half the ullage prior to cargo transfer when cargo vapor is collected by a facility that requires the vapor from the vessel to be inerted, or when cargo vapor is transferred between vessels during lightering or topping off operations with vapor balancing.

Cite: 4-5-1/3.5 Fire Extinguishing Systems – Fire Pumps, Fire Mains, Hydrants and Hoses – Fire Main

Fire mains may not be used for other than fire, deck wash or tank cleaning services unless specific provisions are included in the system design which ensure that system availability and performance requirements to fight shipboard fires are not compromised.

All distribution valves in the fire main system shall be distinctly marked to indicate the compartments or parts of the vessel to which they lead.

Material selection for piping and components shall be in accordance with 46 CFR 56.60 or ASTM F1155. Brass or bronze materials may be used in accordance with these standards.

Only USCG acceptable category “A” valves may be used in firemain system manifolds.

Cite: 4-5-2/11.3 Fire Safety Systems – Fire-extinguishing Systems and Equipment – CO₂ Systems

CO₂ systems, installed or altered after July 9, 2013, protecting spaces containing more than 6,000 cubic feet will require lockout valves. During maintenance or testing of these systems, the master or person-in-charge must ensure that the valve is locked in the closed position in order to prevent its accidental discharge during those times of heightened risk to personnel. At all other times, the lockout valve shall be locked in the open position.

All CO₂ systems installed or altered after July 9, 2013, will need odorizers. In the event of a leak or inadvertent discharge of the system, these units will inject a wintergreen scent into the area where CO₂ is present in order to alert personnel to the presence of this asphyxiant gas.

Cite: 4-6-2/5.5.2 Electrical Installations – Shipboard Systems – Emergency Services – Power Supply – Generator

A stop control for an emergency generator must only be in the space that has the emergency generator, except a remote mechanical reach rod is permitted for the fuel oil shutoff valve to an independent fuel oil tank located in the space.

Cite: 4-6-2/5.9, 5.16 Electrical Installations – Shipboard Systems – Emergency Switchboard and Use of Emergency Generator in Port

Each bus-tie between a main switchboard and an emergency switchboard must be arranged to prevent parallel operation of the emergency power source with any other source of electric power, except for interlock systems for momentary transfer of loads.

If there is a reduction of potential of the normal source by 15 to 40 percent, the final emergency power source must start automatically without load. When the potential of the final emergency source reaches 85 to 95 percent of normal value, the emergency loads must transfer automatically to the final emergency power source. When the potential from the normal source has been restored, the emergency loads must be manually or automatically transferred to the normal source, and the final emergency power source must be manually or automatically stopped.

The emergency generator may not be used during lay time in port, unless approved by the Marine Safety Center.

Cite: 4-6-2/3.1.6 Electrical Installations – Shipboard Systems – System Arrangement

Time for starting and connection to the main switchboard must be both not more than 30 seconds and less than the time to start and connect the emergency generator to the emergency switchboard.

Cite: 4-6-2/13.3 Electrical Installations – Shipboard Systems – Navigation Light System

Each navigation light must meet the following:

- (a) Meet the technical details of the applicable navigation rules.
- (b) Be certified by an independent laboratory to the requirements of UL 1104 or an equivalent standard.

- (c) Be labeled with a label stating the following:
- (1) “MEETS _____.” (Insert the identification name or number of the standard under paragraph (b) above to which the light was tested.)
 - (2) “TESTED BY _____.” (Insert the name or registered certification mark of the independent laboratory that tested the fixture to the standard under paragraph (b) above.)
 - (3) Manufacturer’s name.
 - (4) Model number.
 - (5) Visibility of the light in nautical miles.
 - (6) Date on which the fixture was Type Tested.
 - (7) Identification of the bulb used in the compliance test.

Cite: 4-6-2/15.1.2 Electrical Installations – Shipboard Systems – Engine Order Telegraphs

On a vessel with more than one propulsion engine, each engine must have an engine order telegraph.

On a double-ended vessel that has two navigating bridges, this system must be between the engine room and each navigating bridge.

On vessels equipped with pilothouse control, each local control station in the engine room must have an indicator if the local control station is not immediately adjacent to the engine room control station.

Engine order telegraph and remote propulsion control systems must be electrically separate and independent, except that a single mechanical operator control device with separate transmitters and connections for each system may be used.

Each vessel with navigating bridge throttle control must have a positive mechanical stop on each telegraph transmitter that prevents movement to the “Navigating Bridge Control” position without positive action by the operator.

Electric Engine Order Telegraph System

Where two or more transmitters, located on or on top of, or on the wings of, the navigating bridge operate a common indicator in the engine room, all transmitter handles and pointers must operate in synchronism or operate under the control of a transmitter transfer control as described below. Where the transmitters are mechanically interlocked to effect synchronous operation, a failure of a wire or chain at any transmitter must not interrupt or disable any other transmitter.

- Transmitter Transfer Control System: Except for a transmitter in an unattended navigating bridge on a double-ended vessel, each transmitter must operate under the control of a transmitter transfer control so that movement of any one transmitter handle automatically connects that transmitter electrically to the engine room indicator and simultaneously disconnects electrically all other transmitters. The reply pointers of all transmitters must operate in synchronism at all times.

On a double-ended vessel that has two navigating bridges, a manually operated transfer switch which will disconnect the system in the unattended navigating bridge must be provided.

Each electric engine order telegraph system must have transmitters and indicators that are electrically connected to each other.

Each engine room indicator must be capable of acknowledgment of orders.

Each system must have an alarm on the navigating bridge that automatically sounds and visually signals a loss of power to the system. The alarm is to be provided with means to reduce the audible signal from 100 percent to not less than 50 percent.

Mechanical Engine Order Telegraph System

Each mechanical engine order telegraph system must consist of transmitters and indicators mechanically connected to each other.

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.

If more than one transmitter operates a common indicator in the engine room, all transmitters must be mechanically interlocked and operate in synchronism. Where the transmitters are mechanically interlocked to effect synchronous operation, a failure of a wire or chain at any transmitter must not interrupt or disable any other transmitter.

Cite: 4-6-2/15.5.3 Electrical Installations – Shipboard Systems – Electric Systems

A sound-powered telephone system or other reliable voice communication method must be installed that is independent of the vessel's electrical system (Ref: 46 CFR 113.30-3(b)).

Cite: 4-6-3/5.1.7 Electrical Installations – Shipboard Installations – Paint on Cables

Painting of cables is not permitted.

Cite: 4-6-3/11 Electrical Installations – Shipboard Installations – Equipment and Installation in Hazardous Areas

Electrical installations in hazardous locations must comply with one of the following:

- (a) Equipment required to be identified for Class I locations in NFPA 70 (NEC) Articles 500 through 504 must be tested and listed by an independent laboratory to ANSI/UL 913 or ANSI/UL 1203.
- (b) Equipment required to be identified for Class I locations must be tested and listed by an independent laboratory to one or more of the types of protection in ANSI/ISA Series of standards incorporated in NFPA 70 Article 505.
- (c) Equipment must be tested or approved to the referenced IEC 60079 Series of standards in 46 CFR 111.105 and listed or certified under the IECEx scheme by an independent laboratory. Certification under the ATEX scheme is not acceptable. See Section II/Cite: II-1/45 of this Supplement.

Note: An independent laboratory means a laboratory that is accepted by the Commandant under 46 CFR Part 159 for the testing and listing or certification of electrical equipment.

Intrinsically safe systems or associated apparatus must meet the following “Ex ia” for Zones 0 and 1 (Class I, Division 1).

Cite: 4-6-4/7.15.4 Electrical Installations – Machinery and Equipment – Emergency Switchboards – Equipment and Instrumentation

Each AC switchboard must have a voltage regulator functional cut-out switch for transferring from automatic to manual control mode and a manual control rheostat for exciter field.

A static exciter is prohibited by 46 CFR 111.12-3 for the emergency generator, unless the generator is provided with a permanent magnet or residual magnetism type exciter that has the capability of voltage build-up after two month of no operation.

Cite: 4-6-6/1 Electrical Installations – Specialized Vessels and Services – Oil Carriers

Hazardous area installations must comply with Cite II-1/45 of Section II.A of this Supplement. ABS SVR 4-6-6, Table 1 is modified as necessary to comply with Cite II-1/45.

Cite: 4-6-6/9.1 Electrical Installations – Specialized Vessels and Services – Gas Carriers

Hazardous area installations must comply with Cite II-1/45 of Section II.A of this Supplement. ABS SVR 4-6-6, Table 1 is modified as necessary to comply with Cite II-1/45.

Cite: 4-6-6/9.3 Electrical Installations – Specialized Vessels and Services – Chemical Carriers

Each vessel that carries liquid sulfur cargo or inorganic acid cargo must meet the requirements of 4-6-6/1 of ABS SVR and Cites 4-4-7/5.19 and 4-6-6/1 above for a vessel carrying oil with a flashpoint not exceeding 60° C (140° F), except that a vessel carrying carbon disulfide must have only intrinsically safe electric equipment in cargo tanks, cargo handling rooms, enclosed spaces, cargo hose storage spaces, spaces containing cargo piping and hazardous locations in the weather.

Cite: 4-9-1/7 (SVR) Remote Propulsion Control and Automation – General – Required Plans and Data

The degree of remote propulsion control and automation is to be based on the level of manning intended for the propulsion machinery space.

One copy of a qualitative failure analysis must be submitted for propulsion controls, microprocessor-based system hardware, safety controls, automated electric power management, automation required to be independent that is not physically separate and any other automation that in the judgment of the reviewing authority potentially constitutes a safety hazard to the vessel or personnel in case of failure. The QFA should enable the designer to eliminate single points of failure.

Note: The qualitative failure analysis is intended to assist in evaluating the safety and reliability of the design. It should be conducted to a level of detail necessary to demonstrate compliance with applicable requirements and should follow standard qualitative analysis procedures. Assumptions, operating conditions considered, failures considered, cause and effect relationships, how failures are detected by the crew, alternatives available to the crew, and necessary design verification tests

should be included. Questions regarding failure analysis should be referred to the reviewing authority at an early stage of design.

A Design Verification test is to be performed once, immediately after the installation of the automated equipment or before issuance of the initial Certificate of Inspection (COI) (and thereafter whenever major changes are made to the system or its software), to verify that automated systems are designed, constructed and operate in accordance with the applicable ABS rules and requirements of this supplement. The purpose of design verification testing is to verify the conclusions of the QFA. The Design Verification Test Procedure (DVTP) is therefore an extension of the QFA and the two may be combined into one document. The DVTP should demonstrate that all system failures are alarmed and that all switchovers from a primary system component to a back-up component are also alarmed.

Periodic Safety tests must be conducted annually to demonstrate the proper operation of the primary and alternate controls, alarms, power sources, transfer override arrangements, interlocks and safety controls. Systems addressed must include fire detection and extinguishing, flooding safety, propulsion, maneuvering, electric power generation and distribution and emergency internal communications. Table 1 of Section 4-9-2 of ABS SVR, Table 2 of 4-9-3 and Tables 3 through 8 of 4-9-4, as applicable to the vessel's installed machinery and level of manning, should be used as a guide in developing the Periodic Safety Test Procedure (PSTP).

Design Verification and Periodic Safety test procedures are to be submitted for approval and retained aboard the vessel. Test procedure documents must be in a step-by-step or check off list format. Each test instruction must specify equipment status, apparatus necessary to perform the tests, safety precautions, safety control and alarm set points, the procedure to be followed, and the expected test result. Test techniques must not simulate monitored system conditions by maladjustment, artificial signals, improper wiring, tampering, or revision of the system unless the test would damage equipment or endanger personnel. Where a test meeting the restrictions on test techniques will damage equipment or endanger personnel, an alternative test method shall be proposed together with an explanation of why it is an equivalent test.

It is important to remember that the DVTP tests the response of the automation system to component failures within the system as predicted by the QFA and that the PSTP tests the performance of the automation system, its sensors, alarms, and actuators, and the interconnecting wiring. The design verification and periodic safety tests are to be witnessed by the surveyor. The OCMI must be notified prior to testing and may choose to attend these tests to verify that vital system automation is appropriate to the level of manning requested on the vessel's COI.

Where it is intended to obtain USCG certification for a minimally attended machinery space, the ABS ACC requirements as well as the additional Cites contained in this Supplement are applicable.

Where it is intended to obtain USCG certification for an unattended machinery space, the ABS ACCU requirements as well as the additional Cites contained in this Supplement are applicable.

Note: It is the Owner's responsibility to advise ABS as to the level of manning of the propulsion machinery space that will be requested from the USCG.

Vessels with minimally attended or periodically unattended machinery plants must have a planned maintenance program to ensure continued safe operation of all vital systems. The program must include maintenance and repair manuals for work to be accomplished by maintenance personnel and check off lists for routine inspection and maintenance procedures.

The planned maintenance program must be functioning prior to the completion of the evaluation period for reduced manning.

Maintenance and repair manuals must include details as to what, when and how to troubleshoot, repair and test the installed equipment and what parts are necessary to accomplish the procedures. Schematic and logic diagrams must be included in this documentation. Manuals must clearly delineate information that is not applicable to the installed equipment.

A set of USCG approved automation testing procedures shall be maintained on board and made available upon request.

**Cite: 4-9-1/5.1.10 Remote Propulsion Control and Automation – General – Safety Systems
4-9-1/9.9 (SVR)**

Safety systems must not operate as a result of failure of the normal electric power source unless it is determined to be the failsafe state.

**Cite: 4-9-2/1 & 3 Remote Propulsion Control and Automation – Remote Propulsion
(SVR) Control – Application – System Requirements**

Sensors for the primary speed, pitch or direction of rotation control in closed loop propulsion control systems must be independent and physically separate from required safety, alarm or instrumentation sensors.

**Cite: 4-9-2/5 (SVR) Remote Propulsion Control and Automation – Remote Propulsion
Control – Control on Navigation Bridge**

An alarm to indicate starting capability of less than 50 percent of the requirement total starting capacity must be provided.

Cite: 4-9-3/1 (SVR) Remote Propulsion Control and Automation – ACC – General

Propulsion control from the Navigating Bridge is to be provided.

**Cite: 4-9-3/3 (SVR) Remote Propulsion Control and Automation – ACC/ACCU –
System Requirements**

A personnel alarm must be provided and must annunciate on the Navigating Bridge if not routinely acknowledged at the centralized control station or in the machinery spaces.

**Cite: 4-9-3/9 (SVR) Remote Propulsion Control and Automation – ACC/ACCU –
Monitoring in Centralized Control Station**

All required alarms must annunciate throughout the Centralized Control Station and the machinery spaces.

Cite: 4-9-3/13.9.1, 4-9-4/3.7, 15.1, & 4-8-2/3.11 (SVR) Remote Propulsion Control and Automation – ACC/ACCU – Continuity of Power – Starting Generators – Power Supply and Single Generator Operation

ACC - The Engineering Control Center must include the controls and instrumentation necessary to place the ship service and propulsion generators in service in 30 seconds.

Cite: 4-9-3/15.5.1 (SVR) Remote Propulsion Control and Automation – ACC/ACCU – Fire Detection and Alarm Systems

The fire detection and alarm system of approved type must activate all alarms at the Centralized Control Station, the Navigating Bridge, and throughout the machinery spaces and engineers' accommodations.

Cite: 4-9-3/15.5.2 (SVR) Remote Propulsion Control and Automation – ACC/ACCU – Propulsion Machinery Space – Fire Safety – Fire Main System

The Centralized Control Station must include control of the main machinery space fire pumps. Where one or more fire pumps is required to be independent of the main machinery space, at least one of such pumps must be controlled from the Navigating Bridge. See Section II/Cite II-2/7.2.

All required fire pump remote control locations must include the controls necessary to charge the fire main and

1. A fire main pressure indicator; or
2. A fire main low pressure alarm.

Cite: 5C-1-1/1.13 (SVR) Vessels Intended to Carry Oil in Bulk – Pressure Vacuum Valves

Pressure vacuum relief valves and high velocity vent valves installed on tank vessels must be USCG approved equipment.

Cite: 5C-1-7/11.11.2 (SVR) Cargo Tank Venting/Protection for Tank Overpressurization/PV Valve Setting

The calculations submitted to show that the cargo tanks will not be subjected to a pressure or vacuum in excess of their design pressure must also show that the P/V valve setting will not be exceeded.

Cite: 5C-8-5/1 (SVR) Vessels Intended to Carry Liquefied Gases in Bulk – Process Pressure Vessels and Liquid, Vapor, and Pressure Piping Systems

Cargo containment systems and piping systems carrying nitrogen, other than for deck tanks and their piping systems, must be USCG approved equipment.

Safety relief valves for liquefied compressed gas service must be USCG approved equipment.

Cite: 5C-8-19 (SVR) Vessels Intended to Carry Liquefied Gases in Bulk – Summary of Minimum Requirements – Explanatory Notes to the Summary of Minimum Requirements

A liquefied gas not included in the table in 5C-8-19 of ABS Rules must have USCG approval in order to be carried in bulk in U.S. waters.

Cite: 5C-9-5/2 (SVR) Vessels Intended to Carry Liquefied Gases in Bulk – Piping Fabrication and Lining Details

Hoses must have either full threaded connections; ANSI/ASME B16.2, 16.24, or B16.31 flanges; or Class 1 quick connect couplings that meet ASTM F1122 and marked “C1-1.” The hose should be marked with the date of manufacture and be in good condition (no loose covers, kinks, bulges, soft spots, or gouges/cuts which penetrate the hose reinforcement.) The hose should also be marked with the date of its last inspection, which should be conducted with the hose in a straight, flat, horizontal position and include a static pressure test at the maximum operating pressure.

Cite: 6/5.5 Vessels Intended to Carry Passengers – Automatic Sprinkler Systems (Passenger Vessel Guide)

Automatic sprinkler systems are to comply with National Fire Protection Association (NFPA) Standard 13-1996. Also see Section II, Cite II-2/10.6 and FSS Code Chapter 8 for additional requirements.

Where FSS Code and NFPA 13 have similar requirements, the higher standard is to be satisfied. Note that minimum design area required by SOLAS is 280 m² (3,013 ft²).

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C. Life-Saving Appliances and Arrangements (This supplement entry is intended to add clarity to the various terms used but not clearly defined in SOLAS.)

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D. Radiocommunications

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II. SOLAS INTERPRETATIONS NOT ADDRESSED BY ABS RULES

General

Equipment Approvals

Approvals of safety equipment, materials and installations are covered by regulations contained in 46 CFR 2.75. For U.S. flag vessels, specific and type approvals for fire suppression equipment, structural fire protection materials and life-saving appliances are performed by the USCG as mandated by SOLAS 1974, generally through independent laboratory testing and inspection. Provisions within the 1996 USCG Authorization Act also allow the use of equipment approved by or on behalf of other governments under certain circumstances. In the case of life-saving appliances, there must be a reciprocal agreement in place before equipment approved by that country could be used on a U.S. vessel. ACP does not change the requirements to use USCG approved materials and equipment. Therefore, class society approvals cannot be used to fulfill the obligations of the USCG, as an Administration, where type approval is required by the regulations.

The USCG approves applicable “SOLAS” lifesaving equipment using the IMO LSA Code. For fire protection items, the USCG approves “SOLAS” materials using the IMO Fire Test Procedures Code and the IMO Fire Safety Systems Code.

A Mutual Recognition Agreement (MRA) exists between the U.S. and the European Community (EC), and the U.S. and the European Free Trade Association (EFTA), which addresses a limited number of items of fire protection, lifesaving, and navigation equipment. The MRA makes it possible for a manufacturer with a European Approval (MED/wheelmark) to obtain USCG approval for certain equipment covered by the MRA. This is accomplished by permitting the “Notified Bodies” responsible for issuing approvals in Europe to issue USCG approval. Likewise, the USCG is able to issue the European Approval (MED/wheelmark) for manufacturers having a USCG approval if the item is included within the scope of the MRA. It is important to note that this MRA does not change the requirement of using USCG approved equipment and materials on U.S. Flag vessels. It allows an alternative means for obtaining USCG approval. The European Marine Equipment Directive (MED) “wheelmark” is not accepted in lieu of USCG approval. Further guidance is contained in NVIC 8-04 and NVIC 8-04 Change 1.

Fire Equipment and Arrangements

USCG type-approved materials and equipment from both U.S. and foreign sources approved in accordance with the procedures contained in 46 CFR 159 will continue to be acceptable, and those items which obtain Coast Guard approval from a “Notified Body” under the Mutual Recognition Agreement will also be acceptable.

As discussed above, the following structural fire protection materials may obtain Coast Guard approval from a “Notified Body” under the MRA:

Item	USCG Approval Category
Deck assembly	164.105
Primary deck covering	164.106
Structural insulation (“A” and “B” class)	164.107
Bulkhead panels (“B” class)	164.108
Non-combustible material	164.109
Structural ceiling	164.110
Draperies, curtains, and other suspended textiles	164.111
Interior finish	164.112
Floor coverings	164.117
Fire doors (“A” and “B” class): limited to doors without windows or with total window area no more than 645 cm ² (100 in ²) in each door leaf. Approval limited to maximum door size tested. Doors must be used with fire tested frame design.	164.136
Windows* (see note below)	164.137
Penetration seals (fire stops)	164.138
Dampers	164.139
Bedding components	164.142
Upholstered furniture	164.144
Fire door control system	164.146

*Note: The following table must be used to determine when the applicable hose stream and thermal radiation test are required for “A” and “B” class windows.

Window Dimension	Classification	Hose Stream Test Required?	Heat Flux Test Required?
≤645 cm ² (100 in ²)	A-Class	No	No
≥645 cm ² (100 in ²)	A-Class	Yes	Yes
>645 cm ² (100 in ²)	A-0	Yes	No
≤ 645 cm ² (100 in ²)	B-15	No	No
>645 cm ² (100 in ²)	B-15	No	Yes
Any dimension	B-0	No	No

Navigation Equipment Approvals for Ships

Equipment Name	USCG Approved Category*
GENERAL	
Magnetic Compass	165.101
Transmitting Magnetic Heading Device (TMHD)	165.102
Gyrocompass	165.103
Speed and Distance Indicating Device	165.105
Rate of Turn Indicator	165.106
Echo Sounding Equipment	165.107
Heading Control System	165.110
Auto-Tracking Aid	165.111
Track Control	165.112
Radar Equipment with Automatic Radar Plotting Aid (ARPA)	165.115
Radar Equipment with Automatic Tracking Aid (ARA)	165.116
Radar Equipment with Electronic Plotting Aid (EPA)	165.117
Automatic Radar Plotting Aid (ARPA)	165.120
Electronic Plotting Aid	165.121
Chart Facilities for Shipborne Radar	165.122
Electronic Chart Display and Information System (ECDIS)	165.123
ECDIS Back-up Equipment	165.124
Raster Chart Display Systems (RCDS)	165.125
Global Positioning System Equipment (GPS)	165.130
Global Navigation Satellite System Equipment (GLONASS)	165.131
Differential Global Position System (DGPS)	165.132
Differential Global Navigation Satellite System Equipment (DGLONASS)	165.133
Combined Global Position System and Global Navigation Satellite System Receiver Equipment (GPS/GLONASS)	165.134
Loran-C Equipment	165.135
Chayka Equipment	165.136
Integrated Bridge System	165.140
Integrated Navigational System	165.141
Bridge Navigation Watch Alarm System (BNWAS)	165.142
Voyage Data Recorder (VDR)	165.150
Simplified Voyage Data Recorder (S-VDR)	165.151
Automatic Identification System (AIS)	165.155
Automatic Identification System (AIS) Class B	165.156
Radar Reflector	165.160
Sound Reception System	165.165
Daylight Signaling Lamp	165.166
Gyrocompass for High Speed Craft	165.203
Long Range Identification Tracking (LRIT)	165.207
Heading Control System for High Speed Craft	165.210
Night Vision Equipment for High Speed Craft	165.251
Radar Equipment with Electronic Plotting Aid (ARPA) for High Speed Craft	165.216

For detail USCG Approval Process for the above-listed equipment please refer to NVIC 8-01, Change 2.

A. Construction – Subdivision and Stability, Machinery and Electrical Installations

Cite: II-1/43 Emergency Source of Electrical Power in Cargo Ships

There must be visible indicators in the machinery space to show when the automatically controlled emergency power source is supplying the emergency loads.

Cite: II-1/45 Precautions Against Shock, Fire and Other Hazards of Electrical Origin

“Standards not inferior to those acceptable to the Organization” means standards contained in only one of the following sources:

- (a) The requirements of 46 CFR 111.105; or
- (b) IEC 60092-502: 1999 “Electrical installations in ships – tankers” as supplemented by interpretations and additional requirements of IEC 60092-502: 1999 issued by the U.S. Coast Guard in April 2009.

B. Construction – Fire Protection, Fire Detection and Fire Extinction

Cite: II-2/3.1 Definitions – Accommodation Spaces

“A pantry containing no cooking appliances” is one which contains only low heat warming equipment, has steel furnishings and is not used as a storeroom for cleaning gear, linen supplies or any other combustible material. A dining room containing such appliances shall not be regarded as a pantry.

Cite: II-2/4.2.2.5.1 Fuel Oil Piping

The use of heat sensitive materials is prohibited in piping systems conveying flammable or combustible products. Heat sensitive materials are those having a solidus melting point below 1700° F. Limited lengths (not exceeding 76 cm) of flexible hose that have been fire and pressure tested to the requirements of ISO 15540 or SAE J1942 are acceptable.

**Cite: II-2/7.2 & Fixed Fire Detection and Fire Alarm Systems
FSS Code
Chapter 9**

Fire protection systems must be USCG approved equipment.

A conductor must not be used as a common return from more than one zone.

Each connection box that has conductors for more than one zone must be watertight.

There must be at least two sources of power for the electrical equipment of each fire detecting and alarm system. The normal source must be the main power source. The other source must be the emergency power source or an automatically charged battery. Upon loss of power to the system from the normal source, the system must be automatically supplied from the other source.

The capacity of each branch circuit providing power to a fire detection or alarm system must not be less than 125 percent of the maximum load.

Each fire detecting zone must not include spaces on more than one deck, except:

- (a) Adjacent and communicating spaces on different decks in the ends of the vessel having a combined ceiling area of not more than 279 m² (3000 ft²).
- (b) Isolated rooms or lockers in such spaces as mast houses, wheelhouse top, etc., which are easily communicable with the area of the fire-detecting circuit to which they are connected.
- (c) Systems with indicators for individual spaces.

The fire detecting zone must not contain more than 50 protected rooms or spaces.

The system must visually indicate the zone in which the alarm originated.

The detectors, the detecting cabinet and alarms must be of an approved type.

The fire detecting system must be used for no other purpose, except it may be incorporated with the manual alarm system.

A framed chart or diagram must be installed in the wheelhouse or control station adjacent to the detecting cabinet indicating the location of the detecting zones and giving operating instructions.

Cite: II-2/7.2 & Fixed Fire Detection and Fire Alarm Systems – Installation Requirements
FSS Code
Chapter 9.2.4

A sufficient number of call points must be employed such that a person escaping from any space would find an alarm box convenient on the normal route of escape.

The manual alarm system must be used for no other purpose, except it may be incorporated with the fire detecting system.

Manual fire alarm boxes shall be clearly and permanently marked “IN CASE OF FIRE BREAK GLASS” in at least 12.5 mm (1/2 in) letters.

Detector spacing shall be in accordance with the manufacturer's recommendation. Detector spacing in spaces with ceilings greater than 3 m (10 ft) must be corrected in accordance with NFPA 72E.

Cite: II-2/7.4 Fixed Fire Detection and Fire Alarm Systems – Protection of Machinery Spaces

The fire control station must include an indicating unit or a fire alarm annunciator that indicates the machinery space that is on fire.

Cite: II-2/9.2.3.1 Structural Fire Protection

Only Method IC shall be used.

Cite: II-2/9.2.3.3 Fire Integrity of Bulkheads and Deck

In accordance with 46 CFR 112.05-5(e) and in accordance with 46 CFR 92.05-15 in Subchapter I, 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.

Cite: II-2/10.2.1.5 Fire Mains and Hydrants – Number and Position of Hydrants

At each fire hose valve there shall be marked in not less than 50 mm (2 in) red letters and figure: “FIRE STATION.”

Cite: II-2/10.2.3.1 General Fire Hoses and Nozzles - General Specifications

Each section of fire hose shall be lined commercial fire hose that conforms to Underwriters’ Laboratories, Inc. Standard 19 or Federal Specification ZZ-H-451E.

Cite: II-2/10.2.3.2 Fire Hoses and Nozzles – Number and Diameter of Fire Hoses

The minimum hydrant and hose size shall be 40 mm (1.5 in.).

On passenger and cargo ships over 1500 gross tons, the minimum hydrant and hose size for interior and exterior locations is 65 mm (2.5 in). For interior locations, where 65 mm (2.5 in) hydrants and hose are required, two 40 mm (1.5 in) outlets with two 40 mm, (1.5 in) hoses supplied through a siamese connection may be substituted.

Where two 40 mm (1.5 in) hydrants and hoses are permitted in lieu of one 65 mm (2.5 in) hydrant and hose, both of the outlets operating simultaneously are to be considered as a single outlet for the purpose of complying with the minimum number of jets criteria for fire pump capacity.

Cite: II-2/10.2.3.3 Fire Hoses and Nozzles – Size and Types of Nozzles

Nozzles must be USCG approved equipment.

Cite: II-2/10.3 & FSS Code Chapter 4 Portable Fire Extinguishers – Fire Extinguishers

Fire extinguishers must be USCG type-approved equipment.

Cite: II-2/10.4 & FSS Code Chapter 5 Fixed Gas Fire-Extinguishing Systems – General

Fixed gas fire extinguishing systems must be USCG approved equipment. Cite: II-2/10.4 & Fixed Fire-Extinguishing Systems – Fixed Gas Fire –Extinguishing Systems
FSS Code Chapter 5.2.2

Carbon dioxide and clean agent systems, such as FM200, NOVEC 1230, Halon or Halon substitutes, etc., are to be USCG Type Approved. The design and installation must be in accordance with the USCG Type Approved manufacturer’s manual. Where SOLAS and the USCG Type Approved manufacturer’s manual have dissimilar requirements (such as agent required calculations) the higher standard is to be satisfied.

Markings

The control cabinets or spaces containing valves or manifolds for the various fire extinguishing systems must be marked "STEAM/CARBON DIOXIDE/CLEAN AGENT/FOAM /WATER SPRAY [as appropriate] APPARATUS" in not less than 50 mm (2 in) red letters.

**Cite: II-2/10.4.1.1.3, Fixed Pressure Water-Spraying Fire-Extinguishing Systems in
10.5 & Machinery Spaces
FSS Code
Chapter 7**

Water mist system requirements are outlined in IMO MSC/Circ.1165 for machinery spaces (total flooding), IMO Resolution A.800(19) for accommodation and service spaces, and IMO MSC.1/Circ.1387 for fixed local application firefighting systems in Category A machinery spaces. These guidelines are used in conjunction with USCG Type Approved Manuals. Water spray system requirements are found in FSS Chapter 7.

**Cite: II-2/10.8.1 Fixed Deck Foam Systems
& FSS Code
Chapter 14**

The system must be USCG approved equipment and must comply with the manufacturer's approved Design, Installation, Operation and Maintenance Manual that meets Chapter II-2, Regulation 10.8.1 of SOLAS and the following supplemental requirements:

Controls

Complete, but simple instructions for the operation of the system shall be located in a conspicuous place at or near the controls.

The deck foam system must be capable of being actuated, including introduction of foam to the foam main, within three minutes of notification of a fire.

Piping

All piping, valves, and fittings of ferrous materials shall be protected inside and outside against corrosion unless specifically approved otherwise.

All piping, valves, and fittings shall be securely supported, and where necessary, protected against injury.

Drains and dirt traps shall be fitted where necessary to prevent the accumulation of dirt or moisture.

Piping shall not be used for any other purpose than firefighting, drills and testing.

Discharge Outlets

At least one mounted foam appliance shall be provided for each required foam station.

Markings

Foam apparatus, the control cabinets or spaces containing valves or manifolds for the various fire extinguishing systems shall be distinctly marked in conspicuous red letters at least 50 mm (2 in) high "FOAM FIRE APPARATUS".

Foam Concentrates

Only foam concentrates listed in the USCG type approval shall be used.

Cite: II-2/10.5.4 Fire-Extinguishing Arrangements in Machinery Spaces – Incinerator Space

An enclosed space containing an incinerator shall be considered a machinery space of category A, and therefore, shall be provided with fire detection and fixed fire-extinguishing systems in accordance with IMO Resolution MEPC.76(40), “Standard Specification for Shipboard Incinerators” for the incinerator and waste storage spaces.

Cite: II-2/10.6 Automatic Sprinkler, Fire Detection and Fire Alarm Systems for Accommodations and Service Spaces

When fitted as additional equipment, automatic sprinkler systems are also to comply with National Fire Protection Association (NFPA) Standard 13-1996. Where SOLAS Reg. II-2/12 and NFPA Std. 13 have similar requirements, the higher standard is to be satisfied. The following supplemental requirements apply:

The sprinkler heads, alarms, dry pipe valves, and actuating mechanisms shall be listed or approved by a recognized independent testing lab.

The minimum design area required by SOLAS is 3,013 ft²

The control cabinets or spaces containing valves or manifolds shall be distinctly marked in conspicuous red letters at least 50 mm (2 in) high “AUTOMATIC SPRINKLING SYSTEM.”

Cite: II-2/10.10.3 Fireman’s Outfit

Lockers or spaces where emergency equipment is stowed shall be marked: “EMERGENCY EQUIPMENT”.

Cite: II-2/13 Miscellaneous Items

Small rooms or spaces having a secondary means of escape which is not obviously apparent shall have a suitable sign in red letters “EMERGENCY EXIT” directing attention to such escape.

Cite: II-2/13 Means of Escape

The doors giving access to either of the two required means of escape shall not be lockable, except that crash doors or locking devices, capable of being easily forced in an emergency, may be employed provided that a permanent and conspicuous notice giving instructions on how to open the door or the lock is attached to both sides of the door. This paragraph shall not apply to outside doors to deckhouses where such doors are locked by key only, and such key is under control of one of the vessel's officers.

All public spaces having a deck area of over 28 m² (301 ft²) shall have at least two exits. Where practicable, the exits shall give egress to different corridors, spaces, or rooms to minimize the possibility of one incident blocking both means of escape.

All interior stairways, other than those within the Machinery Spaces or Cargo Holds, shall have a minimum width of 0.71 m (2.33 ft). The angle of inclination with the horizontal of such stairways shall not exceed 50°.

C. Life-Saving Appliances and Arrangements (This supplement entry is intended to add clarity to the various terms used but not clearly defined in SOLAS.)

Cite: III/3 Definitions

“Accommodation” means a cabin or other covered or enclosed place intended to carry persons. Each place where passengers are carried is considered an accommodation, whether or not it is covered or enclosed. Accommodations include, but are not limited to halls, dining rooms, mess rooms, lounges, corridors, lavatories, cabins, offices, hospitals, cinemas, game and hobby rooms, and other similar spaces open to persons on board.

“Embarkation station” means the place where a survival craft is boarded.

“Fleet angle for a wire rope leading to a winch drum” means the angle included between an imaginary line from the lead sheave perpendicular to the axis of the drum and the line formed by the wire rope when led from the lead sheave to either extremity of the drum.

“Marine evacuation system” means an appliance designed to rapidly transfer large numbers of persons from an embarkation station by means of a passage to a floating platform for subsequent embarkation into associated survival craft, or directly into associated survival craft.

“Muster station” means the place where the crew and passengers assemble before boarding a survival craft.

“Seagoing condition” means the operating condition of the ship with the personnel, equipment, fluids and ballast necessary for safe operation on the waters where the ship operates.

“Survival craft” means a craft capable of sustaining the lives of persons in distress after abandoning the ship on which they were carried. The term includes lifeboats, liferafts, buoyant apparatus, and life floats, but does not include rescue boats.

“Toxic vapor or gas” means a product for which emergency escape respiratory protection is required under subchapter 17 of the International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk (IBC Code), and in subchapter 19 of the International Code for the Construction and Equipment of Ships carrying Liquefied Gases in Bulk (IGC Code).

Cite: III/4 Evaluation, Testing and Approval of Life-Saving Appliances and Arrangements

Life-saving appliances must be approved to the appropriate CFR, SOLAS or IMO standard. USCG approved products and systems are accepted regardless of country of manufacture. The USCG recognizes that with the Life-saving Appliances Code (LSA Code) there exists an acceptable IMO standard for approval.

Equipment carrying a CG approval number issued under the US-EC or US-EFTA Mutual Recognition Agreements, discussed above the “General” section, is acceptable.

In addition, life-saving equipment accepted under the reciprocal acceptance agreement with Norway, and produced in Norway, may also be used on U.S. flag vessels. A copy of the USCG acceptance letter must be provided with each piece of equipment supplied to a U.S. flag ship under this agreement.

The following approval series indicate approval to the SOLAS requirements:

160.017	Embarkation-Debarkation Ladders (only if marked “SOLAS 74/83”)*
160.040	Line-throwing appliances
160.115	Winches ***
160.117	Embarkation-Debarkation Ladders*
160.118	Rigid liferafts***
160.121	Hand red flares
160.122	Floating orange smoke signals
160.132	Davits ***
160.135	Lifeboats
160.136	Rocket parachute flares
160.150	Ring life buoys*
160.151	Inflatable liferafts***
160.155	Lifejackets
160.156	Rescue boats***
160.157	Self-activating smoke signals
160.162	Hydrostatic release units*
160.163	Liferaft launching appliance
160.170	Liferaft automatic disengaging apparatus
160.171	Immersion suits
160.174	Thermal protective aids
160.175	Marine Evacuation Systems***
160.176	Inflatable Lifejackets (SOLAS)
161.110	Floating electric water lights
161.112	Lifejacket lights
163.003	Pilot Ladders to comply with SOLAS V/17, IMO Res. A.889(21)****

Those items without an asterisk (*) are to be forwarded directly to the USCG for their approval.

* indicates those items for which ABS possesses USCG acceptance to conduct approval (design review and testing) work on behalf of the USCG.

*** indicates that the USCG reserves the right to attend prototype testing of this equipment as a condition of approval. This option will normally be exercised in the case of a manufacturer seeking approval of this equipment for the first time, or for a substantially new or innovative design.

**** Accommodation ladders which are used in conjunction with a pilot ladder for pilot transfer need not be approved under USCG approval series 163.003. Such accommodation ladders may be approved by ABS under the Alternate Compliance Program to the requirements of SOLAS Ch.II-1/Reg. 3-9.

Where a particular life-saving appliance or arrangement is required, the Commandant, USCG, may accept any other appliance or arrangement that is at least as effective as that specified. If necessary, the Commandant, USCG, may require engineering evaluations and tests to demonstrate the equivalence of the substitute appliance or arrangement.

Life-saving appliances carried on board the ship in addition to equipment of the type required under this part must be approved equipment or be acceptable to the cognizant USCG OCMI for use on the ship.

Cite: III/6 Communications

Each item of radio communications equipment must be type accepted by the Federal Communications Commission.

Cite: III/7 Personal Life-Saving Appliances

Each child-size lifejacket and immersion suit must be appropriately marked and stowed separately from adult or extended-size devices.

Each lifejacket and immersion suit must be marked with the vessel's name.

Inflatable lifejackets, if carried, must all be of the same or similar design.

Each lifejacket, immersion suit, and anti-exposure suit container must be marked in block capital letters and numbers with the quantity, identity, and size of the equipment stowed inside the container. The equipment may be identified in words or with the appropriate symbol from IMO Resolution A.760(18).

Cite: III/8 Muster List and Emergency Instructions

Instructions for passengers must include illustrated instructions on the method of donning lifejackets.

Cite: III/11 Survival Craft Muster and Embarkation Arrangements

If a davit-launched survival craft is not intended to be moved to the stowed position with persons on board, the craft must be provided with a means for bringing it against the side of the vessel and holding it alongside the vessel to allow persons to safely disembark after a drill.

Cite: III/13 Stowage of Survival Craft

Each life raft must be arranged to permit it to drop into the water from the deck on which it is stowed. The liferaft stowage arrangement meets this requirement if it:

- (i) is outboard of the rail or bulwark,
 - (ii) is on stanchions or on a platform adjacent to the rail or bulwark, or
 - (iii) has a gate or other suitable opening large enough to allow the liferaft to be pushed directly overboard and, if the liferaft is intended to be available for use on either side of the vessel, such gate or opening is provided on each side of the vessel.
-

Cite: III/18 Line-Throwing Appliances

In addition to the equipment approved and carried as part of the appliance, each line throwing appliance must also have an auxiliary line that:

- (1) if other than manila, has a breaking strength of at least 40 kN (9,000 lb.);
- (2) if other than manila, is of a dark color or of a type certified to be resistant to deterioration from ultraviolet light; and
- (3) is at least 450 m (1,500 ft) long.

The line throwing appliance and its equipment must be readily accessible for use, stowed in its container carried within the pilothouse or on the navigating bridge or stowed in a portable magazine chest.

Cite: III/32.3 Personal Life-Saving Appliances – Immersion Suits and Thermal Protective Aids (Cargo Ships)

Immersion suits must be carried for each person on board on all cargo vessels except those operating between 32° north and 32° south latitude regardless of whether it has totally enclosed lifeboats

Cite: III/33 Survival Craft Embarkation and Launching Arrangements

On a tank vessel certificated to carry cargoes that have a flashpoint less than 60° C (140° F) as determined under ASTM D93-94, each lifeboat or launching appliance of aluminum construction must be protected by a water spray system.

**Cite: III/34 Launching Appliances Using Falls and a Winch
LSA Code
VI 6.1.2.9**

The lowering speed for a survival craft loaded with all of its equipment must be not less than 70 percent of the speed required under Regulation VI 6.1.2.8 (LSA Code).

The lowering speed for a fully loaded survival craft must be not more than 1.3 meters per second (256 feet per minute).

Cite: III/34 Launching Appliances Using Falls and a Winch
LSA Code
VI 6.1.2

Each unguarded fall must not pass near any operating position of the winch, such as hand cranks, pay out wheels, and brake levers.

Each fall, where exposed to damage or fouling, must have guards or equivalent protection. Each fall that leads along a deck must be covered with a guard which is not more than 300 mm (1 ft) above the deck.

Each winch drum must be arranged so the fall wire winds onto the drum in a level wrap.

D. Radiocommunications

Cite: IV/7.1.6 Radiocommunications – Application

The required EPIRB must be marked with the vessel's name.

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III. ADDITIONAL REQUIREMENTS NOT CONTAINED IN ABS RULES, MARPOL OR SOLAS

A. Diving Support Systems

Diving support systems must meet the following requirements:

- (a) Piping for diving installations which is permanently installed on the vessel must meet the requirements of subpart B (Commercial Diving Operations) of 46 CFR part 197.
- (b) Piping internal to a pressure vessel for human occupancy (PVHO) must meet the requirements of subpart B of 46 CFR Part 197.

B. Accommodations for Officers and Crew

1. Application

- (a) The provisions of this section, with the exception of paragraph 13, shall apply to all vessels other than tankships of 100 gross tons and over contracted for on or after November 19, 1952. Vessels other than tankships of 100 gross tons and over contracted for prior to November 19, 1952, shall meet the requirements of paragraph 13.
- (b) Vessels other than tankships of less than 100 gross tons shall meet the applicable requirements of this section insofar as is reasonable and practicable.
- (c) The provisions of this section, with the exception of paragraphs 14 and 15, apply to all tankships of 100 gross tons and over constructed on or after June 15, 1987.
- (d) Tankships of less than 100 gross tons and manned tank barges must meet the requirements of paragraph 14.
- (e) Tankships of 100 gross tons and over constructed prior to June 15, 1987, must meet the requirements of paragraph 15.

2. Intent

- (a) It is the intent of this section that the accommodations provided for officers and crew on all vessels shall be securely constructed, properly lighted, heated, drained, ventilated, equipped, located, arranged, and, where practicable, shall be insulated from undue noise and effluvia.
- (b) The crew referred to herein includes all persons, except the licensed officers, regularly employed on board any vessel. Where the requirements for the accommodation of licensed officers are not otherwise specified, they shall be of at least equivalent to that indicated herein for the crew.
- (c) For the purpose of this subpart, the term “crew spaces” shall include sleeping rooms, messrooms, recreational rooms, toilet and shower spaces, etc., which are intended for the exclusive use of the crew.

3. Location of Crew Spaces

- (a) Crew spaces shall be located, where practicable, so that the maximum amount of fresh air and light are obtainable, having due regard to the service of the vessel and the requirements of other space users.
- (b) Crew quarters shall not be located farther forward in a vessel than a vertical plane located at 5 percent of the vessel's length abaft the forward side of the stem at the designed summer load waterline. However, for vessels in other than ocean or coastwise service, this distance need not exceed 8.5 m (28 ft). For the purpose of this paragraph, the length shall be as defined in CFR 42.13-15 of subchapter E (Load Lines). No section of the deck of the crew spaces shall be below the deepest load line, except that in special cases, on vessels other than tankships, such an arrangement may be approved provided that in no case shall the deck head of the crew space be below the deepest load line.
- (c) Hawse pipes or chain pipes shall not pass through crew spaces.
- (d) There shall be no direct communication, except through solid, close fitted doors or hatches between crew spaces and chain lockers, cargo, stowage or machinery spaces.
- (e) There shall be no access, vents, or sounding tubes from fuel or cargo oil tanks opening into crew spaces, except that sounding tubes and access openings may be located in corridors.
- (f) Where practicable, crew spaces shall be located entirely separate and independent of spaces allotted to passengers or licensed officers.

4. Construction

- (a) All crew spaces are to be constructed in a manner suitable to the purpose for which they are intended. The bulkheads separating the crew space from cargo and machinery spaces, lamp and paint rooms, storerooms, drying rooms, washrooms, and toilet spaces shall be made odor proof.
- (b) Toilet spaces, except when provided as private or semiprivate facilities, shall be so built, fitted, and situated, that no odor from them will readily enter other crew spaces.
- (c) Where the shell or unsheathed weather decks form boundaries of crew spaces, suitable protective coverings shall be applied to prevent formation or accumulation of moisture.
- (d) Where crew spaces adjoin or are immediately above spaces such as galleys machinery spaces or casings, donkey boilerrooms, etc., they shall be suitably protected from the heat and noise.
- (e) The interior sides and deckheads of crew spaces shall be covered with enamel, paint, or other material light in color.
- (f) Crew spaces shall be properly drained where considered necessary.
- (g) All washrooms and toilet rooms shall be properly drained and so constructed and arranged that they can be kept in a clean, workable, and sanitary condition. The scuppers shall be located in the lowest part of the space, due consideration being given to the average trim of the vessel.

5. Sleeping Accommodations

(a) Arrangements

- (1) Separate sleeping accommodations are to be provided for the deck, engine, and steward groups of the crew.
- (2) Each watch of seamen, firemen or similar ratings on duty in watches is to be provided with separate sleeping room or rooms, unless the total space for accommodations makes this impracticable.
- (3) Where practicable, each licensed officer shall be provided with a separate stateroom.

(b) Size

- (1) Sleeping accommodations for the crew shall be divided into rooms, no one of which shall berth more than four persons. Except on passenger ships requiring a large number of personnel in the steward's department, rooms may be arranged to accommodate not more than 10 such persons.
- (2) Each room shall be of such size that there are at least 30 ft² of deck area and a volume of at least 6 m³ (210 ft³) for each person accommodated. The clear headroom shall be not less than 1.9 m (6 ft 3 in). In measuring sleeping quarters allocated to crews of vessels, any equipment contained therein for the use of the occupants is not to be deducted from the total volume or from the deck area.

(c) Equipment

- (1) Each person shall have a separate berth and not more than one berth shall be placed above another. The berths shall have a framework of metal or other hard, smooth material not likely to corrode or harbor vermin, and shall be so arranged that they provide ample room for easy occupancy. The overall size of a berth shall not be less than 762 mm (30 in) wide by 1930 mm (76 in) long, except by special permission of the Commandant, USCG. Where berths adjoin, they shall be divided by a partition not less than 457 mm (18 in) in height. Where two tiers of berths are fitted, the bottom of the lower must not be less than 305 mm (12 in) above the deck, and the bottom of the upper must not be less than 0.76 m (2 ft 6 in) both from the bottom of the lower and from the deck overhead. The berths shall not be obstructed by pipes, ventilating ducts, or other installations.
- (2) A locker shall be provided for each person accommodated in a room.

6. Wash Spaces, Toilet Spaces; and Shower Spaces

- (a) There must be provided at least 1 toilet, 1 washbasin, and 1 shower for each 8 members of portion thereof in the crew who do not occupy rooms to which private or semi-private facilities are attached.
- (b) The toilet rooms and washrooms must be located convenient to the sleeping quarters of the crew to which sleeping quarters of the crew to which they are allotted but must not open directly into such quarters except when they are provided as private or semiprivate facilities.

- (c) All washbasins, showers, and bathtubs shall be equipped with adequate plumbing, including hot and cold running water. All toilets must be installed with adequate plumbing for flushing.
- (d) At least 1 washbasin must be fitted in each toilet room, except where private or semi-private facilities are provided and washbasins are installed in the sleeping rooms.
- (e) Where more than 1 toilet is located in a space or compartment, each toilet must be separated by partitions.

7. Messrooms

- (a) Messrooms shall be located as near to the galley or suitably equipped serving pantry as is practicable, except where messroom is equipped with a steam table. The messrooms shall be of such size as to seat the number of persons normally scheduled to be eating at one time.
- (b) Mess rooms shall be properly equipped with tables, seats, and other necessary equipment and shall be so arranged as to permit access to each seat

8. Hospital Space

Each vessel which in the ordinary course of its trade makes voyages of more than 3 days duration between ports and which carries a crew of 12 or more, must be provided with a hospital space. This space shall be situated with due regard to the comfort of the sick so that they may receive proper attention in all weathers.

- (b) The hospital shall be suitably separated from other spaces and shall be used for the care of the sick and for no other purpose.
- (c) The hospital shall be fitted with berths in the ratio of one berth to every twelve members of the crew or portion thereof who are not berthed in single occupancy rooms, but the number of berths need not exceed six.
- (d) The hospital shall have a toilet, washbasin, and bath tub or shower conveniently situated. Other necessary suitable equipment of such character as clothes locker, table, seat, etc., shall be provided.
- (e) On vessels in which the crew is berthed in single occupancy rooms, a hospital space will not be required, provided that one room shall be designated and fitted for use as a treatment or isolation room. Such room shall meet the following standards:
 - (1) The room must be available for immediate medical use.
 - (2) A washbasin with hot and cold running water must be installed either in or immediately adjacent to the space and other required sanitary facilities must be conveniently located.

9. Other Spaces

- (a) Sufficient facilities, depending upon the number of the crew, shall be provided where the crew may wash and dry their own clothes. There shall be at least one tub or sink fitted with the necessary plumbing, including hot and cold running water.

- (c) Recreation accommodations shall be provided.
 - (d) A space or spaces of adequate size shall be available on an open deck to which the crew has access when off duty.
10. Lighting
- (a) All crew spaces shall be adequately lighted.
 - (b) Berth lights shall be provided for each member of the crew.
11. Heating
- (a) All crew spaces shall be adequately heated in a manner suitable to the purpose of the space.
 - (b) The heating system will be considered satisfactory if it is capable of maintaining a minimum temperature of 21° C (70° F) under normal operating conditions without undue curtailment of the ventilation.
 - (c) Radiators and other heating apparatus shall be so placed, and where necessary shielded, as to avoid risk of fire, danger or discomfort to the occupants. Pipes leading to radiators or heating apparatus shall be insulated where those pipes create a hazard to persons occupying the space.
12. Insect Screens
- (a) Provisions shall be made to protect the crew quarters against the admission of insects.
13. For all vessels other than tankships contracted for prior to November 19, 1952.
- (a) Vessels of less than 100 gross tons, contracted for prior to November 19, 1952, shall meet the general intent of paragraph and in addition shall meet the following requirements:
 - (1) Existing structure, arrangements, materials, and facilities, previously accepted or approved will be considered satisfactory so long as they are maintained in a suitable condition to the satisfaction of the Surveyor. Minor repairs and alterations may be made to the same standard as the original construction.
 - (b) Vessels of 100 gross tons and over, contracted for prior to March 4, 1915, shall meet the requirements of this paragraph.
 - (1) Existing structure, arrangements, materials, and facilities, previously approved will be considered satisfactory so long as they are maintained in good condition to the satisfaction of the Surveyor. Minor repairs and alterations may be made to the same standard as the original construction: *Provided*, that in no case will a greater departure from the standards of paragraphs 2 through 12 be permitted than presently exists.
 - (c) Vessels of 100 gross tons and over, contracted for on or after March 4, 1915, but prior to January 1, 1941, shall meet the requirements of this paragraph.
 - (1) Existing structure, arrangements, materials, and facilities, previously approved will be considered satisfactory so long as they are maintained in a suitable condition to the

- satisfaction of the Surveyor. Minor repairs and alterations may be made to the same standard as the original construction.
- (2) Where reasonable and practicable, a minimum of one toilet, shower, and washbasin shall be provided for each 10 members of the crew or fraction thereof.
 - (3) Crew spaces shall have a volume of at least 3.4 m³ (120 ft³) and a deck area of at least 1.1 m² (16 ft²) for each person accommodated.
 - (4) Each crewmember shall have a separate berth, and berths may not be placed more than two high.
 - (5) Each vessel, which in the ordinary course of its trade makes a voyage of more than three days' duration between ports and which carries a crew of 12 or more persons, shall be provided with a suitable hospital space for the exclusive use of the sick or injured. Berths shall be provided in the ratio of one berth for each twelve members of the crew or fraction thereof, but the number of berths need not exceed six.
 - (6) The crew spaces shall be securely constructed, properly lighted, heated, drained, ventilated, equipped, located, and arranged, and where practicable, shall be insulated from undue noise and effluvia.
- (d) Vessels of 100 gross tons and over, contracted for on or after January 1, 1941, but prior to November 19, 1952, shall meet the requirements of this paragraph.
- (1) Existing structure, arrangements, materials, and facilities, previously approved will be considered satisfactory so long as they are maintained in a suitable condition to the satisfaction of the Surveyor. Minor repairs and alterations may be made to the same standard as the original construction.
 - (2) Washrooms and Toilet Rooms:
 - (i) There shall be a minimum of one toilet, shower, and washbasin for each 8 members of the crew or fraction thereof who are not accommodated in rooms having attached private or semiprivate facilities.
 - (ii) Separate facilities shall be provided for the engine room, deck, or stewards department when the number of crew in that department, exclusive of officers, exceeds 8.
 - (iii) Toilet rooms shall be separate from the wash rooms. At least one washbasin shall be installed in each toilet room.
 - (iv) Toilets shall be provided with seats of the open front type. Urinals may be fitted in toilet rooms, if desired, but no reduction will be made in the required number of toilets.
 - (v) Washbasins, showers, and bath tubs if substituted for showers, shall be equipped with proper plumbing including hot and cold running water.
 - (3) Crew spaces shall have a volume of at least 3.4 m³ (120 ft³) and a deck area of at least 1.1 m² (16 ft²) for each person accommodated.

- (4) Each crewmember shall have a separate berth, and berths may not be placed more than two high.
 - (5) Each vessel, which in the ordinary course of its trade makes a voyage of more than three days duration between ports and which carries a crew of 12 or more persons, shall be provided with a suitable hospital space for the exclusive use of the sick or injured. Berths shall be provided in the ratio of one berth for each 12 members of the crew or fraction thereof, but the number of berths need not exceed six.
 - (6) The crew spaces shall be securely constructed, properly lighted, heated, drained, ventilated, equipped, located, and arranged, and where practicable, shall be insulated from undue noise and effluvia.
14. Crew accommodations on tankships of less than 100 gross tons and manned tank barges
- (a) The crew accommodations on all tankships of less than 100 gross tons and all manned tank barges must have sufficient size and equipment, and be adequately constructed to provide for the protection of the crew in a manner practicable for the size, facilities, and service of the tank vessel.
 - (b) The crew accommodations must be consistent with the principles underlying the requirements for crew accommodations on tankships of 100 gross tons or more.
15. Crew accommodations on tankships constructed before June 15, 1987

All tankships of 100 gross tons and over constructed before June 15, 1987 may retain previously accepted or approved installations and arrangements so long as they are maintained in good condition to the satisfaction of the Surveyor.

B. Passenger Spaces

1. Ventilation

Passenger Spaces are to be provided with adequate ventilation.

C. Navigation Safety Requirements that Apply to All Vessels

This section applies to all self propelled vessels over 1600 gross tons when operating in the navigable waters of the United States, except the St. Lawrence Seaway.

Cite: 33 CFR 164.35(g) Navigational Equipment

1. Application

- (a) The provisions of this section apply to all self propelled vessels over 1600 gross tons when operating in the navigable waters of the United States, except the St. Lawrence Seaway.

2. Maneuvering Information

- (a) Maneuvering characteristics must be posted prominently on a fact sheet in the wheel house. The requirements for posting maneuvering information are found in 33 CFR 164.35. The maneuvering characteristics are to be representative of both normal load, normal ballast conditions, calm weather (wind 10 kts or less), no current, deep water (at least twice the vessel's draft), and clean hull. At the bottom of the fact sheet the following statement shall be provided:

“WARNING”

The response of the (name of vessel) may be different from that listed above if any of the following conditions, upon which the maneuvering information is based, are varied:

1. Calm weather – wind 10 knots or less, calm sea;
2. No current;
3. Water depth twice the vessel's draft or greater;
4. Clean hull; and
5. Intermediate drafts or unusual trim.

- (b) The posted characteristics shall consist of the following maneuvers:

- Turning Circle Diagram to both port and starboard.
- Time, distance, advance, transfer to alter course 90° with maximum power settings for either full or half speeds, or full and slow speeds.
- Vessels which have essentially the same turning characteristics to both port, and starboard may substitute a turning circle in one direction only, with a note stating the other direction to be essentially the same.
- Time and Distance to Stop the vessel from either full and half speeds while maintaining initial heading, and minimum rudder application.
- Table of Shaft RPM for a representative range of speeds should be provided for a vessel with a fixed pitch propeller.
- Table of Control Settings for a representative range of speeds for a vessel with a controllable pitch propeller.
- Table of Effective Speeds for auxiliary maneuvering devices such as bow thrusters. This table should show the range of speeds for which the unit can be used effectively.

- (c) Navigation and Vessel Inspection Circular (NVIC) 7-89 calls attention to IMO Resolution A.601(15) “Provision and Display of Maneuvering Information Onboard Ships”, adopted 19 November 1987, and MSC/Circ. 389, “Interim Guidelines for Estimating Maneuvering Performance in Ship Design,” adopted 10 January 1985. These provide guidance to the owner and operator concerning maneuvering performance estimation and a standardized format for presentation of ship maneuvering information to operating personnel, including pilots.

**Cite: 33 CFR 164.33(2)(i) & Charts and Publications
33 CFR 164.33(3)(ii)**

1. Application

- (a) The provisions of this section apply to all self propelled vessels over 1600 gross tons when operating in the navigable waters of the United States, except the St. Lawrence Seaway.

2. Requirements

- (a) In addition to the requirements of SOLAS, a vessel must have a current copy of the “U.S. Coast Pilot”, and “Tidal Current Tables”, published by the National Oceanographic Service. Further detail is provided in 33 CFR 164.33.

Cite: 33 CFR 164.41 Electronic Position Fixing Devices

See Federal Register Vol. 59, No. 56, dated March 23, 1994, page 13757 for additional guidance.

1. Application

- (a) The provisions of this section apply to all self propelled vessels over 1600 gross tons and calling at a port in the United States, including Alaska south of Cape Prince of Wales. Each vessel operated, owned, or bareboat chartered by the United States, State, or Political Subdivision, by a foreign nation, and not engaged in commerce is exempt from this requirement. Requirements for electronic position fixing devices are found in 33 CFR 164.41.

2. Devices

- (a) Type I or Type II Loran C Receiver meeting Part 2 (Minimum Performance Standards of the Radio Technical Commission for Marine Services (RTCM) Paper 12-78/DOD100. Each receiver installed on or after June 1, 1982 must have a label showing the name and address of the manufacturer, including the following statement: “This receiver was designed and manufactured to meet Part 2 (Minimum Performance Standards) of the RTCM MPS for Loran-C Receiving Equipment.”
- (b) A Satellite Navigation Receiver with automatic acquisition of satellite signals, and position updates derived from satellite information.
- (c) A system considered to meet the intent for availability, accuracy, and coverage for the U.S. Confluence Zone (CCZ) contained in U.S. “Federal Radio Navigation Plan” (Report No. DOD-No 4650.4-D or No. DOT-TSC-RSPA-80-16I.)

D. Requirements in Addition to MARPOL Annexes

In order to facilitate reference, the applicable CFR cite is given for each entry.

ANNEX I

Cite: 33 CFR 151.27 Shipboard Oil Pollution Emergency Plan

For the issue of a Certificate of Inspection, the Shipboard Oil Pollution Emergency Plans (Reg. 26) outlined in IMO Res. MEPC.86(44) can only be approved by the U.S. Coast Guard (G-MOR.)

Cite: 33 CFR 155.210 Discharge Removal Equipment for Vessels Less Than 400 Feet (122 m) in Length

Oil carrying tank vessels with a length that is less than 122 m (400 ft) must carry discharge removal equipment for on-deck spills up to 7 bbl. The equipment must include: sorbents, non-sparking hand scoops, containers for the recovered spillage, emulsifiers for deck cleaning, protective clothing, one non-sparking portable pump with hoses, and scupper plugs.

Cite: 33 CFR 155.225 Internal Cargo Transfer Capability

Unless the vessel's cargo piping system can transfer cargo among all tanks within the cargo block, the vessel must be equipped with hoses and reducers which can enable the transfer of cargo from any tank to any other tank.

Cite: 33 CFR 155.230 Emergency Towing Capability for Oil Barges

Offshore barges must carry an emergency tow wire or a tow line that is rigged and ready for use which has the same characteristics as the primary tow wire or tow line.

Cite: 33 CFR 155.310 Containment of Oil and Hazardous Material Cargo Discharge

Under hose connections there must be a fixed container or enclosed deck area with a mechanical means of closing the drain for that containment which has a capacity:

- 1/2 bbl for lines no more than 51 mm (2 in)
- 1 bbl for lines more than 51 mm (2 in) up to 102 mm (4 in)
- 2 bbl for lines no less than 102 mm (4 in) up to 152 mm (6 in)
- 3 bbl for lines no less than 152 mm (6 in) up to 304 mm (12 in)
- 4 bbl for lines 304 mm (12 in) or more

Cite: 33 CFR 155.320 Fuel Oil and Bulk Lubricating Oil Discharge Containment

Under fill connections and vents there must be a fixed container or enclosed deck area with a mechanical means of closing the drain for that containment which has a capacity:

- 1/2 bbl for vessels 300 gross tons or more but less than 1600 gross tons
- 1 bbl for vessels 1600 gross tons or more

Cite: 33 CFR 155.380 Oily-water Separating Equipment, Bilge Alarm and Bilge Monitor Approval Standards

The oily water separating equipment, oil content meters, and bilge alarms are all to be U.S. Coast Guard Approved equipment.

Cite: 33 CFR 155.450 Placard

Each machinery space must have a sign indicating that the discharge of oil is prohibited.

Cite: 33 CFR 155.780 Emergency Shutdown

Tank vessel must have an emergency means of stopping transfers within a vessel.

Cite: 33 CFR 155.790 Deck Lighting

Tank vessels must have a means of illuminating the deck in transfer operation work areas – 0.31m (1 ft) candle measured 0.91 m (3 ft) above the deck – and at transfer connections – 1.5 m (5 ft) candle measured 0.91 m (3 ft) above the deck.

Cite: 33 CFR 155.800 Transfer Hoses

Transfer hoses must have burst pressure of at least 41.4 bar (600 psi) and four times the MAWP, which must be at least 10.3 bar (150 psi). Hose flanges must meet ANSI B16.5 or B16.24. The hoses must be marked with the MAWP, type of service, date of manufacture and the date of the last pressure test. The date of manufacture and the date of the last pressure test may be recorded in lieu of being marked on the hoses.

Cite: 33 CFR 155.1010 Response Plans – Purposes

Applies to tank vessels without regard to size. (Reg. 37 applies to tank vessels greater than 150 gt (136 metric ton) and all vessels greater than 400 gt (363 metric ton).) Applies to discharges of oil. (Reg. 37 applies to all discharges of oil.) Requires formal agreements for spill notification and cleanup. (Reg. 37 requires only shipboard procedures and a shoreside contact.) Requires a geographic specific appendix for U.S. ports. (Reg. 37 requires a worldwide list.)

Cite: 33 CFR 157.03(n) Definition – Oil

Oil is not limited to petroleum and includes animal fats and other “oils.” (MARPOL regulates animal fats and vegetable oils under Annex II.)

Cite: 33 CFR 157.10b Segregated Ballast Tanks, Dedicated Clean Ballast Tanks, and Special Ballast Arrangements for Tank Vessels Transporting Outer Continental Shelf Oil

Tank vessels servicing the OCS are permitted to carry ballast water in cargo tanks. (MARPOL makes no special allowances for these sorts of vessels.)

Cite: 33 CFR 157.10d Double Hulls on Tank Vessels

U.S. dates for required double hull construction are three (3) years earlier than Reg. 13F.

There is no minimum tonnage limit for applicability to vessels. (Reg. 13F applies for vessels greater than 5000 dwt.)

Cite: 33 CFR 157.12 Cargo Monitor and Control System

The oil discharge monitoring and control system is to be USCG approved equipment. The ODMC system manual is also required to be approved.

Cite: 33 CFR 157.15 Slop Tanks in Tank Vessels

The oil-water detectors installed on slop tanks are to be USCG approved equipment.

Cite: 33 CFR 157.21 Subdivision and Stability

For U.S. Flag vessels, MARPOL damage stability requirements are applicable to the following vessels:

- (a) New vessels delivered after 31 December 1977;
- (b) New vessels contracted after 31 December 1974; and
- (c) New vessels whose keels were laid (or similar stage of construction) after 30 June 1975.

New (defined in 157.03i) applies to vessels as under contract, constructed, or completed between 1975/1976/1979. (Reg. 1(26) defines “new” as four (4) years later.

Interpretation: MARPOL Reg 13(5)

Segregated ballast tanks, dedicated clean ballast tanks and crude oil washing. Vessels less than 150 m (492 ft) in length: The U.S. has not adopted the requirements in Appendix 1 to Annex I which addresses segregated ballast for vessels less than 150 m in length. Determination under this regulation must be made by the Commandant, USCG.

Interpretation: MARPOL Reg 13F(4)

Prevention of oil pollution in the event of collision or stranding. Mid-deck tankers: The U.S. has not ratified that the mid-deck design is equivalent to a double hull.

Interpretation: MARPOL Reg 13G

Prevention of oil pollution in the event of collision or stranding. Determinations by the Administration: The Commandant, USCG, makes determinations on behalf of the U.S.

Interpretation: MARPOL Reg 25(1)(c)

Subdivision and Stability. Stability for vessels under 100 m (328 ft): The Commandant, USCG, makes determinations concerning the relaxation requirements for vessels less than 100 m (328 ft) if the standards for a vessel 150 m (412 ft) or longer would impair the operational qualities of the ship.

ANNEX II

Navigation and Vessel Inspection Circular No. 03-06 provides “Guidance on implementation of revisions to MARPOL Annex II and the IBC Code,” which is considered to be U.S. Coast Guard policy.

Cite: 33 CFR 151.27 Shipboard Marine Pollution Emergency Plan for NLS

For the issue of a Certificate of Inspection, the Shipboard Marine Pollution Emergency Plans for Noxious Liquid Substances (NLS) (Reg. 16) outlined in IMO Res. MEPC.85(44) can only be approved by the U.S. Coast Guard (CG-533)

ANNEX III (no differences)**ANNEX IV (NOT ADOPTED) COMPARISON OF USCG RULES TO MARPOL**

Cite: 33 CFR 159.53 Marine Sanitation Devices (MSDs)

All vessels must be installed with either an operable MSD which controls the discharged fecal coliform bacteria count not greater than 200 per 100 ml (3.38 fl oz) and the suspended solids not greater than 150 mg/l, which is certified by the Commandant, USCG or with an operable MSD which retains the sewage on board.

ANNEX V

Cite: 33 CFR 151.51 Garbage Pollution – Applicability

The U.S. applies Annex V to U.S. public vessels after January 1, 1994. MARPOL does not generally apply to public vessels.

Cite: 33 CFR 151.55 Garbage Pollution – Record Keeping Requirements

U.S. ships over 12.2 m (40 ft) must keep records of garbage disposal.

Cite: 33 CFR 151.57 Garbage Pollution – Waste Management Plans

U.S. ships over 12.2 m (40 ft) with galleys must have a waste management plan.

Cite: 33 CFR 151.59 Garbage Pollution – Placards

U.S. ships over 7.9 m (26 ft) must have placards describing prohibited waste discharges.

ANNEX VI

U.S. Coast Guard policy with respect to the issue of MARPOL Annex VI certificates required to be carried aboard a vessel is contained in CG-543 Policy Letter 09-01.

Cite: 46 CFR 63.25-9 Incinerators

Each incinerator installed on or after March 26, 1998 must meet the requirements of IMO Resolution MEPC.76(40). A Coast Guard Certificate of Approval is required for each incinerator. Incinerators in compliance with the following are considered to meet IMO Resolution MEPC.76(40):

- ISO 13617; or
- Both ASTM F 1323 and Annexes A1-A3 of IMO Resolution MEPC.76

IV. PASSENGER VESSELS – SOLAS INTERPRETATIONS NOT ADDRESSED BY ABS RULES

Cite: II-1/8	Stability of Passenger Ships in Damaged Condition	IV-1
Cite: II-1/15	Openings in Watertight Bulkheads in Passenger Ships	IV-1
Cite: II-1/20	Watertight Integrity of Passenger Ships Above the Margin Line	IV-1
Cite: II-1/42	Emergency Source of Electrical Power in Passenger Ships	IV-1
Cite: II-2/13	Means of Escape	IV-1
Cite: II-2/20.6	Protection of Special Category Spaces	IV-2
Cite: II-2/20.6 & II-2/20.3.1.3	Protection of Special Category Spaces – Indication of Ventilation Systems	IV-3
Cite: III/21	Survival Craft and Rescue Boats	IV-3
Cite: III/22	Personal Life-Saving Appliances	IV-3
Cite: III/22.3	Personal Life-Saving Appliances – Lifejacket Lights	IV-3
Cite: III/22.4.1.2	Personal Life-Saving Appliances – Immersion Suits and Thermal Protective Aids	IV-3
Cite: III/23	Survival Craft and Rescue Boat Embarkation Arrangements	IV-4

IV. PASSENGER VESSELS – SOLAS INTERPRETATIONS NOT ADDRESSED BY ABS RULES

Cite: II-1/7-2 Calculation of the factor s_i

MSC/Circ. 541 – Guidance notes on the integrity of flooding boundaries above the bulkhead deck of passenger ships should be followed for proper application of SOLAS Chapter II-1, Regulation 7-2 (Calculation of the factor s_i) and Regulation 17 (Internal Watertight Integrity of Passenger Ships above the bulkhead deck).

Cite: II-1/13 Openings in Watertight Bulkheads in Passenger Ships

All watertight doors in subdivision bulkheads shall be numbered conspicuously on both sides on an etched plate or equivalent in not less than 10 mm (3/8 in) letters and figures “W.T.D. 1”, “2”, “3”, etc. If stenciled or similar notice is used, the letters and figures shall be at least 25 mm (1 in) high. If the construction is such that the number cannot be seen with the door in the open position, a similar number shall be placed on the frame or other location immediately adjacent to the door. All watertight door remote control stations shall be marked in the same manner, and in addition, the direction of operation of the lever or wheel to open and close the door shall be conspicuously marked. Doors fitted in accordance with Subdivision and Stability requirements must be additionally marked “RECLOSE AFTER USE.”

Cite: II-1/17 Watertight Integrity of Passenger Ships Above the Margin Line

Provisions of this regulation are mandatory.

Each opening in an exposed weatherdeck must have a coaming of at least 15.2 cm (5.98 in) and a means for closing it weathertight.

MSC/Circ. 541 – Guidance notes on the integrity of flooding boundaries above the bulkhead deck of passenger ships should be followed for proper application of SOLAS Chapter II-1, Regulation 7-2 (Calculation of the factor s_i) and Regulation 17 (Internal Watertight Integrity of Passenger Ships above the bulkhead deck).

Cite: II-1/42 Emergency Source of Electrical Power in Passenger Ships

There must be visible indicators in the machinery space to show when the automatically controlled emergency power source is supplying the emergency loads.

Cite: II-2/13 Means of Escape

Stairways on new passenger ships shall comply with the following:

In no case shall lifts be considered as forming one of the required means of escape.

The two means of escape required by Regulation 13, paragraphs 3.2.1 and 3.2.2 shall be as remote as possible to minimize the possibility of one incident blocking both escapes. Vertical ladders and deck scuttles shall not in general be considered as one of the required means of escape.

However, where it is demonstrated that the installation of a stairway would be impracticable, a vertical ladder may be used as the second means of escape. Doors giving access to either of the two required means of escape shall not be lockable, except that crash doors or locking devices, capable of being easily

forced in an emergency, may be employed provided that a permanent and conspicuous notice giving instructions on how to open the door or lock is attached to both sides of the door.

Vertical communication shall be provided between weather decks by means of permanent inclined ladders. Where ladders are for the exclusive use of the crew, and do not form part of the escape route, vertical ladders may be employed.

Small rooms or spaces having a secondary means of escape which is not obviously apparent shall have a suitable sign in red letters "EMERGENCY EXIT" directing attention to such escape.

Readily accessible enclosed stairway is defined to mean it must either be in the MVZ or immediately adjacent to the zone such that entrance into the stairway does not require entering into the adjoining zone to gain access to the stairway.

Cite: II-2/20.6 Protection of Special Category Spaces

Where a manual sprinkling system is installed for protection of vehicle decks, it shall comply with Regulation II-2/20.6, IMO Assembly Resolution A.123(V), and the following:

Capacity and Arrangement

The system shall be so designed and arranged that the overhead is effectively sprayed and all portions of the deck are covered. The capacity shall be such that at least 5 liters (769 fl oz) of water per square meter per minute are applied to all parts of the deck area.

Controls

Complete, but simple instructions for the operation of the system shall be located in a conspicuous place at or near the controls.

Piping

All piping, valves and fittings shall meet the applicable requirements of Section 4/6 of the ABS Steel Vessel Rules as modified by this supplement.

All piping, valves, and fittings of ferrous materials shall be protected inside and outside against corrosion unless specifically approved otherwise.

All piping, valves, and fittings shall be securely supported, and where necessary, protected against injury.

Drains, strainers and dirt traps shall be fitted where necessary to prevent the accumulation of dirt or moisture.

Distribution piping shall be used for no other purpose.

Markings

The control cabinets or spaces containing valves or manifolds shall be distinctly marked in conspicuous red letters at least 50 mm (2 in) high – "MANUAL SPRINKLING SYSTEM".

Cite: II-2/20.6 & II-2/20.3.1.3 **Protection of Special Category Spaces – Indication of Ventilation Systems**

The alarm required to indicate loss of ventilation in spaces specially suitable for vehicles shall be marked with a conspicuous sign in at least 8 mm (1/4 in) letters “VENTILATION FAILURE IN VEHICULAR SPACE.”

Cite: III/21 **Survival Craft and Rescue Boats**

Each passenger vessel that is less than 500 gross tons and is certified to permit less than 200 persons on board may carry the following survival craft and rescue boat in lieu of the lifeboat/liferaft combination addressed in 1974 SOLAS as amended Chapter III/21.

- (1) On each side of the vessel
 - (i) liferafts are carried with an aggregate capacity sufficient to accommodate the total number of persons on board and are stowed in a position providing for easy side-to-side transfer at a single open deck level; or
 - (ii) liferafts are carried with an aggregate capacity sufficient to accommodate 150 per cent of the total number of persons on board. If the required rescue boat is also a lifeboat, its capacity may be included to meet the aggregate capacity requirement.
- (2) If the largest survival craft on either side of the vessel is lost or rendered unserviceable, there must be survival craft available for use on each side of the vessel, including those which are stowed in a position providing for side-to-side transfer at a single open deck level, with a capacity to accommodate the total number of persons on board.

Each passenger vessel of less than 500 tons gross tonnage must carry at least one rescue boat.

Cite: III/22 **Personal Life-Saving Appliances**

Immersion suits and thermal protective aids are required to be provided for persons accommodated in totally or partially enclosed lifeboats, unless the vessel operates only on routes between 32° north and 32° south latitude.

Cite: III/22.3 **Personal Life-Saving Appliances – Lifejacket Lights**

Passenger ships engaged on international and short international voyages are to be fitted with a lifejacket light approved under Approval Series 161.112.

Cite: III/22.4.1.2 **Personal Life-Saving Appliances – Immersion Suits and Thermal Protective Aids**

The warm climate exemption in Regulation 22.4.1.2 applies to ships operating only on routes between 32° north and 32° south latitude.

An immersion suit of suitable size for each person is to be provided for each person assigned to a marine evacuation system crew.

Cite: III/23

Survival Craft and Rescue Boat Embarkation Arrangements

Each lifeboat on passenger vessels of 80 m (262 ft) in length and upwards must be stowed where the after-end of the lifeboat is at least 1.5 times the length of the lifeboat forward of the vessel's propeller.

The height of the davit head of each davit when it is in position to launch the survival craft should, as far as practicable, not exceed 15 m (49 ft) to the waterline when the vessel is in its lightest seagoing condition.

V. REQUIREMENTS FOR OCEANOGRAPHIC RESEARCH VESSELS CERTIFICATED UNDER SUBCHAPTER U

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V. REQUIREMENTS FOR OCEANOGRAPHIC RESEARCH VESSELS CERTIFICATED UNDER SUBCHAPTER U

Cite: B-1 Subdivision and Stability

- 1) Each oceanographic research vessel must meet the subdivision and damage stability requirements of 46 CFR Part 173, Subpart D (www.access.gpo.gov/nara/cfr/waisidx_08/46cfr173_08.html) and SOLAS Chapter II-1 cargo ship requirements.
- 2) In lieu of the requirement of paragraph 1), an oceanographic research vessel may comply with SOLAS chapter II-1 passenger ship requirements.

Cite: B-2 Lifesaving Appliances and Arrangements

- 1) Lifesaving appliances and arrangements on oceanographic research vessels are to meet the SOLAS/ACP Supplement requirements for passenger vessels as follows:
 - A. Vessels that carry more than 50 special personnel.
 - B. Vessels that carry not more than 50 special personnel that meet the structural fire protection regulations for passenger vessels of same size.
- 2) Lifesaving appliances and arrangements on oceanographic research vessels that carry not more than 50 special personnel that do not meet the structural fire protection regulations for passenger vessels of same size are to meet the SOLAS/ACP requirements for cargo vessels.

Cite: B-3 Means of Escape

There shall be two means of escape from all general areas where scientific personnel may be quartered or normally employed and from each public space with a deck area greater than 300 ft². At least one of these two means of escape shall be independent of watertight doors and hatches, except for quick acting watertight doors giving final access to weather decks.

Cite: B-4 Structural Fire Protection

Oceanographic research vessels that carry more than 150 persons must meet the structural fire protection requirements in SOLAS/ACP Supplement for Passenger vessels as applicable to passenger ships carrying more than 36 passengers.

Cite: B-5 Structural Fire Protection – General Laboratory Areas and Chemical Storerooms

- 1) Laboratories and chemical storerooms shall be considered as “service spaces” for the application of SOLAS chapter II-2.
- 2) Boundary bulkheads shall be of “A” class construction; however, if constructed in other than steel, shall be wholly lined with metal. Refer to 190.05-10 for similarity.
- 3) Divisional bulkheads that are permanently installed between laboratory spaces within a general laboratory may be of “B” or “C” class construction.
- 4) Divisional bulkheads temporarily installed between laboratory spaces within a general laboratory area may be constructed of combustible materials when they are necessary to facilitate a specific scientific mission.
- 5) Boundary bulkheads and decks separating general laboratory areas of 152 m² (500 ft²) or less from accommodations and control stations shall be of “A-15” class construction.
- 6) Boundary bulkheads and decks separating general laboratory areas of over 152 m² (500 ft²) from accommodations and control stations shall be of “A-30” class construction.

- 7) Furnishings and equipment which are permanently installed in laboratories, such as desks, file and storage cabinets, waste paper baskets, work benches, chair frames, etc. are to be constructed of noncombustible materials, in so far as reasonable and practicable. Working surfaces where chemical stores are used shall be of noncombustible material.
- 8) Furnishings and equipment temporarily installed to facilitate a specific scientific mission or used for working surfaces other than chemical stores may be of combustible materials.
- 9) Equipment installed in chemical storerooms, such as shelves and cabinets shall be constructed of noncombustible materials.
- 10) If the vessel is certificated to carry more than 150 persons, laboratories and chemical storerooms must be considered as type (14) spaces, and the boundary bulkheads must meet the requirements of SOLAS regulation II-2/9.2.2.3 in lieu of the requirements of items 1) through 6) of this cite.
- 11) Shelving must be constructed so as to provide a clear space of at least 102 mm (4 in) between the bottom shelf and the deck.

Cite: B-6 Structural Fire Protection- Integral Magazines

Bulkheads and decks of integral magazines that are common with storerooms or workshops shall be of "A-15" construction. Flush constructions shall be used where practicable.

Cite: B-7 Segregation of Chemical Laboratories and Chemical Storerooms

- 1) Chemical storerooms shall not be located in horizontal proximity to nor below accommodation or safety areas.
- 2) Chemical storerooms shall not be located adjacent to the collision bulkhead, nor boundary divisions of the boiler room, engine room, galley or other high fire hazard area.
- 3) Chemical laboratories shall not be located adjacent to nor immediately below safety areas. Whenever possible, they shall be similarly separated from accommodation spaces and high fire hazard areas such as the galley.
- 4) Access doors shall be labeled "Scientific Laboratory," "Chemical Laboratory" or "Chemical Storeroom" in Red or White 3 inch Block type letters.

Cite: B-8 Construction and Location of Integral Magazines

- 1) Integral magazines shall be of permanent watertight construction located below the freeboard deck and where practicable below the waterline.
- 2) Magazines shall not be located in horizontal proximity to or below accommodation spaces.
- 3) Magazines shall not be located adjacent to the collision bulkhead, nor in bearing with the bulkhead forming the boiler room, engine room, galley, or other high fire hazard area boundary. If necessary to construct the magazine in proximity of these areas, a cofferdam space of at least 0.61 m (2 ft) shall be provided between the bulkhead or deck involved and the magazine. Such a cofferdam shall be provided with suitable ventilation and shall not be used for storage purposes.
- 4) Access doors to magazines shall be of watertight construction, provided with means of locking and shall be labeled "Magazine" "Keep Open Lights and Fire Away" "Keep Door Closed" "Remove Matches and Lighters Prior to Entering" in Red or White 3 inch Block type letters.
- 5) Racks, stanchions, battens, and other devices must be installed in the magazine to provide rigid and safe stowage of explosives.

Cite: B-10 Deck Covering for Chemical Storerooms and Laboratories

In chemical storerooms and in laboratories where chemicals will be commonly used, the deck shall be of nonskid material suitably resistant to chemical spills with provisions to contain and remove chemical spills.

Cite: B-11 Deck/Shell Covering for Integral Magazines

- 1) Decks shall be covered with a permanent non-slip, non-spark covering.
- 2) Noncombustible thermal insulation shall be installed on shell and unsheathed weather decks that form boundaries of magazine spaces to prevent condensation of moisture.
- 3) Tank tops that form the magazine deck shall be insulated with an approved deck covering to prevent condensation of moisture. Tank top manholes shall not be installed in magazines.

Cite: B-12 Ventilation Systems for Chemical Storerooms and Chemical Laboratories

- 1) Exhaust type power ventilation system shall be installed which has a capacity sufficient to effect a complete change of air in not more than 4 minutes based on volume of compartment.
- 2) Power ventilation units shall have non-sparking impellers and shall not produce a source of vapor ignition in either the compartment or the ventilation system associated with the compartment.
- 3) System shall be independent of any other ventilation system, serve no other space in vessel and be of watertight construction.
- 4) Controls for the power ventilation shall be conveniently located and marked to clearly identify the purpose of control.
- 5) Ventilation exhaust outlets shall terminate more than 1.8 m (6 ft) from any opening to the interior part of the vessel and from any possible source of vapor ignition.
- 6) Chemical storerooms shall comply with the following additional requirements:
 - a. Vent inlets to exhaust ducts shall be provided and located at points where concentration of vapors may be expected.
 - b. Terminals of vents shall be fitted with flame screens.
 - c. Provisions shall be made so that the storeroom is ventilated prior to entry including an indicator outside the space to show that ventilation is being provided and, in addition, the storeroom shall be marked "Danger-Ventilate Before Entering"
- 7) Chemical laboratories shall comply with the following additional requirements:
 - a. Ventilation system must serve the entire laboratory so that same may be used in event of spills or other emergencies.
 - b. Power ventilation system shall be interlocked with any other ventilation or air conditioning system serving the laboratory to prevent circulation of vapors to other spaces.
 - c. Ventilation of air conditioning systems shall be designed so that air cannot be re-circulated into an accommodation space.
 - d. Suitably installed fume hood equipped with independent power exhaust ventilator shall be provided for any operations, reactions or experiments which produce toxic, noxious or corrosive vapors. Fume hood vent shall be compatible with laboratory ventilation to prevent fumes from backing-up within the fume hood system and shall terminate so as to prevent fumes from entering other portions of vessel. Terminals of vents shall be fitted with flame screens.

Cite: B-13 Ventilation Requirements for Integral Magazines

- 1) Natural or mechanical ventilation shall be provided with sufficient capacity to maintain the magazine temperature below 37.8° C (100° F) with 31.1° C (88° F) weather air. Mechanical cooling may be used where ventilation requirements exceed 1,500 cubic feet per minute.
- 2) Vent systems shall be of watertight construction, serve no other space and be provided with metal watertight closures for use when system is not in use.
- 3) Weather cowls shall be provided with a double layer of wire screen not less than 1/8" mesh.
- 4) To prevent pressure build up, a 2 inch IPS bypass with check valve shall be provided in parallel with at least one of the vent closures.

Cite: B-14 Piping and Electrical Requirements for Chemical Storerooms

- 1) Piping systems or similar arrangements are not permitted for the transfer of chemical stores between a storeroom and the area in which chemical stores are used.
- 2) Piping, electrical equipment and wiring shall not be installed within or pass through the storeroom except as required for storeroom itself.
- 3) Electrical installations must comply with requirements for hazardous areas – Class I, Division 1, Group C.

Cite: B-15 Electrical Requirements for Chemical Laboratory

Electrical installations located within 457 mm (18 in) of the deck of the laboratory must comply with the requirements for hazardous areas-Class I, Division 2.

Cite: B-16 Electrical Requirements for Integral Magazines

- 1) Light fixtures shall be of an approved type fitted with globes and guards.
- 2) Controls of the lighting system shall be from a location outside the magazine with an indicator light provided at the switch location to show when lighting circuits are energized.
- 3) Other electrical equipment and wiring must not be installed within or pass through the magazine.
- 4) Electrical cables enclosed in a watertight trunk are permitted.

Cite: B-17 Flushing System for Chemical Storerooms and Laboratories

- 1) Provisions shall be made for flushing away chemical spills.
- 2) Working spaces in which chemical stores are used shall be equipped with fresh water supply shower.
- 3) If a drainage system is installed, it shall be separate from any other drainage system.

Cite: B-18 Piping Systems for Integral Magazines

The only piping allowed, other than piping required for magazine itself, within or passing through magazine is as follows:

- 1) Fresh and salt water service piping and drainage system may be routed through magazines.
- 2) Other piping systems enclosed in watertight trunk.

Cite: B-19 Fire Extinguishing System for Magazines

Sprinkler system shall be installed in each magazine or magazine group.

- 1) System shall be manual control, hydraulic control or automatic and shall be remotely operable from a control station on the freeboard deck and manually operable at the control valve location. Control Valve shall be in general accordance with Spec. MIL-V-17501.
- 2) Automatic type systems shall have sprinkler head of the open head design to permit either manual or automatic operation.
- 3) System designs shall be based on minimum total system capacity of 0.8 gallons per minute per square foot of overhead area.
- 4) Vessel fire pump may be used if sprinkling system shall not interfere with simultaneous use of fire main.
- 5) Control locations for sprinkler system shall be labeled “MAGAZINE SPRINKLER CONTROL”

Cite: B-20 Firemain

Sufficient number of hose streams must be immediately available from the firemain at all times by either of the following methods:

- 1) Maintain water pressure on firemain by continuous operation of:
 - a. One fire pump, or
 - b. A suitable pump capable of supplying one hose stream at pitot tube pressure of not less than 3.45 bar (50 psi), or
 - c. Pressure tank capable of supplying one hose stream at pitot tube pressure of not less than 3.45 bar (50 psi) for five minutes.
 - d. An audible alarm must be installed in continuously manned space to sound if pressure of firemain drops to less than necessary to maintain minimum pitot tube pressure.
- 2) Remote activation and control of one fire pump
 - a. If fire pump is in continuously manned space, remote controls for pump and all necessary valves must be located at manned operating platform.
 - b. If fire pump is in an unmanned machinery space, remote controls for pump and all necessary valves must be located in:
 1. Fire control station, if any
 2. Navigation bridge, or
 3. Readily accessible space acceptable to OCMI.

Cite: B-21 Fire Hydrants and Hose

If nozzles are provided that accept low velocity water spray applicators, a low-velocity water spray applicator must be installed in way of at least one length of fire hose on each fire hydrant outside and in the immediate vicinity of each laboratory.

Cite: B-22 Fixed Fire Suppression System

A fixed carbon dioxide system shall be installed in all chemical storerooms. Carbon dioxide systems for chemical storage areas are required to be automatically activated (46 CFR 194.20-7).

Cite: B-23 Portable Fire Extinguishers

One dry chemical and one carbon dioxide C-II Type portable fire extinguisher must be installed in each chemistry laboratory, scientific laboratory and chemical storeroom for each 27.9 m² (300 ft²) or fraction thereof, as well as one of each kind located in vicinity of the exit of same.

Cite: B-24 Hazardous Materials and Explosives

Oceanographic research vessels shall comply with detailed requirements of 46 CFR Part 194 for stowage, labeling, handling, use, and control of explosives and other hazardous materials.

http://www.access.gpo.gov/nara/cfr/waisidx_08/46cfr194_08.html

Cite: B-25 Explosive Handling Plan

- a) It shall be the responsibility of the master to have prepared, signed, and prominently posted in conspicuous locations, operating procedures, plans, and safety precautions for all operations involving the use of explosives.
- b) The operating procedures referred to in paragraph (a) of this section shall include and set forth the special duties and stations of appropriate qualified persons for various operations involving the

use of explosives. Assignment of such persons shall be commensurate with their experience and training.

- c) A copy of the operating procedures, plans and safety precautions required by paragraph (a) of this section and all subsequent changes or revisions shall be forwarded to the Officer in Charge, Marine Inspection, issuing the certificate of inspection for review.

Cite: B-26 Magazine Vans and Magazine Chests

- 1) Magazine vans and magazine chests carried on oceanographic research vessels shall meet the arrangement, construction, stowage, labeling, ventilation and fire protection system-sprinkler system requirements of 46 CFR Subpart 194.10
http://www.access.gpo.gov/nara/cfr/waisidx_08/46cfr194_08.html
- 2) Magazine vans are subject to normal plan submission procedures and initial construction inspection.

Cite: B-27 Portable Vans and Tanks

- 1) Portable vans and tanks, including temporary structures, which may be carried on oceanographic research vessels shall meet the design, construction, stowage and labeling requirements of 46 CFR Subpart 195.11:
http://www.access.gpo.gov/nara/cfr/waisidx_08/46cfr195_08.html
- 2) Accommodation, power and chemical stores vans are subject to normal plan submission procedures and initial and periodic inspection.

Cite: B-28 Weight Handling Gear

- 1) Weight handling gear installed on an oceanographic research vessel, with the exception of gear for lifesaving equipment, shall be certified in accordance with the ABS "Guide for the Certification of Lifting Appliances" as appropriate for the type of weight handling gear provided.

As an alternative, evidence of approval by the International Cargo Gear Bureau may be submitted.

Cite: B-29 Fire Axes

Each vessel must carry at least the number of fire axes as shown in the table below and these must be distributed throughout the spaces available to persons on board to be readily available in case of emergency.

Regulatory gross tons		Number of axes
Over	Not over	
	50	1
50	200	2
200	500	4
500	1,000	6
1,000		8

VI. SURVEYS DURING AND AFTER CONSTRUCTION

CHECKLIST ON ACP CLASSIFICATION SAFETY CONSTRUCTION (SLC) SURVEYS	VI-1
CHECKLIST ON ACP STATUTORY SAFETY EQUIPMENT (SLE) SURVEYS	VI-3
CHECKLIST ON ACP ENVIRONMENTAL SURVEYS AND MARPOL V	VI-5

The following checksheet will be completed by the ABS Surveyor during surveys during and after construction including initial, annual or renewal surveys. These checkseet are in addition to the normal classification, SOLAS and MARPOL check sheets the surveyor will complete to verify compliance with the ABS Rules, SOLAS and MARPOL convention.

**CHECKLIST ON ACP CLASSIFICATION SURVEYS
ALTERNATE COMPLIANCE AND THE US SUPPLEMENT TO ABS RULES
TO BE DONE IN CONJUNCTION WITH INITIAL, MANDATORY ANNUAL SURVEY (MAS),
AND RENEWAL SAFETY CONSTRUCTION (SLC) SURVEYS**

1. On vessels not classed ACC, automation systems for propulsion and auxiliary boilers were tested with USCG-approved procedures and found satisfactory.
2. The vessel's Chief Engineer certified that all aspects of the vessel's automated equipment has been routinely and recently tested using the USCG-approved Periodic Automation Test Safety Procedure (or approved by ABS on behalf of the USCG) and found satisfactory.
3. Was the ABS Class Annual Automation Survey (AAS) satisfactorily carried out, utilizing the USCG or ABS approved Periodic Automation Test Safety Procedure?
4. It was confirmed that vessels with periodically unattended or minimally attended Machinery Spaces had a planned maintenance program, including maintenance and repair manuals and routine maintenance and checksheets?
5. The remote controls of valves in hull penetrations were randomly tested. Proper operation of reach rods, control actuators and function indicators were randomly verified and found satisfactory.
 - a. At the SLC renewal, a more detailed examination, to the satisfaction of the Surveyor, was conducted.
6. Throttle control apparatus was demonstrated in manual and power modes at all stations and related alarms and trips were verified operational.
7. A general examination was conducted of ladders, handrails, ramps, catwalks, accommodation ladders, and protective guards on machinery to ensure these items were in good general repair and suitable to protect personnel.
8. Draft marks, vessel name and hailing port were accurately affixed and displayed.
9. Machinery space tank tops and bilges were examined for accumulation of oil or other substances that could pose a fire hazard.
 - a. Unsafe conditions were corrected.
10. An operational test was conducted of the main and emergency bilge pump suction.
11. The main and auxiliary piping systems were examined externally and found free of apparent leakage.
 - a. The flexible non-metallic expansion pieces in the circulating system were identifiable by manufacturer and verified by the Chief Engineer to have less than 10 years of service.
12. The vessel's Master and Chief Engineer confirmed that the vessel had no 835s or other conditions that needed to be brought to my attention.
13. The crew did not report, nor did I see any unsafe or unsanitary conditions of a concern.

14. If any of the above questions is answered "No," the local OCMI must be informed before the vessel sails. The source of the information is to be kept confidential.

**CHECKLIST ON ACP STATUTORY SURVEYS
ALTERNATE COMPLIANCE AND THE US SUPPLEMENT TO ABS RULES
TO BE DONE IN CONJUNCTION WITH INITIAL, MANDATORY ANNUAL SURVEYS (MAS),
AND RENEWAL SAFETY EQUIPEMENT (SLE) SURVEYS**

I. Fire Hose Testing

1. All fire hoses were hydrostatically tested to the maximum fire pump pressure to which they may be exposed but not less than a minimum pressure of 6.9 bar (100 psi). Note: The Safety Equipment Certificate may not be issued or endorsed if this is not done.

II. Liferaft Servicing

Note: Lack of certification is a No Sail item and the local OCMI must be contacted.

1. Note: New Regulations have been published regarding the servicing of liferafts. USCG field offices perform initial service facility approval and periodic spot checks, but third parties may be substituted. A new sticker system on the liferaft itself should be used in conjunction with the certificate to determine proper servicing.
2. Liferaft certificates indicate current servicing by a USCG approved facility. Note: The information must contain the port of servicing and the date of servicing.

III. Lifeboat Operational Tests

1. Proper operation of the propelling gear and/or motors was demonstrated. (IMO allows this testing to be carried out while the boat is secured in the falls.)
 - a. The CG inspectors will have a crew proficiency test to conduct during their boarding. At that time, the crew must operate each boat in the water, and the following tests will be carried out:
 - b. The USCG will accept load tests done by ABS.
2. Each motor lifeboat and hand-propelled boat was operated at full speed both ahead and astern.
3. Each installed system, such as any powered bilge pump or water spray system, was successfully operated.
4. Compass readings were compared with several known bearings.
5. Each air tank buoyancy unit was visually inspected and appears fit for service. Note: In case of doubt, air tanks may be tested for air-tightness per Marine Safety Manual, Chapter 6, Section R.
6. Water tanks were inspected and confirmed watertight. Note: This should be demonstrated by either an airtight test or filling with water and watching for leaks. Refer to Marine Safety Manual, Chapter 6, Section R.
7. Batteries for engine starting and searchlights have a means for recharging, which are in satisfactory condition.
8. The condition and quantity of survival equipment was checked as per the standard ABS checklists.

IV. Advice for Lifeboat Weight Tests

1. The USCG has requirements in addition to SOLAS. The USCG requires weight testing of the lifeboats during each inspection for certification.

2. The primary references for USCG lifeboat testing and inspection are:
 - a. Title 46, Code of Federal Regulations Part 199.45 and
 - b. Marine Safety Manual, Vol. 11, Section 6.R.
3. The CFR contains the performance standard required, while the process used to verify compliance with the standard is found in the Marine Safety Manual (MSM). A brief summary of the lifeboat test and inspection requirements and the verification process follows. If difficulties are encountered, please ask for advice from the local OCMI.

V. Tests and Inspections Required

1. At each Safety Equipment Inspection that will be used by the United States Coast Guard for their renewal or mid-period Certification, a demonstration showing the proper condition and operation of lifeboats and their launching appliances at loads ranging from light load to full load is required. A demonstration of the proper condition and operation of launching appliances at loads ranging from light load to 10% overload is required at intervals not exceeding five years. During an inspection for initial or renewal of SLE, any portion of the five year load since the vessel's previous inspection for initial or renewal of SLE need not be repeated.
2. Light Load Test. The boat should be lowered into the water and released. Operating the launching system at light load demonstrates that the mass of the boat is sufficient to overcome the frictional resistance of the winch, falls, sheaves, blocks and associated gear. This test is especially important on older installations to test the condition of rollers, bushings, bearings, and other rolling and sliding parts.
3. Full Load Test. The boat is lowered to the embarkation position. Tricing pendants are disconnected. Weight is added to bring the lifeboat to full load condition. During loading, the boat should be held alongside the ship by means of the installed frapping and/or bowsing gear. The fully loaded boat should be lowered using the normal lowering procedure and using the on-deck winch control position. During lowering, alternatively release and apply the brake so that the boat stops at approximately 2 m (6.6 ft) intervals. Complete at least three start-stop cycles. Stop lowering just as the boat reaches the water. The keel should be at or in the water but there should still be tension on the falls. Release the boat using the on-load release mechanism control. Release mechanisms with a hydrostatic lock will require use of the emergency override device to permit on-load release. The release mechanism must open all hooks simultaneously and release the boat into the water. Unload the boat, recover it with the winch, and return it to its stowed position. Observe operation of the limit switches as the davit approaches the stowed position. Anyone on board the boat should disembark at the deck level.
4. Caution: NO ONE SHOULD BE IN THE BOAT WHEN THE WEIGHT OF THE DAVIT IS TAKEN UP BY WINCH AND THE DAVIT MOVES INTO ITS STOWAGE POSITION.
5. During the test, there should be no deformation of, or damage to the launching appliance or its connection to the vessel. The brake must be a "DEADMAN" type. When the operator releases the brake handle, the davit must apply the brake, stopping the boat, without any additional force.

**CHECKLIST ON ACP ENVIRONMENTAL SURVEYS
ALTERNATE COMPLIANCE AND THE U.S. SUPPLEMENT TO ABS RULES
TO BE DONE IN CONJUNCTION WITH INITIAL, MANDATORY ANNUAL SUREVEY (MAS),
AND RENEWAL MARPOL ANNEX I SURVEYS**

1. Marine Portable Tanks (MPTs), were labeled showing compliance with IM 101, IM 102, or exemption issued according to 49 CFR 107 (Subpart B) and installed and tested IAW 46 CFR 64.
2. The Vessel's Fuel and Bulk Oil Containment arrangements were examined and found to be in compliance with 33 CFR 155.320.
3. The Vessel's Oil Placards indicating that discharge of oil is prohibited were examined and found in each machinery space and at control stations for ballast and bilge controls.
4. Cargo Discharge Containment arrangements were examined and found to be in compliance with 33 CFR 155.310.
5. Emergency Shutdown of cargo transfers within the vessel was examined and found to be in compliance with 33 CFR 155.780.
6. On tank vessels, is the illumination of the deck in transfer operation work areas and at transfer connections adequate? 33 CFR 155.790(b)
7. Cargo Transfer Hose testing was witnessed or an affidavit sighted from a responsible individual, that hoses had been hydrostatically tested and marked according to 33 CFR 155.800.
 - a. Pipe and manifold labeling was checked for accuracy and legibility.
8. Tank Vessel's approved OPA Vessel Response Plan complying with 33 CFR 155.1010 was verified onboard.
9. Vessel's approved shipboard oil pollution emergency plan (SOPEP) (MARPOL ANNEX 1, REGULATION 26), was verified on board.
10. Tank Vessel of length less than 122 m (400 ft) was examined and found to have Oil Discharge Removal Equipment complying with 33 CFR 155.210 for on-deck spills up to 7 bbl stowed in marked location.
11. Vessel was examined and found to have oil discharge removal equipment complying with 33 CFR 155.220 (Permit issued or NLS Certificate issued) and COI authorized C and D NLS Cargoes.
12. Tank Vessel's Cargo Internal Transfer Equipment was examined and found to be in compliance with 33 CFR 155.225.
13. Vapor control systems were examined for compliance with 46 CFR 39, and a representative sample of alarms were tested and found to be in proper operation.
14. NOTE: Tank Vessel carrying animal fats and "other oils" are considered as a vessel carrying "oil" in accordance with 33 CFR 157.03(n).

**CHECKLIST ON ACP ENVIRONMENTAL SURVEYS AND MARPOL
ALTERNATE COMPLIANCE AND THE U.S. SUPPLEMENT TO ABS RULES
TO BE DONE IN CONJUNCTION WITH INITIAL, MANDATORY ANNUAL SURVEY (MAS),
AND RENEWAL MARPOL ANNEX IV (Sewage) SURVEYS**

1. Marine Sanitation Devices were examined, devices found to be certified in accordance with 33 CFR 159 as Type I, II, or III, as appropriate, and continue to be in satisfactory operating condition and arrangement.

**CHECKLIST ON ACP ENVIRONMENTAL SURVEYS AND MARPOL
ALTERNATE COMPLIANCE AND THE U.S. SUPPLEMENT TO ABS RULES
TO BE DONE IN CONJUNCTION WITH INITIAL, MANDATORY ANNUAL SURVEY (MAS),
AND RENEWAL MARPOL ANNEX V (Garbage) SURVEYS**

1. The Vessel was verified to be keeping Garbage Disposal Records required by 33 CFR 151.55.
2. The Vessel's approved Waste Management Plan complying with 33 CFR 151.57 was verified onboard.
3. Placards describing prohibited waste discharges as required by CFR 151.59 were verified as posted.

VII. SURVEYS DURING CONSTRUCTION

CHECKLIST ON ACP NEW CONSTRUCTION SURVEYS NCS

VII-1

The following checksheet will be completed by the ABS Surveyor during new construction surveys. The checksheet is in addition to the normal classification checksheets the Surveyor will complete to verify compliance with the ABS Rules.

ACP NEW CONSTRUCTION SURVEYS ALTERNATE COMPLIANCE AND THE US SUPPLEMENT TO ABS RULES – NEW CONSTRUCTION TO BE DONE IN CONJUNCTION WITH ISSUANCE OF THE INTERIM CLASSIFICATION CERTIFICATE

1. The Surveyors involved with the new construction were qualified in the ACP process and the ABS processes for new construction.
2. Are communication cables routed to avoid high risk fire areas and are telephone installations in the weather located in a watertight enclosure with an external audible signaling device?
3. Is the stop control for the emergency generator located only in the room containing the emergency generator?
4. Were the additional requirements for vessels carrying hazardous cargoes complied with and tested as necessary?
5. Were valves verified to meet the requirements of positive shutoff category A or category B in the required piping system?
6. Sounding tubes, where fitted to oil tanks, were verified to not have perforations or openings throughout their length?
7. For vessels with automatic or remote control and monitoring systems, are the following approved manuals found on board:
 - a. Qualitative Failure Analysis (propulsion controls, monitoring and alarm systems, automated electric power management system, all other automated systems that may potentially constitute a safety hazard (e.g. stabilization systems, integrated propulsion/steering systems)
 - b. Planned Maintenance Program
 - c. Design Verification Test Procedures (all automated systems)
 - d. Periodic Safety Test Procedures
8. Were the Design Verification Test and the periodic Safety Test described in cite 4-9-1/7 of this Supplement satisfactorily conducted?
9. Was the steering failure alarm tested and found satisfactory?

10. On tank vessels, were the additional requirements for cargo vapor emission control systems verified?
11. Were all required placards, instructions, and identification labels found to be in accordance with the supplement?

VIII. RECORD OF REVISIONS

Introduction	Updated to indicate inclusion of Subchapter L. Also revised applicability criteria for Supplement, i.e., Item G regarding Automation deleted (see Cite 4-9-1/1.)	1 Jan. 2002
Section I		1 Jan. 2002
General	Cite references in the Table of Contents revised to agree with 2002 Edition of the Under 90M Rules.	
1-1-5/1	New cite to clarify requirements for cargo gear.	
4-3-3/11	New cite to clarify that full follow-up control is required for steering gear. This change brings Under 90M (295 ft) Supplement in line with same change made to Steel Vessel Rule (SVR) Supplement.	
4-4-2/7	New cite added to clarify plastic pipe & components must be USCG approved. Brings Under 90M Supplement in line with same change made to SVR Supplement.	
4-4-2/11	Cite revised to reflect changes in USCG requirements for valves employing resilient material and to agree with same change to SVR Supplement.	
4-4-7/3.1	New cite to clarify that arrangements permitted by this Rule are not acceptable on U.S. flag vessels. Clarification added regarding need for remote operation of cargo tank valves. This change brings the Under 90M Supplement in line with SVR Supplement.	
4-4-7/5.5	New cite to clarify that arrangements permitted by this Rule are not acceptable on U.S. flag vessels. This change brings the Under 90M Supplement in line with SVR Supplement.	
4-4-7/5.19	Item g revised to clarify the requirement for oxygen measurements (based on same change top SVR Supplement).	
4-5-1/3.5	Cite revised to clarify material requirements based on same change to SVR Supplement.	
4-6-3/11	First paragraph revised to clarify that either NEC or IEC standards for installations in hazardous areas may be followed, i.e., it is not necessary to comply with both.	
4-6-4/13	Cite revised to recognize USCG acceptance of IEC 92-350 series cables.	
4-9-1/1 (SVR)	New cite to clarify the automation requirements by basing the criteria on the level of manning intended for the propulsion machinery space.	

4-9-3/1, 4-9-3.3 4-9-3/9, 4-9-3/15.5.1 (SVR)	New cites providing additional USCG requirements which supplement ABS ACC requirements.	
4-9-3/15.5.2 (SVR)	Cite revised to include additional USCG requirements for fire pump control & pressure monitoring. Also made applicable for ACC.	
5-1-1/1.13 (SVR)	Updated cite to indicated USCG approval for high velocity vent valves. Additionally, required approval for pressure vacuum valves clarified.	
5-8-5/1 (SVR)	Updated cite to indicate that safety relief valves for liquefied compressed gas service are to be USCG approved. Additionally, required approval for cargo containment systems and piping systems carrying nitrogen clarified.	
6/5.5 (PVG)	Cite revised to make reference to the ABS Passenger Vessel Guide.	
Section II		1 Jan. 2002
II-2/4.7.2	Cite revised to clarify hydrant and hose arrangements to agree with USCG requirements.	
II-2/4.8.4	Cite revised to clarify required approval for nozzles.	
II-2/5	Cite revised to clarify required approval for fixed gas extinguishing systems.	
II-2/5.2	Requirement addressing release time for CO2 system deleted as it is not applicable to cargo spaces and the machinery space requirement is covered by SOLAS.	
II-2/6	Cite revised to clarify required approval for fire extinguishers.	
II-2/7	Cite revised to clarify fire detection and fire extinguishing requirements for incinerator spaces.	
II-2/12	Cite revised to clarify that compliance with SOLAS and NFPA 13 required with the higher standard prevailing.	
II-2/13	Cite revised to eliminate the battery capacity requirements as USCG requirements were harmonized with SOLAS. Additionally, the cite was revised to clarify required approval for fixed fire detection and alarm systems.	
II-2/61	Cite revised to clarify required approval for fixed foam systems.	
VI 6.1 &	Cites III/48 & III/48.2 revised to reflect SOLAS.	
VI 6.1.2.8 (LSA Code)	Amendment creating the LSA Code.	

Section III		1 Jan. 2002
B.6m	Deleted as the requirement for open front toilet seat is no longer in CFR.	
Section VI		1 Jan. 2002
III/21	Regulation number of Cite III/20 changed to III/21 per SOLAS Amendments.	
III/22	Regulation number of Cite III/21 changed to III/22 per SOLAS Amendments.	
III/22.3	Regulation number of Cite III/21.3 changed to III/22.3 per SOLAS Amendments.	
III/22.4.1.2	Regulation number of Cite III/21.4.2.2 changed to III/22.4.1.2 per SOLAS Amendments.	
III/23	Regulation number of Cite III/22 changed to III/23 per SOLAS Amendments.	
Section VIII		25 Oct. 2002
VIII	New section incorporates the OSV's addendum additional requirements.	
II/44	Added "A60" construction for space around the emergency source of power.	
IV	Added revised check sheets.	
Introduction		
Introduction-1	Revised Title to reflect applicability to include vessels certificated for International Voyages.	
Introduction-2	Revised applicability of Supplement.	
Introduction-3	Expanded guidance regarding equivalency evaluation. Correction of Chapter 32 to 9.	
Introduction 4	Re-Flagging wording revised to reflect requirements.	
Introduction-5	Reportable Casualty re-paragraphed.	
Section I		
3-3-1/3.1	Revised intact stability to include vessels for re-flagging.	
3-3-1/3.3	Cargo vessels over 80 m (262 ft) when changing US Flag must meet the probabilistic damage stability regulations.	

Section II

II-2/4.7.2 Revised from one hose to two hoses.

Section III

33 CFR 151.27 Added Pages III-ii, III-12, III-15 Shipboard oil pollution Emergency Plan requirements.

Section VIII

10 Mar. 2003

A-3 Revised Carriage of NLS.

Section I Deleted Cites 4-6-2/7, 9, 13.1.3, 15; 4-6-3/114-6-4/7.11.1, 7.11.4,13,13, 7/31, 4-6-6/1.

4-6-4/7.15.4 Reference to Main AC Switchboards deleted.

Section II Entire section “General, Equipment Approvals” replaced.

New section added “Fire Equipment and Arrangements.”

Added approval series 160.175, 160.176, 161.110, Deleted **** Deleted 161.010.

II-2/5.2 Revised last two paragraphs relative to the SOLAS Reg. to 10.4.1.1.1 and 20.6.1.1

Under “Carbon Dioxide Storage” deleted last sentence; II/6 under “Fire Extinguishers” replaced approved with type-approved.

II-2/10 First sentence rewritten for clarity.

II-2/56.6 Deleted since part of SOLAS.

III-4 Original wording replaced with new paragraphs.

III-17 Revised to 18.

III-27.3 Revised to 32.3.

Added/inserted for each person and regardless if it has totally enclosed lifeboats.

III/41 Revised to 33, revised Cite III/34 LSA Code 6.1.2.9, 6.1.2.

22 Apr. 2003

Section II Revised, corrected and clarified as per USCG letter dated 14 May 03.
General Equipment Approval changed Union to Community, MarED to MED.

II-2/45	Changed .087 radius to 50°.	
III/4 160.132	Added “if davits for rescue boat***”.	
II-2/37.1.3	Revised to 20.6, Cite II-2/37.1.3 and 37.1.6.3 to 20.6 and 20.3.1.3.	
II-2/28	Revised to 13 and changed applicable cites in wording as per SOLAS 2000 Amendments.	
Introduction 1	Added subchapter “L.”	
Addendum	Cite A3 revised to include all CFR referenced regulation cites.	
Section VIII		20 May 2003
	Deleted check sheet H/NLS-OSV added references.	
	Cite III/4 added 160.115 “if winches for rescue boat***”.	
	Revised Cite II-2/44 to 9.2.3.3. II-2/45 to 13, II-2/61 to 10.4 and FSS Code Ch. 14.	
	Added wording to Cite A-3 from USCG Reg. 153.470-491 for clarity.	
		23 May 2003
Addendum	Revised/added all references throughout.	5 Jun. 2003
Section II	Revised all SOLAS Consolidated Ed cites to SOLAS 2000 Amendment cites.	9 Jun. 2003
Contents	Revised Sections, added Section VIII Subchapter U, renumbered Sections.	8 Aug. 2009
Introduction - 1	Updated revised 2nd paragraph, added Subchapter U.	
Introduction - 2	Revised added section VIII, minor corrections.	
Introduction - 6	Minor corrections 1st paragraph.	
Introduction - 7	Minor changes.	
Introduction - 8	Revised how to handle the Form 835.	
Introduction - 9	Drydocking inspection intervals for passenger vessels revised.	
Introduction - 10	Minor revision last sentence.	
Table I	Revised numerous Cites and headings and added new headings.	
3-3-1/3.1	Revised and corrected IMO resolution.	

4-4-1/1	Revised heading.
4-4-2/7	Revised requirement for plastic pipes.
4-4-2/11	Revised paragraph relative to Valves at vital piping.
4-6-2/5.9, 5.16	Added use of emergency generator in port, added last sentence.
4-6-2/3.1.6	Added new cite relative to time and connection of emergency generator to switchboard.
4-6-6/9.3	Revised reference rule cite.
4-9-2/5	Added new cite relative to starting capability of less than 50 percent alarm.
4-9-2/1&3	Revised heading, added application.
4-9-3/13.9.1 4-9-4/3.7,15.1, 4-8-2/3.11 (SVR)	Minor changes.
4-9-3/15.5.2 (SVR)	Added reference cite.
	Added "C" to all Part 5 cites.
6./5.5	Revised reference cite.
Section II	Index revised all cites.
Section II	New Equipment Approval list for ships.
II-1/45	New – Precaution against electrical shock.
	Revised all regulation numbering to latest SOLAS Regulations.
II-2/7.4	New Regulation.
II-2/9.2.3.3	Wording revised in its entirety.
Section III	New Table added for Navigation Equipment Approvals for Ships.
II-2/10.4 & FSS Code 5.2.2	1st paragraph revised; Controls 1st paragraph last deleted; 3rd paragraph last chapter sentence deleted.
II-2/10.4.1.1.3, 10.5 & FSS Code Chapter 7	1st paragraph wording revised in its entirety; 4th line from end be USCG approved.
III/4	2nd paragraph revised in its entirety; Line item 161.112 revised.

46 CFR 63.25-9	New.	
Section VII	Revised Subchapter L (OSV).	
Section VIII	New Subchapter U (Research Vessels).	
Section IX	Revision Record updated.	
Section Intro to IX	Incorporated USCG Comments AJG1 to AJG17. Revised units to both Metric and English units.	8 & 10 December 2009
Section Intro to IX	Incorporated USCG Comments AJG1 to AJG16.	17 May 2010
Section II-1/45	Added paragraph USCG Letter CG-522 as per USCG Comments Part 3.	21 Jun 2010
Part IV.2.b	ACP Statutory Surveys Checksheet changed Section to B1.P.2 as per USCG Comments Part 3.	21 Jun 2010
Section VII	Cite A2 added Paragraph (2) as per USCG Comments Part 3.	21 Jun 2010
II-2/9.2.3.3	Revised first sentence for clearer interpretation	01 Jul 10
Contents	Removed section “Requirements for Offshore Supply Vessels (OSV’s) Certificated Under Subchapter L, except Liftboats”	1 May 2013
Addendum	Removed all conversions to “metric tons” cited through the Supplement Sections I through VII.	
Mission Statement	ABS Mission Statement Updated	
Introduction	Updated and Simplified Introduction Revised section listing to reflect removal of OSV requirements and removed reference to Subchapter L for applicability.	
1-1-5/1	Updated Cargo Gear Certification to comply with ABS Guide for Certification of Lifting Appliances, 2007	
3-3-1/3.3	Include Regulation 46 CFR 173	
4-1-1/31	Update reference to ABS 2013 Steel Vessel Rules	
4-3-5/15 (SVR)	Revised citing.	
4-4-7/5.19 (SVR)	Revised citing.	
4-5-2/11.3	Added new USCG Rulemaking requirements for CO ₂ systems	
4-6-2/15.5.3	Revised heading on page I-7.	
4-6-3/5.1.7	Paint on cables not permitted	

4-6-3/11	ATEX certification not permitted for electrical equipment in hazardous areas
5C-1-7/11.11.2 (SVR)	Revised citing.
5C-1-7/11.11.2	Added “(SVR)” to cite listing.
II-i	Removed reference to OSV requirements (Addendum1).
II-2/10.2.3.1	Revised heading.
II-2/10.2.3.2	Revised heading.
II-2/10.2.3.3	Revised heading.
II-2/10.3 & FSS Code Chapter 4	Revised heading.
II-2/10.4.1.1.3 10.5 & FSS Code Chapter 7	Revised heading.
Section II	Revised page references.
II-3	Update Navigation Equipment Approvals for Ships to requirements from NVIC 8-01, Change 2
V/22	Removed – requirement only applicable to vessels 100m and longer.
III-i	Removed reference to OSV requirements (Addendum1). Revised page references.
II-2/20.6 & II-2/20.3.1.3	Revised heading.
III/4, Page II-10	Added clarification to series 163.003.
VI-VII	Surveys During and After Construction moved to Section VI and VII
VI-2	Modified “Advice for Lifeboat Weight Tests” To eliminate requirements for end-for-ending of lifeboat falls. Requirements removed from SOLAS.