GUIDE FOR CONDUCTING UNITED STATES COAST GUARD INITIAL CERTIFICATE OF COMPLIANCE EXAMINATIONS ON FOREIGN PASSENGER VESSELS

This work instruction provides clear guidance and information for U.S. Coast Guard Foreign Passenger Vessel Examiners (FPVEs), shipyards, owner/operators, and third-party stakeholders in the preparation and execution of Initial Certificate of Compliance (ICOC) Examinations. This guidance does not limit FPVEs from expanding or modifying the examination scope provided there are reasonable grounds that do not deviate from USCG or IMO requirements.

1. References:

a) USCG Marine Safety: Port State Control, COMDTINST 16000.73
b) USCG FPV Initial Certificate of Compliance Exam Process Guide MPS-FM-CSNCOE-03
c) USCG Marine Safety Center (MSC) SOLAS Plan Review Guidelines
d) US Cruise Vessel Security and Safety Act (CVSSA), 2010
e) SOLAS 1974, Consolidated Edition
f) MARPOL, Annex I, Annex IV, Annex V, and Annex VI, as amended
g) IMO Codes: FTP Code, FSS Code; LSA Code; ISPS Code, IGF Code
h) USCG Low Flashpoint Fuel Job Aid

2. Applicability:

An Initial COC Exam is required for certain foreign passenger vessels in order to meet the obligations specified in Title 46, U.S.C. Section 3505 and SOLAS 74/78, Chapter I, Regulation 19. Initial COC Exam-related plan review and inspection must be performed for the following vessels:

a. New or existing vessels that intend to embark passengers for the first time from a U.S. port.

b. New or existing vessels that intend to carry U.S. citizens as passengers and make port calls at U.S. ports for the first time.

c. Existing vessels that have undergone a modification or alteration of a “major character” as defined by SOLAS 74/78 Chapter II-1, Regulation 1.

d. Existing vessels that have undergone a modification or alteration, or a change of use or categorization of existing spaces that affects required structural fire protection or means of egress. In such cases, the Coast Guard will limit Initial COC Exam plan review and related examination to the new arrangements and will examine existing arrangements as described in this Work Instruction.

e. Existing vessels that return to service in the United States more than one year after the annual Certificate of Compliance, Form CG-3585 expired and more than 5 years since the Coast Guard Marine Safety Center (MSC) completed the vessel plan review. The vessel

owner or operator of such a vessel must make a complete submission of all modifications or alterations made to the vessel since the initial Coast Guard plan review. The Coast Guard will require Initial COC Exam plan review and inspection for any modification or alteration made to the vessel that materially alters structural fire protection or means of egress and will examine existing arrangements as described in Paragraph D.7.C.2 of reference (a), Annual Foreign Passenger Vessel Examination.

f. Existing vessels selected by Commandant (CG-CVC).

3. ICOC Exam Components: The ICOC exam process consists of the following steps, listed in the order that they should occur:

a. **Concept Review**: The MSC will conduct the concept review during the design phase for novel ship arrangements or unique designs incorporating design features that involve interpretations of SOLAS rendered by the vessel's classification society or flag Administration, equivalencies, or exemptions from existing regulations. The MSC provides this review to address specific design concepts or ideas that could create delays if discovered later during the normal course of plan review. Concept review does not result in approval of the conceptual drawings, but results in acceptance of specific conceptual details.

The MSC requires at least 30 day-notice before the proposed concept review meeting date and the request must include an agenda for the meeting. Additionally, the submitter should provide the MSC with arrangement plans and documentation to support the meeting agenda.

For alternative designs and arrangements addressed by International Conventions, the USCG is an interested party. Due to the increased engineering rigor associated with alternate design and arrangements, the submitter must include the MSC in all communications related to alternate design and arrangements as provided in Section 1.4 of the Annex to the International Maritime Organization (IMO) Maritime Safety Committee Circular 1002.

Contact the MSC for additional information concerning submittals.

b. **Plan Review:** The submitter submits vessel plans to the MSC for review of compliance with the SOLAS convention to which the vessel is built. The plans should provide supporting information for any special considerations approved by the flag Administration such as equivalencies or exemptions. Vessel's returning to service in the U.S. need only provide plans for areas of the vessel that have been altered since the last plan review. A thorough checklist is provided on MSC's website (MSC Guidelines for Review of Initial Certificate of Compliance (ICOC) Plans, Procedure Number H2-16).

The submitter should submit at least three sets of final drawings and documentation bearing the approval stamp of the flag Administration or Recognized Organization (RO) to the MSC for review. The submitter should make these submissions as early as possible (at least 6 months in advance), to allow MSC to complete plan review before the SFP and Initial Exam.

(1) All plans must:

(a) Reflect the "as-built" condition of the vessel.

(b) Clearly indicate areas of the vessel that the submitter modified or altered during design.

(c) Clearly indicate the SOLAS convention and amendments applicable to each area.

(d) Be legible, contain a legend or key written in the English language, and contain a scale to allow reviewers to determine dimensions.

(e) Include supporting information (either on the plan or on separate documentation) for any special considerations approved by the flag Administration such as equivalencies or exemptions.

(2) The submitter should submit the following information and plans for review by the MSC:

(a) General Information:

[1] Name of vessel (including former name(s) for existing vessels);
[2] IMO Number;
[3] Building contract date, keel laying date, deliver date;
[4] Country of registry;
[5] Classification Society;
[6] Total number of passengers and crew;
[7] Gross tonnage, length, breadth, depth, and speed;
[8] First U.S. port where passengers are expected to be embarked and the approximate date;
[9] SOLAS Convention to which the vessel was built, including amendments; and
[10] Major modification information to include dates, locations, and SOLAS Convention to which the vessel was modified.

(b) Structural fire protection plans of bulkheads and decks. These include:

[1] Legend detailing bulkhead and deck construction, including insulation values. Symbols should be distinguishable and in accordance with IMO Resolution A.654(16) for ships constructed before 1 January 2004. For ships constructed on or after 1 January 2004, the symbols should be in accordance with IMO Res. A.952(23) or ISO 17631:2002.

[2] Identification of each space by name and numerical fire risk category per SOLAS II-2/9 as applicable. For spaces having multiple uses and fire risk classifications, or when the fire risk classification for a space is in doubt, the submitter shall provide explanations regarding the use of the space, expected fire load in the space, and whether hazardous materials are stored in the space, to expedite review.

[3] Location of all main vertical zone boundaries, fire screen doors, and draft stops (the submitter may show this by providing the fire control plan required by SOLAS).

[4] If requested by MSC, fire barrier penetration schedule that details approved methods for penetrating bulkheads and decks with piping, cables, ventilation ducts, etc. Include any heating, ventilation, air conditioning (HVAC) plans showing fire boundary penetration details and damper details.

(d) Means of escape diagram should indicate primary and secondary exits from each area, maximum occupancy of public spaces (occupant load), escape routes, and assembly stations. In addition, include means of escape calculations in accordance with Chapter 13 of the International Code for Fire Safety Systems (FSS Code).

(e) If requested by the MSC, Preliminary stability calculations. Submit these calculations early in the design stage as this will assist with design planning. MSC will conduct a cursory oversight review of assumptions accepted by the Administration. In particular, the MSC will review documentation associated with cross-flooding, down-flooding, and any equalization measures accepted by the Administration.

After satisfactory review, the MSC notifies the cognizant OCMI, CSNCOE and first U.S. port of any items that require an onsite clarification. For additional information on plan submittal, visit the MSC's public facing website at https://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Prevention-Policy-CG-5P/Commercial-Regulations-standards-CG-5PS/Marine-Safety-Center-MSC

c. **Structural Fire Protection Examination (SFP Exam):** The MSC and the OCMI/COTP office responsible for inspections at the vessel location, visit the ship during the construction or lay-up period to examine structural fire protection that is not readily accessible once the vessel is in operation.

(1) For vessels under construction or undergoing extensive modifications, the Coast Guard conducts the SFPE after plan review, but several months before the ICOC exam. For vessels already in operation, the Coast Guard may perform a modified SFPE during the ICOC exam. In areas where visual inspection is limited (primarily on existing vessels), the removal of certain joiner panels exposing structural fire

protection installations for examination may be required. Items looked at during the SFP Exam include:
(a) Fire Insulation
(b) Enclosed Escape Stairways
(c) Escape Routes
(d) Fire Boundary Penetrations
(e) Fire and Smoke Damper and Ventilation Arrangements
(f) Draft Stops
(g) Space Categorization (sometimes referred to as the Passive Fire Protection Plan)
(h) Smoke Detector and Sprinkler Arrangements (Fixed pressure water spraying and water mist fire-extinguishing systems)

(2) The SFP exam is separate from the Initial Certificate of Compliance Exam and is not limited to new vessels and major conversions. The local OCMI may need to conduct spot checks of SFP arrangements for vessel's returning to service in the U.S. PSCOs should require the shipyard or owner's representative to provide the following items upon arrival:

(a) Approved copies of each of the following plans for Coast Guard use onboard the vessel (or drawings showing the same details as the drawings submitted for approval):
[1] SFP plan.
[2] SFP details showing insulation thickness.
[3] SFP details for cable, ventilation, and other penetrations.
[4] Ventilation plans to verify location/routing of ducting in way of A-class boundaries.

(b) Type approval certificates for all the following items:
[1] Fire rated doors for each model installed.
[2] Fire rated windows for each model installed.
[3] Low flame spread, toxicity, and smoke materials installed throughout the vessel.
[4] Non-combustible materials, including fire insulation, installed throughout the vessel.

(c) Manufacturer's manuals, including details regarding the components and installation procedures for:
[1] Automatic sprinkler system; and
[2] Smoke and heat detection system.

(3) The submitter may request an SFP exam in conjunction with the ICOC exam if the ship meets the following criteria. The scope of the SFP exam is the same as if it

were separate from the ICOC exam. The submitter must receive written confirmation from the OCMI of acceptance of a combined exam.
(a) Not first in class at the shipyard,
(b) Not first ship at the shipyard, and
(c) No identified problems/worklist items issued during previous SFP exam for the ship class/builder.

Note: These requests will be evaluated on a case-by-case basis and meeting the above criteria does not guarantee acceptance.

d. **Assessment Examination (for New Build Vessels):** Prior to the ICOC exam, the examiners representing the OCMI/COTP responsible for the examination will gauge the vessels' readiness, usually accomplished via an Assessment Examination (OCMI discretion on in-person, virtual, etc.). During the Assessment Examination, if the examiner questions the ability of the vessel to pass an ICOC exam, then the examiner should recommend that the ICOC exam be postponed. If the designer made significant changes to the vessel, the designer should submit revised plans of the areas affected to the MSC. An ICOC exam should not begin until the vessel is complete and the Administration (or RO acting on behalf of the Administration) issues the SOLAS Passenger Ship Safety Certificate (PSSC) or attests that the vessel is in a state of readiness to issue the PSSC.

e. **Initial Certificate of Compliance Examination:** An "Application for Inspection" shall be submitted to the respective USCG OCMI office at least 30 days prior to the desired examination date. Typically, the initial examination will take 3 to 4 days and will involve a team comprised of 4 to 6 qualified Port State Control Officers (PSCOs) from the local OCMI/COTP office responsible for inspections at the vessel ICOC exam location, the USCG MSC, USCG Cruise Ship National Center of Expertise, and for gas fueled vessels (first in class &/or first time for the yard) the Liquefied Gas National Center of Expertise. The Coast Guard expects the presence and participation of the Administration/RO and the owner during the ICOC exam.

The OCMI yard or owner's representative must prepare a written plan for conducting the ICOC examination to provide the sequence of events such that all parties will be ready to perform their roles efficiently during the examination. The written plan and schedule must be provided well in advance to the respective OCMI office for review prior to attending the vessel for the ICOC examination. The respective OCMI is responsible to identify exam dates, team assignments, and team pre meeting dates and times prior to the commencement of the examination aboard the ship. Each attending U.S. Coast Guard Office should review the plan to verify it meets all examination requirements.

During the ICOC examination, citable regulatory deficiencies noted by USCG examiners should be captured as work list items to be corrected prior to the issuance of the COC. After issuance of the COC, all items on the work list that have not been cleared will be recorded as deficiencies on a Coast Guard Port State Control Report of Inspection - Form B (CG-5437B). Vessel operators should anticipate and plan for at least one day in the first U.S. port for the finalization of any Initial COC Exam initiated overseas, depending upon the number of outstanding discrepancies. Provided no more than one year has elapsed

since the ICOC Exam was started overseas and the vessel condition or clear grounds dictate otherwise, the OCMI at the first U.S. embarkation port will not require re-examination of the items inspected and found satisfactory during the overseas part of the exam. The examination will cover fire and abandon ship drills; any outstanding discrepancies or items not inspected during the overseas portion of the examination; and any unresolved plan review, overseas inspection, or classification society issues.

The Coast Guard allows up to two years between the beginning of the overseas portion of the ICOC exam and the continuation of the ICOC exam at the vessel's first U.S. embarkation port provided there are no modifications to the vessel's structural fire protection or means of egress in the intervening period. If more than two years have passed since the beginning of the ICOC examination, the Coast Guard will complete a new ICOC exam at the first U.S. embarkation port.

Requests for an underway Initial COC Exam will rarely be approved. Direct all inquiries for an underway Initial COC exam to Commandant (CG-CVC).

f. **Coordination with Shipyard/Operator:** The lead PSCO should maintain communications with the shipyard POC throughout the construction process. Key steps for USCG attendance include MES initial deployment, SFP exam, ICOC assessment, and ICOC exam. The OCMI will coordinate the attendance dates with all relevant units (MSC, CSNCOE, LGCNCOE) to confirm availability. Once the team composition is finalized, the lead PSCO should respond to the requester with the USCG attendees scheduled for the exam. The lead USCG examiner will maintain communications with the team leading up to the exam date.

4. **Overseas Planning Meeting:** An overseas planning meeting, made up of Coast Guard personnel only, should occur prior to the Initial COC exam. The exam team lead should arrange a planning meeting with the exam team (email, telephonic, virtual, in-person, etc.). The team lead reviews the project history and prior USCG attendance notes in MISLE. The following item are valuable to discuss during the planning meeting:

a. Summary of key construction observations from builder
b. An initial walkthrough of large public areas and alternative or special arrangements, to verify spaces are configured in accordance with SOLAS and USCG requirements.
c. All alternatives, exemptions, and equivalent granted to the ship, or under review
d. Summary of observations from prior USCG attendance
e. Status & comments of MSC plan review letters
f. Method of communication during the exam
g. Exam schedule
h. Team meeting schedule between exam phases/days
i. Team assignments

5. **Exam opening meeting:** The USCG examination team in conjunction with key shipyard personnel and vessel representatives will conduct an opening meeting on day 1 of the ICOC examination. During the opening meeting, introductions shall be made and the USCG team lead shall confirm team make-up, resources, scheduling conflicts, etc., with shipyard representatives.

6. **Completion of Overseas ICOC:** A closing meeting will be held before the ICOC team departs the vessel during which time the final worklist will be issued. All members of the ICOC team should have the opportunity to discuss internally those items on the ICOC worklist before issuance to the shipyard or appropriate representatives. Following the departure from the vessel the team lead should follow the relevant MISLE procedures for closing that portion of the examination.

7. **Clearing Worklist Items:** Following departure of the overseas ICOC examination team, vessel representatives should work through the first port of arrival where the COC will be issued for clearance of any outstanding worklist items. Vessel representatives might send photographs of identified items they consider rectified, or documentation from the Administration (or the RO acting on behalf of the Administration) to the first port OCMI. Plan review items should continue to be addressed thru the Marine Safety Center for the vessel to receive a completed status of plan review before conducting US passenger operations.

8. **Completion of the ICOC at First Embarkation Port:** The OCMI at the vessel's first U.S. port call where passengers will embark completes the ICOC exam begun overseas. That OCMI shall open a new MISLE activity for the domestic portion of the ICOC exam. The unit need not reexamination the items inspected and found satisfactory during the overseas part of the exam, unless vessel conditions indicate otherwise, or a significant time has transpired between the overseas portion of the exam and the vessel's arrival in a U.S. port (please refer to the "Applicability" section of this Work Instruction for clarification on what constitutes "significant time"). A CSNCOE member should attend first U.S. port ICOC completion exam for continuity.

a. Vessel operators must anticipate and should plan for at least one day in port for the U.S. part of the completion of the ICOC exam depending upon the number of discrepancies remaining from the overseas portion of the initial examination. The examination should cover the following areas:
    1. Fire and abandon ship drill, to include launching of a liferaft,
    2. Verification of all documents issued to the vessel,
    3. Verification of crew training and certification,
    4. Any items not inspected during the overseas portion of the exam (waste stream audit, OWS test, and Cruise Vessel Safety and Security Act (CVSSA) requirements, and
    5. Any outstanding worklist items or unresolved plan review verification items.

b. After successful completion of the examination, with no major deficiencies discovered, the OCMI issues the vessel a Certificate of Compliance (CG-3585) and enters the appropriate information in MISLE (ensure Scorecard application is utilized during the exam), reference (i). The OCMI also issues a single Certificate of Compliance covering all lifeboats used as tenders, provided these hold valid PSSC or Lifeboat/Tender Safety Equipment Certificates.

Table of Contents for Examination Guidance:

** Items that require first port OCMI verification during ICOC completion exam in U.S. waters.*

Structural Fire Protection	0.0
Reference	SOLAS II-2/9 & II-2/13 MSC PRGs SOLAS-01, SOLAS-02, SOLAS-03, SOLAS-07, SOLAS-11, SOLAS-13, SOLAS-14, SOLAS-24, SOLAS-25, SOLAS-26, SOLAS-28, SOLAS-29, SOLAS-30, SOLAS-38, SOLAS-39, SOLAS-42, SOLAS-44, SOLAS-45, & SOLAS-52
Scope	The Structural Fire Protection (SFP) exam aims at verifying the standard adopted by the Shipyard for what concerns type and installation of fire insulations relevant to "A" and "B" class fire divisions; B-class deck-to-deck arrangements; continuous B-class ceilings; draft stop construction and arrangements; penetrations of A and B class divisions. Moreover, consistency of the fire risk categories (ref. SFP plan) assigned to ship's spaces with on board content and arrangement should also be verified.

1.0	**The aboard SFP exam**
1.1	For the purpose of the examination, two teams should be formed; each team must consist of representatives of USCG, Class, Shipyard and Owner: • 1 – Verification of fire risk categories of on-board spaces, and of means of escape; • 2 – Verification of inspection points).
2.0	**Verification of the aboard spaces (fire risk categories and escapes)**
2.1	Review agreed upon areas of the SFP plan to be inspected in detail during the exam.
2.2	If the Marine Safety Center is unable to attend, verify plan review status and comments with their office prior to the inspection. In general, the team should inspect and examine the following areas and arrangements: a. consistency of the on-board arrangement of ship's spaces (their purpose, use and content) with the assigned and approved fire risk category (ref. to SFP plan and to SOLAS II-2, Reg.9.2.2.3.2.2); arrangement of available means of escape (ref. to SOLAS II-2/13). In particular, the following should be part of the on-board verification: - cat. (7) vs cat. (13) lockers (ref. to available surface); - fire categorization of pantries, i.e. cat. (9), (12), or (13) in consideration of the cooking appliances that should be provided inside them, and of their arrangement (e.g. isolated pantries in accommodation spaces, or annexed to galley, etc.); - fire categorization of areas beneath a retractable roof, ie. cat. (8) or (9) depending on anticipated furnishings; - cat. (1) control stations (passive and active fire protection); - cat. (8) saunas (passive and active fire protection); - technical spaces behind linings (no room for storage); - pool machinery spaces (verification of their fire category - i.e. (10), (11) or (13) - vs their arrangement, content (e.g. storage areas for chemicals) and fire protection; - cat. (10) spaces (electrical lockers, AC stations, aux machinery spaces) where no storage is allowed (including tables, chairs, shelves); - cat. (3) lobbies between galleys, main laundry and stair enclosures (size, dimensions, and fire hose arrangement); - cat. (3) lobbies between shopping areas and stair enclosures; - cat. (14) paint lockers (ref. to SOLAS II-2/10.6.3); - fire protection of overhanging decks (when they are more than 10 m);

	- escape stairways (unauthorized spaces shall not open directly to stair; available landing area; construction, type and quantity of possible furniture, etc.); - cat. (2) horizontal stairways; - two deck spaces and two deck stairways; - escape routes (presence of possible dead-end corridors, availability of two Means of Escape (MoE), etc.); - fire category of sideshell in way of and belowcat. (4) evacuation stations and external escape routes, and arrangement of relevant sprinkler (or equivalent system) nozzles, if applicable; - fire doors at MVZs, stair enclosures and galley boundaries. - roller shutters protecting openings in an A-60 bulkhead.
3.0	**Verification of A and B class divisions**
3.1	Review agreed upon areas of the SFP plan to be inspected in detail during the exam. All designated inspection points should already be completed and accepted by Class.
3.2	Scope of the examination is to verify Shipyard's standards relevant to workmanship, thickness, and heat bridges, cable, pipe and duct penetrations through "A" and "B" class divisions, and in particular the construction standard of: - A-class divisions (fire insulation of bulkheads and decks); - Particular attention should be paid to MVZ bulkheads and their steps or recesses; - B-class divisions (type and construction of bulkheads and ceilings); - B-class extensions (deck-to-deck construction and arrangements); - continuous B-class ceilings (e.g. cabin areas); - draught stops (workmanship and location of horizontal and vertical draft stops in stateroom corridors, lounges and areas in way of the side shell).
3.3	For each identified inspection location, verify: - type and thickness of A-class fire insulations (consistency with the approved SFP plan and with relevant details and certificates); - integrity of A-class divisions at penetrations for electrical cables, pipes, trunks, ducts; - that B-class bulkheads extend from deck-to-deck, unless a continuous B-class ceiling is provided; - consistency of construction of continuous B-class ceilings (where applicable); - type, workmanship, and location of vertical and horizontal draught stops.
3.4	In case A-class divisions are not constructed of steel but of other equivalent material (ref. SOLAS II-2/11.2 and 11.3), the proposed standards and relevant details should be discussed between USCG, Class and Shipyard in advance of the on-board inspection. In this case, the list of locations to be inspected should also include the divisions incorporating 'material equivalent to steel' If A-class lightweight bulkhead panels (e.g. SBA panels) are arranged on board, full documentation relevant to their construction and proper arrangement shall be available for USCG's review so that the USCG inspectors are able to verify that the on board arrangement is in line with what is prescribed by the manufacturer of the panels.
4.0	**Galley ranges exhaust ducts**
4.1	A galley is selected by the Shipyard (e.g. main galley or crew galley) so that a typical arrangement of exhaust ducts from galley ranges and of relevant means for extinguishing fire within the duct can be verified.
4.2	Diagram showing the arrangement of exhaust ducts, relevant inspection hatches, fire dampers and dedicated fire suppression systems should be available for discussion.

	In order to speed up the on-board verification, the diagram, or diagrams, should clearly identify for each exhaust duct its route and position of the following items: - inspection hatches (for maintenance and cleaning); - fire suppression nozzles inside ducts (e.g. water-mist, or CO_2, or both); - fire dampers. Moreover, the design criteria adopted for the arrangement of the fire suppression system nozzles should be described (e.g. every XX m, at each turn, by volume, etc.) by the technician representing the manufacturer. For clarity, the a.m. positions should be marked and identified on both the drawings and on board, e.g. for each device (hatch, nozzle) an identification number should identify its position both on the drawing and on board (galley ceiling).
4.3	Verify: a. onboard arrangement of hoods in way of galley ranges or cooking appliances, of relevant fire dampers (at least the ones located in the lower ends of the ducts), and of their controls; and that grease traps are readily removable for cleaning (unless an alternative approved grease removal system is fitted); b. arrangement of exhaust duct inspection hatches: location, quantity, dimensions, accessibility and marking; c. proper arrangement of exhaust duct fire suppression system (e.g. location and distribution of CO_2 or water-mist nozzles) and of relevant local controls; any other system or device suitable to reduce risks caused by grease (e.g. UV-ray devices).
4.4	It should be verified that single CO2 bottles used in galley duct fire extinguishing, or as beverage distribution system, if any, are not stowed in accommodation areas and are arranged so that a rapid loss of CO_2 charge will not pose a threat to persons nearby (as far as practicable, bottle stowage should be in accordance with SOLAS II-2/10.4.3 and in line with USCG MSC SOLAS-03).
4.5	The exam can include verification of the arrangements provided for cooking appliances on open decks, if any, in order to verify that fire protection, detection and suppression are appropriate (ref. USCG MSC PRG SOLAS-39).
5.0	**Main laundry exhaust ducts**
5.1	Ship's main laundry should be inspected to verify arrangement, fire protection, accessibility and location of exhaust duct inspection hatches. Information relevant to design, construction, route and location of inspection/cleaning hatches should be available for review. Verify the route of the exhaust ducts and proper accessibility from the inspection hatches.
5.2	Arrangement of primary filters (at dryers), and how they are supposed to work, as well as arrangement and location of secondary filters, and how they are supposed to work, should also be verified.
6.0	**Regulation 17 Alternative Designs**
6.1	Alternative designs utilizing SOLAS II-2/17 should be inspected to verify arrangement, fire protection, and other relevant information demonstrating equivalence in accordance with the approved alternative design documentation.

Fire load Calculations/Material Certificates	1.0
Reference	SOLAS II-2/5.3; II-2/6; II-2/2.2.1.3 MSC/Circ. 1120 MSC.1/Circ.1436
Scope	The purpose of this test is to verify approved plans and onboard arrangements with applicable fire protection regulations.

1.0	Fire Load Calculations/ Material Certificates
1.1	Verify presence of approved Fire Load Calculation booklet
1.2	Verify presence of Material Certificates Record Book: Certificates of Bulkheads, ceilings, and of relevant linings and furnishings (laminates, fabrics, paints, varnishes, etc.) and, where applicable, floor coverings (stairs, corridors) shall be provided.
1.3	Verify presence of Materials Samples Record Book: record book of samples relevant to materials used onboard as lining or decoration in accommodation spaces; the samples are identified with the following information: material identification code, type, manufacturer, trade name, visual characteristics, fire characteristics (if applicable), certificate number (if applicable)
1.4	Ship drawings of various public spaces, and of passenger cabins (suites included) shall be spot-checked. Identify spaces having the highest fire load (i.e., the calculated value is very close to the allowable one).
1.5	The approved Fire Load Calculation Booklet will be reviewed/discussed. During the ICOC Exam the spaces identified as having the highest value of allowable combustible material will be checked in detail at their onboard location. Data of all materials (quantity, type, dimensions) are checked in order to verify consistency of the calculation with the onboard arrangement.
1.6	The Material certificate record book is spot-checked. The book should be verified in conjunction with the Material Sample Book and with the vessel schematic relevant to the selected spaces as mentioned above.

Outstanding Plan Review	2.0
Reference	Marine Safety: Port State Control, COMDTINST 16000.73 SOLAS II-2/17; III/38
Scope	The purpose of this exam is to review any outstanding plan review items to verify the vessel addressed all comments and concerns presented by the U.S. Coast Guard's Marine Safety Center (MSC) office.

1.0	Outstanding Plan Review
1.1	The following plans are required to be submitted to the USCG Marine Safety Center (MSC) for review: -Structural Fire Protection (SFP) -Means of Escape (MOE) -Fire Control Plans -Damage Stability Calculations -Alternative Designs (SOLAS II-2/17 & SOLAS III/38)
1.2	All plans submitted to the MSC must be approved by the vessel's Flag Administration or Classification Society prior to MSC review.
1.3	All plans must be in English.
1.4	If there are any outstanding plan review items from the MSC office that were not resolved prior to USCG attendance, or if physical verification of a specific arrangement is required, this shall be conducted during the ICOC exam.
1.5	The MSC office will provide a plan review letter to the vessel representative/ Classification Society. Any outstanding comments need to be addressed during the time of the ICOC exam.
2.0	Verifications for first U.S. port
2.1	First port should discuss remaining plan review items with MSC.
2.2	If there are any outstanding plan review items from the MSC office that were not resolved prior to the vessel's arrival at the first U.S. port of embarkation, this shall be verified during the exam.

Damage Stability/Subdivision/Load Line	3.0
Reference	Marine Safety: Port State Control, COMDTINST 16000.73 SOLAS II-1/5; II-1/18 MSC.1/Circ.1245
Scope	The following documentation shall be made available for USCG review and verification during the ICOC exam. The purpose of this exam is to verify the vessel is in compliance with the proper damage stability provisions.

1.0	Damage Stability
1.1	The damage stability information shall provide the vessel Master with a simplistic way of assessing the ship's survivability in all damage scenarios involving a compartment or a group of compartments. The Damage Control Plan is reviewed by USCG examiners during the ICOC. Physical verification of the Damage Control Plan is conducted to ensure the plan is correct with the onboard arrangements. The plan should be complete, accurate, and approved. The following information shall be provided for each deck: a. Boundary and identification of ship's watertight compartments b. Compartment access points c. Openings in watertight compartments (e.g., watertight doors) with the means of closure and the position of relevant controls d. Watertight doors which are permitted to remain open during navigation (if any) e. Arrangements for the correction of any list due to flooding f. General precaution, such as equipment, conditions, and operational procedures considered by the Administration to be necessary to maintain watertight integrity under normal operation g. Specific precautions, such as list of items (i.e., closures, alarms, etc.) considered by the Administration to be vital to the survival of ship, passengers, and crew h. Location of damage control equipment and damage equipment lockers i. Location of sounding pipes for all spaces j. Bilge and ballast pumps and any other pumps referred to the damage control booklet
1.2	Copies of the Damage Control Plan shall be posted onboard the vessel. One copy of the plan shall be displayed on the bridge, in each watertight door emergency station, and in crew areas (recreation room, mess room, accommodation areas, etc.)
2.0	Stability Systems
2.1	The Stability Booklet should be made available to USCG examiners for review and verification.
3.0	Subdivision and Load Line marking
3.1	The following marking should be verified on the ship's hull: -Principal Passenger condition (C1, C2, P1, P2) -Load Line is in a contrasting color from the hull -Proper Class Society markings

Fire Control Plan (FCP)	4.0
Reference	SOLAS II-2/15.3.3; II-2/10.2.3; II-2/10.3; II-2/10.10; II-2/13.4.3 FSS Code IMO Res. A.952(23); Res. A.756(18); Res. A.1116(30); Res. A.951(23) MSC/Circ.451; MSC/Circ.849; MSC.1/Circ.1275
Scope	The purpose of this exam is to verify the accuracy of the fire control plan with the equipment onboard. *Note, the arrangement and location of items to be spot-checked against the FCP can be verified in conjunction with other exam evolutions.

1.0	Fire Control Plan (FCP)
1.1	The FCP is reviewed by USCG examiners, Class Surveyors, Shipyard personnel and the Owner representatives to verify the FCP is complete and approved. The FCP should be formally reviewed by the USCG MSC as well prior to conducting the ICOC. If FCP amendments are noted during the exam, the completed FCP will be finalized and resubmitted to the MSC for final review upon completion of the ICOC exam.
1.2	The descriptions within the plan shall be in the language(s) required by the Administration. If the language is neither English nor French, a translation into one of those two languages shall be included.
1.3	Verify required locations of FCP (spaces with FCP posted should be well illuminated, including lighting supplied from emergency power supply): -plans should be permanently stored in prominently marked red weather tight enclosures outside the bridge -at embarkation areas for the assistance of shore side firefighting personnel -posted in crew areas (e.g., in way of crew mess rooms, recreation rooms, corridors, ECR, and near bridge).
1.4	The FCP is spot-checked with onboard arrangements, locations, and IMO markings. Items/equipment spot checked includes but is not limited to: -fire hydrants and hoses -portable fire extinguishers -semi-portable fire extinguishers -ventilation fire dampers and relevant controls -section valves for fixed fire-fighting system -fire detection and alarm system (manual and automatic) -international shore connection -Emergency Escape Breathing Devices (EEBDs)
2.0	Fire Stations
2.1	During FCP verification, ensure fire stations comply with the following: - Position should be marked by consistent IMO sign (and id. number, if any) - fire hoses should be readily accessible and ready for use and positioned, as far as practicable, near the access of the protected space - hoses should be in good condition and connected to the relevant hydrant; each hose should have a nozzle and necessary couplings and tools - their arrangement should be such that when hoses are unfolded the flow of water is not blocked - spanner wrenches should be kept ready for use in a conspicuous position

	- access doors, if any, should be provided with handles, or opening devices, but no locking system should be provided so that equipment is always readily available without the need of any key;
3.0	Portable Fire Extinguishers/Semi-Portable Fire Extinguishers
3.1	During FCP verification, ensure portable extinguishers comply with the following requirements: -fully charged and ready for use; - mounted on proper bracket and located in conspicuous places and easily accessible; - marked by suitable and consistent IMO sign; and - instructions in common language, understandable by crew. Spare charges should be provided for first 10 extinguishers and 50% of the remaining fire extinguishers aboard should be capable of being recharged.
4.0	Fire Fighting Equipment/ Technical Lockers
4.1	Location of the lockers is accurately identifiable on the Fire Control Plan.
4.2	The Fire Lockers are examined to verify their content is consistent with applicable regulation, with the size of the vessel, and with what indicated on the plan.
4.3	All items in the lockers should be stowed ready for immediate use and clearly marked.
4.4	When examining the lockers, the following items shall be checked: - ensure all required equipment is present; - all equipment should be readily accessible; - access doors should be marked by relevant signs and identification numbers; - dimensions of the spaces should be consistent with the inside equipment; - manufacturer's instructions for cylinder maintenance; - fire extinguishers should be fully charged and ready for use, with relevant spare charges. For fire extinguishers that cannot be recharged onboard, additional portable fire extinguishers of the same quantity, type, capacity and number shall be provided in lieu of spare charges. -In passenger ships carrying more than 36 passengers: o lighting should be available from an emergency source of power; o operating instructions should be in common language, understandable by crew, easily read under local lit conditions and located near the equipment. o verify there is a means of communication between the fire equipment lockers and the safety center, central control station, navigation bridge, engine control room, and storage rooms for fire-extinguishing systems.
4.5	Ready accessibility of the space should be checked: if normally kept locked, an emergency key should be fitted on the outside of the space.

Fire Doors	5.0
Reference	SOLAS II-2/9.4.1.1 2010 FTP Code, Annex 1, Part 3, Appendix 1, 2.3MSC PRG SOLAS-02
Scope	The purpose of this test is to verify proper operation of fire doors located throughout the vessel. General closing of all doors is conducted in conjunction with the Emergency and Transitional Power Exam.

1.0	Fire Doors
1.1	All fire doors shall be addressable at a continuously manned control station (e.g., safety center, bridge monitor control panel) by an effective means for doors located in the following locations: -MVZ Bulkheads -Galley Boundaries -Stairway Enclosures
1.2	Fire doors in MVZ bulkheads, galley boundaries, and stairway enclosures, other than watertight doors and those normally locked, should be self-closing and capable of remote release (from the safety center, ECR) and local release (from both sides of the door). Hold-backs (magnets) not connected to a central control station are prohibited.
1.3	Remote closing of the fire doors, and relevant indication at the central control panel (safety center), shall be checked during the transitional power test.
2.0	Hinged Fire Doors
2.1	Time of closure should be no more than 40 sec. and no less than 10 sec. from initiation of the door closure. Closing path of doors should be clear of obstructions or interference. *Only applicable for fire doors in MVZ bulkheads, galley boundaries, and stairway enclosures.
2.2	The fire doors must properly close and latch when released, in particular when the ventilation systems are operating to ensure there is no effect on fire doors closure.
2.4	Open double-leaf doors (by hold-back mechanism) should be equipped with an interlock or sequencing mechanism preventing overlay when both doors in same opening are closed. *Only applicable for fire doors in MVZ bulkheads, galley boundaries, and stairway enclosures.
3.0	Sliding Fire Doors
3.1	Uniform rate of closure should be of no more than 0.2 m/s (.66 ft/s) and no less than 0.1 m/s (.33 ft/s).
3.2	Remote-released sliding doors should be equipped with an alarm that sounds at least 5 sec. but no more than 10 sec. after the doors are released from the central control station and before the fire doors begin to move; the alarm should continue sounding until the doors are completely closed.
3.3	Sliding doors equipped with safety bar should not reopen more than 1 m (3.28 ft) from the point of contact when activated.
4.0	Rolling Shutters
4.1	Fire rolling shutters are normally used to bound category (12) galleys or smaller cooking areas on upper decks as well as utilized in MVZs as an approved alternative arrangement. *Alternative arrangement* means that an alternative design process should be carried out. Reference MSC SOLAS-02 for further guidance.
4.2	Remote-released rolling fire doors should be equipped with an alarm that sounds at least 5 sec. but no more than 10 sec. before closing when the rolling shutters are

	remotely activated (i.e., from the continuously manned control station (e.g., safety center). The alarm should continue sounding until the shutters are completely closed.
Note 1	Typically, verification of proper operation of rolling shutter bounding category (12) spaces is conducted during the examination of galley fire protection system.
Note 2	Proper closing of fire rolling shutters for each MVZ, activated from the central control station (safety center), is verified during the transitional power test.
Note 3	Use of door gaskets constructed of intumescent materials that expand to fill gaps between the door and the bulkhead are considered acceptable.

Fire Alarms/ Fire Detection	6.0
Reference	SOLAS II-2/7 FSS Code, Ch. 9 MSC PRG SOLAS-25
Scope	This verification aims at checking proper operation of a representative sample of fire alarms throughout the vessel: i.e., smoke detectors, manual call points, and flame and heat detectors (if installed). If applicable, audible alarms (room-in-room arrangements) and visual alarms should also be tested. In general, testing should be carried out on each deck, and for each fire zone. These tests can be conducted while verifying the Fire Control Plan.

1.0	Preparation
1.1	In general, the number of detectors that should be checked should be based on the arrangement of the system loops. Since most systems have individually identifiable detectors, a 2-3 detectors per loop should be tested per deck and MVZ.
1.2	A spot check of all alarm types shall be tested to include smoke detectors, heat detectors, flame detectors, and manual call points.
1.3	In case audible or visual alarms, controlled by the smoke detection system, are fitted onboard (e.g., in room-in-room spaces) they are to be tested by the activation of relevant detector; these locations are to be identified prior to test.
1.4	In case “smoke-doors” are fitted onboard - i.e. “A” or “B” class fire doors which are normally kept open, but their closure is controlled by dedicated fire detectors - their proper operation should be checked by activation of relevant detectors. Such arrangements should be identified before starting the verification.
2.0	Tests and verifications
	In general, the test should be carried out by two teams: - Team 1, with the smoke/heat-generating equipment, should spot test all type of fire alarms throughout the vessel - Team 2, at fire alarm control panel (safety center) to recognize and identify alarms (CG team member does not need to be physically at safety center (bridge) to address the alarms received. A shipyard or vessel representative is adequate).
2.1	It should be verified that means are provided to ensure any fault (e.g., power break, short circuit, earth, etc.) occurring in the loop will not render the whole loop ineffective; and the first initiated fire alarm will not prevent any other detector from initiating further fire alarms. (For example: a fault is simulated and then a detector is activated to verify if it still works; then, one detector is tested but not acknowledged; a second detector is tested to ensure the panel receives both alarms).
2.2	Fire alarms are activated, one by one, and as prescribed by manufacturer, by Team 1: - in case of smoke detectors, by dedicated portable smoke-generating equipment; - in case of manually operated call points, by dedicated key; - in case of heat detectors, by heat generating device. Team 1: the identification number of the activated detector/manual call point is noted. Team 2 (in the safety center): the alarm is recognized, and relevant identification number and location is communicated to Team 1, via radio.
2.3	Verify that detectors and fire alarms are in good conditions and not obstructed.

2.4	It should be spot checked that manually operated call points are installed throughout accommodation spaces, service spaces and control stations and that one of them is located at each exit. Manually operated call points shall be readily accessible in the corridors of each deck and such that no part of the corridor is more than 20m from a manually operated call point.
3.0	Room-in-Room Alarm Arrangement; Audible and/or visual alarms controlled by fire detection system (if applicable)
3.1	This verification is applicable to alarms, fitted in room-in-room spaces, which are controlled by the fire detection system of the adjacent space that is part of the escape route, in order to provide an immediate and clear notification of a fire in such surrounding space (e.g. a pantry within a large public space, a chef's office within a galley).
3.2	The detector within the space forming part of the escape route is activated.
3.3	Activation and proper operation of the audible or visual alarm in the unaffected (protected) space is verified.
4.0	Doors controlled by fire/smoke detectors (if applicable)
4.1	This verification is applicable to normally open "A" or "B" class doors the automatic closure of which is controlled by the fire detection system of the space. It is also applicable to fire doors which are temporarily kept open for operational purposes and their automatic closure is controlled by the smoke detection system of the same space (dead-end corridors, fire doors within atriums, etc.).
4.2	The detector shall be activated, and proper activation and closure of the fire door should be verified.

Fire Main System & Fire Pumps	7.0
Reference	SOLAS II-2/10.2.1; II-2/10.2.2
Scope	The purpose of this test is to demonstrate proper operation (manual/automatic) of the fire pumps and to verify the firemain system is able to provide immediate pressure to all hydrants.

1.0	Preparation
1.1	Two hoses should be prepared on the upper decks (including furthest and highest from the pumps, jets should be directed outboard). A dedicated shipyard team should be available to open/close relevant hydrants.
	One USCG examiner should attend the test at the fire pump location (machinery space) and one USCG examiner should attend the test in the ECR (automatic and manual operation will be tested).
1.2	Verify the firemain is under pressure prior to starting the test (proper value for static pressure shall be verified with manufacturer representative or engineering staff).
	The system should be set in automatic mode. Once the indicated hydrant valve is locally opened, immediate water pressure should be available at the indicated hydrant
1.3	At least one pump should be powered by the emergency switchboard. Normally tested during “emergency and transitional power test (#25).”
2.0	Testing
2.1	Observe system pressure drop: a sufficient number of fire hydrants (or anchor wash) are opened so that the proper operation of automated starting sequence of the fire pumps can be verified.
2.2	When the system drops to the designated pressure, the “topping off” shall be observed automatically starting. System pressure should return to normal.
2.3	Secure “topping off” pump and verify the fire pump starts automatically and provides appropriate system pressure.
2.4	Operation of remaining fire pumps shall be tested by manual start and starting from a remote location.
2.5	The fire pump which is capable of being fed form the emergency switchboard shall be secured from the main switchboard; it should then be powered using the emergency switchboard while testing the emergency generator. (Can be conducted during transitional & emergency power test (#25)).
2.6	During testing of the fire pumps and firemain, ensure there are no excessive leaks observed.
2.7	Ensure that isolating valves to separate the firemain within the machinery space containing the fire main pump from the rest of the firemain are easily accessible outside the space. If located in the overhead, ensure access is provided (i.e., welded steps, ladder, etc.

Fixed-fire Suppression Systems	8.0
Reference	SOLAS II-2/10.4 FSS Code Ch. 5; Ch. 6; Ch. 7
Scope	The purpose of this test is supposed to verify proper operation of fixed-fire suppression system, associated section valves, and system alarms. System should be spot checked and tested in order to verify that audible and visual alarms operate at the continuously manned control station and to verify the automation of system. Manual activation of the fire-suppression system shall be discussed and observed.

1.0	Fixed Gaseous Fire Extinguishing System (CO2)
	Verify proper quantity of extinguishing medium available; where the quantity of the fire-extinguishing medium is required to protect more than one space, the quantity of medium available need not be more than the largest quantity required for any one space so protected.
1.1	Verify proper operation of ventilation of protected space.
1.2	Ensure warning placards are in place.
1.3	System diagram is accurate and in place at CO2 bottle station.
1.4	Verify good material condition of equipment (piping, hoses, bottles, etc.)
1.5	CO2 bottles are correctly marked, connected, and secured.
1.6	CO2 release procedures are posted and show proper sequence of events to discharge CO2. System instructions shall be posted in English or language of crew.
1.7	Verify that two separate controls are provided for releasing carbon dioxide into a protected space; one control shall be used for opening the valve of the piping which conveys the gas into the protected space and a second control shall be used to discharge the gas from its storage container. Verify the two controls are located inside a release box clearly identified for the particular space.
1.8	Spaces protected are adequately marked and equipped with audible alarms. Functional test of the alarm equipment shall be conducted.
2.0	Fixed Foam System
2.1	Foam analysis report available for review (The first foam report is good for 3 years and then must be analyzed every year afterward).
2.2	Verify foam system procedures are present at each operating station.
2.3	Ensure the system is capable of manual release and designed to produce foam at the required rate within one minute of release.
2.4	Verify means for testing the operation of the system; required pressure and flow shall be provided by pressure gauges at both inlets (water and foam concentrate supply) and at the outlet of the foam proportioner.
2.5	Spare parts shall be provided based on the manufacturer's instructions
2.6	The system source of power supply, foam concentrate supply and means of controlling the system shall be readily accessible and simple to operate and shall be arranged at positions outside the protected space not likely to be cut off by a fire in the protected space.
2.7	Verify all installation plans and operating manuals are in the working language of the ship. If the working language is not English, French or Spanish, a translation into one of these languages shall be included.

3.0	Fixed water-based System
3.1	The following arrangements, which could impact system head effectiveness, should be verified: -system heads are adequately distributed throughout the vessel -protective caps have been removed and there are no obstructions to spray patterns -water mist heads are not damaged -heads are of the proper color (activation temperature shall be consistent with the characteristics and use of the protected space) -heads are filled with the proper amount of liquid (for expanding and breaking when sensing the temperature threshold for fire).
3.2	Protection of windows facing lifesaving appliances embarkation areas, or other category (4) spaces: -for vessels fitted with a high-pressure water mist system, A-0 windows may be used without a dedicated head if the system fully protects the interior space; -for vessels fitted with traditional sprinkler system, windows adjacent to embarkation areas should be either A-60 or A-0 but protected by dedicated sprinkler heads.
4.0	Testing of Water-mist Nozzles/Sprinkler Heads
4.1	One or more spaces, should be selected on the ship to manually activate one or more system heads (e.g., garbage room, handling area, bunker station) in order the automatic starting and proper operation of the system can be demonstrated.
4.2	The test procedure should be discussed and agreed before the test is started. The system may be tested in accordance with anyone of the following options: a. activation of one head; b. activation of two heads relevant to two adjacent zones, or within the same zone; c. activation of two heads relevant to two adjacent zones: one skid only, failure of one pump, automatic starting of the stand-by pump.
5.0	High-Pressure Water Mist Pump Test (pump skids)
5.1	System pressure should be verified before starting the test (proper value for static pressure shall be verified with manufacturer representative or engineering staff).
5.2	System manufacturer should be consulted to determine /test system alarms and redundancies.
5.3	High-pressure water mist pump motors (two pumps per motor) start to operate automatically when pressure drops below the designated value (the test valve is operated). The high-pressure water mist pump motors should cycle on one at time until all primary pump motors start.
5.4	Verify standby pump motor (slave) automatically starts (i.e., if the system has six motors, five should start with one in standby. If there are eight motors, then seven should start with one in standby). If the vessel is equipped with more than one system, the second system is typically in standby mode and will come on if the primary system cannot maintain system pressure if there is a failure of any primary pump motors.
5.5	The following shall be verified: -cross connection to fire main is installed and locked; -pressure on nitrogen stored energy (if equipped); -automatic solenoid is connected on stored energy bottles.
6.0	Section Valves and Pre-action Valves
6.1	Each station should be provided with means to prevent unauthorized access or operation (e.g., locking device or an addressable alarm sounded in ECR or safety center)

6.2	The section valve should be readily accessible in a location outside the associated section or in cabinets within stairway enclosures.
6.3	Each station should be provided with legible diagram of the area serviced by the station, i.e., a plan showing the spaces protected by the system and location of the zone with respect of each section; testing and maintenance instructions should be also posted at the station.
6.4	Each section valve station should be marked by relevant identification sign (IMO symbol and number). Valves should be labelled (in consistency with relevant safety center alarm panel) for addressability.
6.5	The system should be under pressure and test fittings should be in place for testing automatic operation of the pump following reduction of system pressure. Alternatively, drain valve may be opened.
6.6	Spare heads should be available onboard (e.g., in each station or inside fire lockers).
7.0	Testing of Section Valves
7.1	For the purpose of this verification, a reasonable sample size of section valves shall be tested (variety of decks & MVZs). One team (USCG) shall be at the location of the section valve and another team (shipyard personnel) at the location of the alarm panel (navigation bridge).
7.2	Close the stop (isolation) valve and verify the alarm is received (if equipped) at the navigation bridge. The team on the bridge shall verify via radio that the relevant alarm is working along with the respective station ID number. *Note, there could be other methods in place to prevent unauthorized operation of the section valve.
7.3	Take note of system's static pressure.
7.4	The pressure should be reduced through test fittings or by opening the drain valve. As soon as the valve is opened, the flow alarm is triggered: the alarm shall be confirmed by the team on the bridge via radio (water should then flow in the pipe).
7.5	The system pressure should drop to a set pressure and will initiate the automatic starting of pumps to bring the system up to operating pressure.
7.6	Once alarms and system operation are verified, ensure pump is secured and all alarms are reset.
8.0	Testing of Pre-action Valves
8.1	Dry pipe systems require a pre-action or remote-activated stop valve. It should be verified that the valve is accessible outside the affected space and that can either be operated manually (locally) or remotely.
8.2	Pre-action valves operation should be verified for any control station or spaces protected by such a system.
9.0	Protection of deck openings (if any)
9.1	Deck openings protected by water-curtains are identified and the relevant arrangements are discussed (MSC PRG SOLAS-13).
9.2	Where deck openings are less than 30% of the total deck area between the two spaces, the opening should be protected by a draught curtain (if applicable and agreed) and by high-pressure water mist nozzles in order to create a water-curtain. It should be verified that the nozzles are placed at 2-meter intervals and located between 150-300 mm from the draught curtain (if fitted) on the side away from the opening.

9.3	The water mist nozzles may be installed in an open head configuration (or deluge system) if the prescribed draught curtain is omitted: they should be automatically activated as soon as any two smoke detectors within the lower spaces are in alarm. Other opening protection methods can be considered on a case-by-case basis e.g., manually and locally activated, or remotely (from the bridge), or as otherwise agreed with the USCG MSC.

Fixed Local Application	9.0
Reference	SOLAS Ch.II-2/10.5.6 MSC/Circ.913; MSC.1/Circ.1387; MSC/Circ.1082; MSC.1/Circ.1276;
Scope	The purpose of this test is to verify proper operation of the fixed local application system, locally and remotely as well as manual and automated activation methods. Note: The lead examiner should ensure the shipyard understands the expectations of this test prior to the start of the exam. While reviewing the schedule, the examiner should communicate that the USCG will verify actual water flow.

1.0	Fixed Local Application System
1.1	It should be verified that the arrangement of the fire-extinguishing system is such that the following areas are protected: a. the fire hazard portions of internal combustion machinery; b. boiler fronts; c. the fire hazard portions of incinerators (if any); d. purifiers for heated fuel oil.
1.2	In case of periodically unattended machinery spaces, it should be verified that the fire extinguishing system has both automatic and manual release capabilities. In case of continuously manned machinery spaces, only a manual release capability is required for the fixed local application fire-extinguishing system
1.3	Verify the operation of the system section valves in all modes of operation. A minimum of 3 section valves shall be tested, one per mode of operation: - local operation (near required installation); - remote operation (from ECR, location not near required installation); - automatic operation (2 sensors). NOTE: It must be demonstrated that the valve opens upon activation (testing of just the electronic solenoid is not acceptable). Flow of water from the nozzles will need to be witnessed for all THREE selected protected areas.
1.4	Activation of any local application system shall give a visual and audible alarm in the protected space and at a continuously manned station (e.g., ECR). The alarm should indicate the specific system activated.
1.5	If equipped with emergency bottles and nitrogen cylinders, the setup of such arrangements shall be visually examined to verify proper installation including all hoses hooked up, and wires and relays connected.

Drencher/Deluge System	10.0
Reference	MSC PRG (SOLAS-29)
Scope	Purpose is to determine proper operation and coverage of the installed drencher system. In general, any partially enclosed area that is covered with an overhanging deck in excess of 10m is considered an enclosed space requiring fire protection appropriate for the fire load and use, including sprinklers (or equivalent system) and fire detection.

1.0	Drencher System/Deluge
1.1	Overhanging deck areas are reviewed in order to select the area to be inspected and tested (typically, if applicable, the aft or forward mooring deck area is suitable for the test).
1.2	Items that can be damaged by water are removed or protected.
1.3	Location, arrangement, accessibility and marking of the control valve is verified: the valve should be easily accessible without going through protected areas (e.g., it should be located outside the protected area). The valve should be in a location that allows for easy operation of the valve.
1.4	Operational instructions shall be posted in the vicinity for the manual activation of the control valve.
1.5	Arrangement of the drencher/deluge system is checked: in particular, heads should be in way of greater fire risk features, such as machinery, ropes, cooking equipment, combustible, or flammable storage areas under the overhanging deck.
1.6	Heads should be clear of obstructions and of debris.
1.7	The control valve is operated in order to activate the system: the efficiency and coverage of the fire suppression system should be verified.

Galley Fire Suppression System	11.0
Reference	SOLAS II-2/9.7.5 MSC PRG (SOLAS-03); MSC PRG (SOLAS-11); MSC PRG (SOLAS-07)
Scope	The purpose of this test is to verify proper arrangement and operation of galley hoods and of ventilation shutdowns, system marking, instructions, and proper arrangement of dedicated fixed fire extinguishing systems within ducts. If fire rolling shutters are fitted to enclose category (12) cooking areas, they shall be verified and tested. Open deck cooking areas should be included in the verification. Fire-extinguishing systems relevant to deep-fat cooking equipment are checked. At least one galley hood shall be tested in each galley.

1.0	Preparation
1.1	All galleys and category (12) cooking areas should be examined. Galleys should be preliminarily inspected in order to verify location of hoods, arrangements and type of grease traps, arrangement of fire dampers, type and arrangement of fixed fire extinguishing systems provided for galley ranges exhaust ducts.
1.2	Confirm the fixed fire extinguishing system is sized to provide protection for the entire volume of ducting.
1.3	Confirm all vents are running and relevant dampers are open.
	Remote-control arrangement for shutting-off exhaust fans and supply fans, for operating the fire dampers and the fire extinguishing system should be verified. All the controls should be located in a position close to the entrance, or escape, door of the galley; they should be visible, accessible and properly marked.
1.4	If fire rolling shutters are fitted to enclose category (12) cooking areas, they shall be ready in the open position. The position of relevant fusible links (if fitted) should be identified prior to test.
1.5	Remote control arrangements of the fire-extinguishing system relevant to the deep-fat cooking equipment should also be checked (if fitted). Controls should be positioned in a suitable location, i.e., not too close to the equipment, and are to be clearly labelled for ready use of the crew.
1.6	Schematic and location of CO2 releases (if fitted) should be checked: the schematic should be posted at the controls, close to the entrance of the galley, in escape direction.
1.7	Single CO2 bottles used in galley duct extinguishing shall not be stowed in accommodation areas and shall be arranged so that rapid loss of the CO2 charge will not pose a threat to persons nearby.
1.8	All ceiling inspection hatches provided to access fire dampers, fire suppression system nozzles, for maintenance or cleaning purposes, are to be clearly marked, accessible, and clear from obstructions.
2.0	Testing
2.1	A shut-down test is carried out, remotely (from the control cabinet outside the galley) and locally by hood controls. Verify, for each hood, that the ventilation is stopped, and lower duct fire dampers are closed. Fire damper status indication is also checked: it shall be consistent with relevant fire damper position (open/closed).
2.2	Proper operation of audible and visible alarms relevant to the activation of the fixed fire extinguishing system within ducts shall be verified.
3.0	Fire Rolling Shutters (See also Fire Doors)

3.1	A-class fire rolling–shutters shall be tested both in manual and automatic mode.
3.2	Fire rolling-shutters local control arrangements should be checked: they should be close to the shutters, in escape direction, and properly marked.
3.3	Automatic closing upon detection of a fire either by a dedicated fusible link or by activation of a local smoke detector or sprinkler system should also be checked: the fusible link should be disconnected, or removed, or a fire detector should be activated: the rolling shutter should close automatically. NOTE: Two or more rolling shutters which are supposed to enclose the same cooking area shall close simultaneously, even if controlled by two or more fusible links, i.e., one for each rolling-shutter (any single fusible link should control the closing of all rolling shutters).
3.4	Alarm should sound for 5 to 10 seconds before closing when activated from remote location.
3.5	Proper operation of manual closing of all rolling shutters shall be conducted.
3.6	The fail-safe mode may be also checked (e.g., spot check of at least one rolling-shutter): the power is disconnected to verify proper automatic closure of the shutter (can be conducted during transitional power test).
3.7	In case A-30 or A-60 divisions are arranged on board according to the approved SFP plan, proper arrangement of dedicated sprinkler/water mist nozzles should be checked in order to provide A- 60 or A-30 protection when using A-0 shutters. The nozzles shall be located on both sides of the shutter so to be able to wet both the inner and outer surface of the roller shutter.
4.0	Fire Extinguishing System for Deep-fat Cooking Equipment
4.1	Proper arrangement of automatic or manually operated fire-extinguishing systems should be checked. Nozzles should be located above the cooking equipment.
4.2	Controls for the manual activation of the fire extinguishing system should be located in a protected location, i.e., away from the possible fire, and clearly marked.
4.3	Operating instruction: it should be verified that they are close to the controls, complete, accurate and consistent with the on-board equipment.
4.4	Dedicated alarm system for indicating the operation of the fire-extinguishing system within the galley shall be checked.

Fire Dampers-Ventilation	12.0
Reference	SOLAS Ch.II-2/5.2.1; 5.2.2; 9.7.1 to 9.7.4 MSC.1/Circ.1434; MSC.1/Circ.1527; MSC.1/Circ.1480;
Scope	The purpose of this test is to verify proper operation of the ventilation system. This test is relevant to accommodation and service spaces only (machinery ventilation shutdowns are separate from this section).

1.0	Preparation and Testing
1.1	Design principles relevant to ventilation system for accommodation and service spaces shall be described by the Shipyard's person in charge. Ventilation shutdowns shall be tested both locally and remotely. The order of events shall be agreed upon prior to testing.
1.2	Prior to test, it should be verified that ventilation system is running, and all fire dampers are open; fire dampers which are kept normally closed and/or fans which are not supposed to run in normal condition, if any, are to be indicated and explained.
1.3	Once all above verifications are completed, ventilation shutdown can commence.
1.4	Secure fire dampers from local control and verify fan motors are secure and fire dampers are in the closed position. Indicators on dampers shall be visually checked.
1.5	Dampers and ventilation fans shall be reset.
1.6	Secure ventilation and dampers from a remote location (ECR/Safety Center). Ensure fan motors secure and fire dampers close.
2.0	Fire damper shutdown within A.C. stations and general arrangement of the system
2.1	For each MVZ of the ship, AC stations shall be examined (at least one AC station for each MVZ) in order to verify: -location and identification number of the AC station -proper arrangement of means of escape (in particular for multi-deck AC stations) -that there are no areas for unauthorized storage -fire dampers and relevant local control panels are consistently marked with the number of the damper.
2.2	Material condition, arrangement and accessibility of fire dampers shall be verified
2.3	Fire dampers shall be easily accessible; where they are placed behind ceilings or linings, these ceilings or linings shall be provided with an inspection hatch on which the identification number of the fire damper is marked.

Main Laundry & Launderettes	13.0
Reference	SOLAS II-2/9.7.7; II-2/13.3.2.3
Scope	The purpose of this examination is to verify the onboard arrangements located within the main laundry and launderettes to mitigate potential fire hazards and ensure adequate fire protection, and that a cleaning/maintenance program is in place.

1.0	Main Laundry
1.1	The general arrangement of laundry dryers is examined: presence, arrangement, accessibility and functionality of filters is verified.
1.2	Ventilation system and ducts shall be clean and clear of potential fire hazards. Verify that the exhaust ducts are fitted with the following: -readily removable filters (for cleaning purposes) -fire damper, located in the lower end of the duct, automatically and remotely operated -remote-control arrangements for shutting off the exhaust fans and supply fans from within the space and for operating the respective fire damper -suitably located hatches, for inspection and cleaning: they should be properly distributed along exhaust ducts, accessible and labelled.
1.3	Adequate cleaning and maintenance program should be in place for ventilation and for lint traps.
1.4	Storage of laundry chemicals shall be verified: use, proper containment, and proper protection.
1.5	Verification of primary and secondary means of escape: - shall be properly marked, accessible and clear of obstructions - if a category (3) lobby is fitted between the laundry and the escape stair, verify arrangement (surface area of at least 4.5 m^2, 900 mm width, with fire hose).
1.6	Smoke detectors, water-mist heads and fire extinguishers shall not be obstructed.
1.7	No stowage should be provided behind machinery where there could be fire hazards.
2.0	Crew laundry and launderettes (laundromats)
2.1	The arrangement of the crew laundry and of passenger launderettes is spot checked in order to verify that systems are clean and clear of potential fire hazards.
2.2	The arrangement of filters at dryer exhaust openings is spot-checked: how they are fitted, how they work, and their accessibility for maintenance and cleaning.
2.3	Cleaning and maintenance programs are discussed to verify they are adequate to the arrangements.
2.4	Verify presence of timers or other means to secure power on installed clothes irons

Incinerator	14.0
Reference	MARPOL Annex VI, IMO Resolution MEPC.244(66): Standard Specification for Shipboard Incinerators
Scope	The purpose of this exam is to verify the functionality of emergency shut-down and general arrangement of required safety devices of the incinerator.

1.0	Incinerator
1.1	Shipboard incinerators shall possess an IMO Type Approval for each incinerator.
1.2	Piping for fuel and oil residue (sludge) should be seamless steel of adequate strength and to the satisfaction of the Administration. Short lengths of steel or annealed copper nickel, nickel copper or copper pipe and tubing may be used at the burners.
1.3	All rotating or moving mechanical and exposed electrical parts shall be protected against accidental contact.
1.4	The incinerator should be provided with a safe observation port of the combustion chamber to provide visual control of the burning process and waste accumulation in the combustion chamber. Neither heat, flame, nor particles should be able to pass through the observation port. An example of a safe observation port is high-temperature glass with a metal closure.
1.5	The incinerator should have warning plates attached in a prominent location on the unit, warning against unauthorized opening of doors to combustion chamber(s) during operation and against overloading the incinerator with garbage.
1.6	The incinerator should have instruction plate(s) attached in a prominent location on the unit that clearly addresses the following: Operating procedures and instructions. These should include proper start-up procedures, normal shut-down procedures, emergency shut-down procedures, and procedures for loading garbage (where applicable).
1.7	Verify the incinerator is internally equipped with a fire suppression system.

Main Propulsion (propulsion breakers)	15.0
Reference	SOLAS II-1/31.2.3
Scope	The purpose of this test is to demonstrate proper operation of the bridge (or ECR) remote shutdown for main propulsion breakers (not a shutdown of the engine) in emergency conditions.

1.0	Preparation
1.1	Verify main propulsion units are started and fully operational; ensure the propulsion breakers are closed and the system is engaged.
1.2	Verify that the emergency stopping device on the navigation bridge is independent of the navigation bridge control system.
1.3	Personnel in machinery spaces should be informed (by P.A. system) that the main propulsion shutdown test is going to be carried out (e.g., shafts could move).
2.0	Test
2.1	The bridge shall engage the emergency stop switch. Observe that the main propulsion breakers open, units shutdown, and alarms are verified.
2.2	The test is repeated using the emergency stop in ECR and at the emergency steering propulsion located in each pod room, if applicable.

Machinery Emergency Shutdowns	16.0
Reference	SOLAS II-2/5.2.2; II-2/5.2.3; II-2/4.2.2.3.4
Scope	The purpose of this test is to verify the emergency shutdowns of machinery space ventilation (fans and dampers), fuel pumps, fuel oil purifiers (separators), and quick closing valves in machinery spaces, both locally and from ECR.

1.0	Preparation
1.1	Prior to the test, the location/quantity of valves, dampers, pumps, etc. to be tested shall be discussed and selected. The proper procedures for shutdown shall be discussed and understood by all involved parties.
1.2	The systems should be ready for the test (i.e., ventilation system running and fire dampers open; pumps running; machinery running, etc.).
1.3	The shutdowns should be carried out from the ECR and/or locally from machinery spaces.
2.0	Fuel Oil Transfer Pumps
2.1	Verify fuel oil transfer pumps to be tested are running.
2.2	Ensure the respective valves are not blocked open, or the valve actuators are not defeated in any way.
2.3	Secure fuel oil transfer pumps from local control. Proper shutdown is verified. Fuel oil transfer pumps are reset.
2.4	Secure fuel oil transfer pumps from remote location (ECR / Safety center). Proper shutdown is verified. Fuel oil transfer pumps are reset.
3.0	Machinery Space Ventilation
3.1	Ensure ventilation system is running and all fire dampers are open in selected spaces
3.2	Secure ventilation and dampers from remote location (ECR/Safety Center). Ensure fan motors secure and fire dampers close.
3.3	Verify fire dampers and control panels are accurately marked with the identification number of the damper
4.0	Fuel Oil Purifiers
4.1	Verify fuel oil purifiers are running.
4.2	Secure fuel oil purifiers from local control, verify proper shutdown.
4.3	Reset fuel oil purifiers.
4.4	Secure fuel oil purifiers from remote location (ECR/Safety Center, or a location immediately outside of the separator room), verify proper shutdown.
5.0	Remote fuel valves (quick closing valves)
5.1	Verify valve closing groups are clearly identified and their location displayed.
5.2	Select a group of quick closing valves to test.
5.3	Secure quick closing valves from master station above the bulkhead deck.
5.4	Verify all quick closing valves in group are closed.
5.5	Verify all quick-closing valves in group are marked correctly.

Bilge System	17.0
Reference	SOLAS II-1/35-1; II-1/39; II-1/48 MSC.1/Circ 1424
Scope	The purpose of this test is to verify proper operation of the bilge pumps/emergency bilge suction from a remote location.

1.0	Bilge Pumping System
1.1	Prior to conducting a bilge pump test, the pumping sequence, number of bilges, and the bilge locations shall be discussed and agreed upon between the USCG examiner and the vessel representative (Class Surveyor, Shipyard personnel, manufacturer representative, etc.). In the event the main bilge system cannot pump overboard and there is no means to recirculate back into the bilges, arrangements should be made to pump bilges into the fixed ballast tanks. Dirty oil bile pumps can be verified by pumping into the oily water holding tank.
1.2	The agreed bilges shall be filled with clean water up to alarm condition. Verify the visual and audible bilge alarms on the alarm panel are functioning properly.
1.3	Pump water from the most remote bilge pocket utilizing the farthest bilge pump from the selected bilge space. This operation shall be repeated utilizing all required bilge pumps. Between testing of bilge pumps, the system shall be vented of any standing vacuum by opening bilge valves in areas that are not in an alarm state. Ensure priming pump secures and bilge pump operates. Note: Be aware that before moving on to the next bilge pocket, the crew might need to relieve vacuum in the line by opening a valve and allowing flow into an empty pocket.
1.4	Prove proper operation of main space emergency bilge suction.
1.5	Prove proper operation of bilge valves in both manual and remote operations.

Flooding Detection System	18.0
Reference	SOLAS II-1/22-1 MSC.1 Circ.1291
Scope	The purpose of this test is to verify the proper operation of the flooding detection system.

1.0	Flooding Detection
1.1	A flooding detection system for watertight spaces below the bulkhead deck shall be provided (refer to IMO guidance within MSC.1 Circ.1291)
1.2	The flooding detection system should be continuously powered and should have an automatic change-over to an emergency power supply in case of loss of the normal power supply. Failure of the normal power supply should be indicated by an alarm.
1.3	Prior to conducting the test, the amount of flooding detection sensors as well as their locations shall be discussed amongst the USCG examiner and vessel representative. Not all sensors need to be tested; adequate sample size of sensors shall be tested in each MVZ (port, centerline, stbd). Identify means to access flooding sensors installed behind liners.
1.4	It is not necessary to fill each space with water to test the flooding detection system. Local/manual operation of the sensor is acceptable.
1.5	Each flooding detection system should give an audible and visual alarm at the navigation bridge and the safety center (ECR), if located in a separate space from the navigation bridge. These alarms should indicate which watertight space is flooded. *Note: the flooding detection alarms are separate from the bilge high level alarms.

Steering Gear	19.0
Reference	SOLAS II-1/29; II-1/30; II-1/31V/26 IMO Res. A.415(XI) MSC.1/Circ.1398; MSC.1/Circ.1416
Scope	The purpose of this test is to demonstrate proper operation of the steering gear from all locations and in both modes (normal and emergency). System alarms are to be tested. *Vessels equipped with a podded propulsion system are tested in the same manner.

1.0	Preparation for Steering Gear Test
	Each team shall be provided with a radio; one team will remain on the bridge and one team will proceed to the steering gear compartment.
1.1	All components of the steering gear shall be ready for operation, with no alarms or pumps in stand-by mode.
1.2	Ensure there are no hazards or restrictions in place prior to conducting the test (divers are out of the water, fenders clear, etc.)
2.0	Steering Gear Compartment
	The steering gear compartment is generally designated as a category 10 space; examine the space to ensure no combustibles are stowed.
2.1	Verify that the steering gear compartments are provided with suitable arrangements to ensure working access to steering gear machinery and controls; these arrangements shall include handrails and gratings (or other non-slip surfaces) to ensure suitable working conditions in the event of a hydraulic fuel leak. **Vessels equipped with steering gear components not containing hydraulic fluid may not have handrails, gratings or other non-slip surfaces.
2.2	The steering gear compartments shall be provided with emergency lighting; it should be adequate for the arrangement and size of the space.
2.3	Simple operating instructions with simple schematic for changing-over procedures for remote steering gear control system and steering gear power units shall be permanently displayed in visible position on the navigation bridge, and in each steering room: such operating instructions shall be consistent with the system and accurate. The instruction should be clearly legible in emergency lighting conditions.
2.4	The means of communication between the navigation bridge and each steering gear room should be verified: the sound-powered telephones (or talk-back systems) are tested.
2.5	Verify installation of gyro compass repeater in each steering gear compartment. Ensure the vessel heading on the repeater matches the heading display on the bridge.
3.0	Conducting the Steering Gear Test
3.1	The tests and verifications shall be conducted for all pumps, for each rudder (or pod), each steering gear compartment, and each steering control station.
3.2	Proper operation from all remote operating locations (navigation bridge and bridge wings) in both modes (follow-up and non-follow up). The steering gear system shall be capable of putting the rudder over from 35º on one side (port/stbd) to 30º on the other side (port/stbd) in 28 seconds.
3.3	The bridge team and steering gear room team shall communicate frequently to ensure the rudder angle indicator is the same in both locations throughout the test.

3.4	Upon completion of the steering gear operation from the navigation bridge, control should be switched from the navigation bridge to the steering gear room.
3.5	Proper operation locally in emergency mode shall be conducted. The time required to put the rudder from 35º on one side (port/stbd) to 30º on the other side (port/stbd) should not be greater than 28 seconds. Determine the minimal required number of pumps & motors needed to operate the steering gear; ensure steering gear can be operated within these parameters.
3.6	The following alarms in the ECR and navigation bridge should be tested and verified (alarm should not be simulated): -Low hydraulic oil, by removal of the probe sensor from the tank (not applicable for electric turning motors) -Loss of power (power panel should be secured)

Engine Order Telegraph (EOT)	20.0
Reference	SOLAS II-1/31.2.4
Scope	The purpose of this test is to verify the proper operation of the engine order telegraph.

1.0	Engine Order Telegraph
1.1	Operation of all engine order telegraphs should be tested at all steering gear compartments.
1.2	Audible and visual alarms should be activated when bridge sends throttle commands by way of engine order telegraph. **both forward and astern commands shall be provided.
1.3	Ensure that position of the ECR engine order telegraph matches the requested position from the bridge; alarms silence should be confirmed when the positions match.
1.4	The EOT should be clearly visible in emergency lighting conditions.

Watertight Doors/Semi-Watertight Doors	21.0
Reference	SOLAS II-1/13
Scope	The purpose of this test is to verify the proper design, markings, and operation of both watertight and semi-watertight doors.

1.0	Test Preparation
1.1	The Damage Control Plan shall be examined to identify the number and location of watertight doors, as well as the number and location of watertight door emergency stations. The verification method is discussed and agreed: e.g., for each deck and each watertight compartment, at least one watertight door should be examined and tested.
1.2	The Damage Control Plan is also examined to identify the watertight doors maximum clear opening. If it is more than 1.2 m, the safety measures prescribed by the Administration are verified.
1.3	One USCG examiner (along with Class Surveyor, Shipyard personnel, vessel representative) shall be located at the watertight door (with radio); one USCG examiner (along with Class Surveyor, Shipyard personnel, vessel representative) shall be located at the relevant watertight door emergency station (with radio). Good communication shall be established prior to conducting the test.
2.0	Tests and Verifications
2.1	The central operating console at the navigation bridge shall have a "master mode" switch with two modes of control: a "local control" mode which shall allow any door to be locally opened and locally closed after use without automatic closure, and a "doors closed" mode which shall automatically close any door that is open. The "doors closed" mode shall automatically close any door that is open. The "doors closed" mode shall permit doors to be opened locally and shall automatically re-close the doors upon release of the local control mechanism. The "master mode" switch shall normally be in the "local control" mode. The "doors closed" mode shall only be used in an emergency or for testing purposes. Special consideration shall be given to the reliability of the "master mode" switch
2.3	The central operating console at the navigation bridge shall be provided with a diagram showing the location of each door, with visual indicators to show whether each door is open or closed. A red light shall indicate a door is fully open and a green light shall indicate a door is fully closed. When the door is closed remotely the red light shall indicate the inttrn1ediate position by flashing. The indicating circuit shall be independent of the control circuit for each door.
2.4	Watertight doors fitted above the bulkhead deck, which are required to meet both fire protection and watertight requirements, should comply with the fire requirements of II-2/9 and the watertight requirements of II-1/17. Watertight doors fitted above the bulkhead deck should be insulated to the standard required by Reg, II-2/9 and Table 9.1.
3.0	Local Operation of Watertight Doors
3.1	The USCG examiner physically located at the watertight door shall verify the following: -Operating Instructions are posted on both sides of the watertight door -Control handles shall be provided at each side of the bulkhead at a minimum height of 1.6 m above the floor and shall be so arranged as to enable persons passing through the doorway to hold both handles in the open position without being able to set the power

	closing mechanism in operation accidentally. The direction of movement of the handles in opening and closing the door shall be in the direction of door movement and shall be clearly indicated. -Each watertight door shall be provided with an individual hand-operated mechanism (hydraulic or electric)
3.2	Locally close the watertight door via the control handle. Door closure rate must not be less than 20 seconds and not more than 40 seconds. It should be verified that if equipped with a movable sill plate that it can operate freely. The hand-operated mechanism shall be utilized to open the watertight doors. It should be demonstrated that the time necessary for the complete closure of the door, when operating by hand gear, does not exceed 90 seconds.
3.3	Proper operation of doors opening and closing with stored energy (emergency source of power) is normally carried out during the transitional power test: the possibility to open and re-close doors locally by means of the stored energy should be verified (3 cycles of operation). If it is necessary to test the stored energy outside the transitional power test, each door shall have the main power secure at the control station and operated on stored power to verify the three movements (O-C-O)
4.0	Operation of the WT doors from the WTD emergency control station (bulkhead deck)
4.1	The selected watertight door(s) shall be closed from relevant watertight door emergency station. The door closure mechanism shall be an all-round crank motion or some other movement providing the same degree of safety acceptable to the Flag Administration.
4.2	At the location of the watertight door: audible alarms (distinct from any other alarm in the area) shall sound as soon as the door is in motion and should continue sounding until the doors are completely closed. The alarm should be audible from both sides of the door. In passenger areas and areas of high ambient noise, the Administration may require the audible alarm to be supplemented by an intermittent visual signal at the door
4.3	If the system is hydraulic, power to hydraulic pumps should be secured to ensure hand pumps operate as designed. Proper operation of the hand pumps (or equivalent mechanism) at the watertight door emergency stations should be then verified.
4.4	Status (open/closed) of the doors and relevant numbers should be verified at the respective watertight door emergency station.
4.5	The time necessary to complete the closure of the watertight door, when operating by hand gear, shall not exceed 90 seconds.
5.0	Operation of the doors from the central operating console at the navigation bridge
5.1	Closure of the watertight doors from the safety center is normally conducted during the “emergency & transitional power test”. The central operating console at the navigation bridge places the master mode into the “doors closed" mode which shall automatically close any door that is open. The "doors closed" mode shall permit doors to be opened locally and shall automatically re-close the doors upon release of the local control mechanism. The "master mode" switch shall normally be in the "local control" mode. The "doors closed" mode shall only be used in an emergency or for testing purposes. The audible alarms (distinct from any other alarm in the area) shall sound for at least 5 sec. but no more than 10 sec. before the doors begin to move and should continue sounding until the doors are completely closed. The alarm should be audible from both sides of the door.

Counter Flooding Measures	22.0
Reference	SOLAS II-1/7-2 Marine Safety: Port State Control, COMDTINST 16000.73
Scope	The purpose of this test is to verify the presence and proper installation, and arrangement of counter-flooding measures.

1.0	Flooding Control
1.1	The Damage Control Plan shall be examined to identify type and location of counter flooding systems (if any).
1.2	Flooding control devices need to be constructed to the same structural fire protection boundary for which they are located (refer to SFP plan). If a cross-flooding hatch is in an A-60 boundary, then it needs to be constructed of a material that meets the A-60 rating.
1.3	A visual spot check is conducted at counter/cross flooding locations to verify the installation, arrangement and, if necessary, proper operation. Examples of counter/cross flooding mechanisms include, but are not limited to: -sounding closures and relevant counterweights -cross flooding plates in cases of structural openings -flooding hatches and shutters
1.4	If the system is an active system (e.g., vales or other arrangements), the USCG examiner may require a system test to ensure the system operates properly.
1.5	Examine type approval certificates to verify cross flooding devices are installed as per approved methods

Low Flashpoint Point Fuel System	23.0
Reference	SOLAS II-I/57 IGF Code USCG Low Flashpoint Fuel Job Aid STCW Code
Scope	The purpose of this test is to verify the proper installation and operation of the low flashpoint fuel system. This section includes verification of administrative items (documents, procedures, manuals) as well as testing of various monitoring and alarm systems.

1.0	Preparation
1.1	Determine machinery space concept and system configuration prior to examination of the fuel system.
1.2	A safety briefing shall be held with vessel representatives, shipyard personnel, crew (if available), and USCG examiners to discuss exam scope, ensure proper PPE, atmospheric monitors, and LNG associated safety hazards. Verify if tanks are filled and if the fuel system is commissioned. Any confined spaces needing to be certified "safe for entry" shall be discussed prior to commencing the exam of the fuel system.
2.0	Documents and Manuals
2.1	Verify presence of the following documents, procedures and manuals: -Fuel System Endorsement (found on Passenger Ship Safety Certificate) -Dual Fuel Switch Over Procedures -Fuel Handling Manual -Operational Procedures -Bunkering Procedures -Emergency Procedures -Risk Assessment Analysis -Electrical Equipment Maintenance Manual -Shipboard Hazardous Area Diagram -Cause and effect matrix for alarm testing -Verify electrical standard used
3.0	Crew Training (if present-normally reviewed at first U.S. port)
3.1	Verify certification of personnel required to have "basic training": seafarers responsible for designated safety duties associated with the care, use or in emergency response to low flashpoint fuels.
3.2	Verify certification of personnel required to have "advanced training": masters, engineer officers, and all other personnel with immediate responsibility for the care and use of low flashpoint fuels and fuel systems.
3.3	Verify training for personnel conducting maintenance on electrical equipment in hazardous areas. (*vessel may not have personnel onboard with this type of certification if third party vendors are used for repairs/maintenance on electrical equipment).
4.0	Tank Types
4.1	Determine requirement for second barrier based on tank type: -Membrane: complete secondary barrier required -Type A: complete secondary barrier required -Type B: partial secondary barrier required -Type C: no secondary barrier required

5.0	Airlocks (*Note: Vessel will have numerous airlock spaces)
5.1	Direct access is not permitted from a non-hazardous area to a hazardous area. Where arrangements like this are needed for operational reasons, an airlock shall be provided.
5.2	Verify free and easy passage of the space and that the airlock compartment is not used for any other purpose, i.e., as a storeroom.
5.3	The airlock shall have gas-tight doors, with the doors spaced at least 1.5 and not more than 2.5 meters apart.
5.4	The airlock space shall have a deck area not less than 1.5 m^2
5.5	The door sill of the airlock shall not be less than 300 mm in height.
5.6	The doors shall be self-closing without any hold back arrangements.
5.7	Verify that the airlock is mechanically ventilated at an overpressure relative to the adjacent hazardous area. The airlock should be designed in a way that no gas can be released to safe spaces.
5.8	Verify operation of visual and audible alarm system to give a warning on both sides of the airlock to indicate if more than one door is moved from the closed position.
5.9	Verify operation of audible and visual alarms at a manned location to indicate both loss of pressure and opening of the airlock doors when pressure is lost.
5.10	Essential equipment required for safety shall not be de-energized and shall be certified safe type (may include lighting, fire detection, public address, general alarm systems, etc.).
5.11	For non-hazardous spaces with access from hazardous open deck where the access is protected by an airlock, electrical equipment which is not certified safe type shall be de-energized upon loss of overpressure in the space.
5.12	Verify that a permanently installed gas detector is fitted within the airlock space.
6.0	Gas-safe Machinery Space
6.1	Verify that fuel piping in a gas-safe machinery space is completely enclosed by a double pipe or duct fulfilling one of the following conditions: -the gas piping shall be a double wall piping system with the gas fuel contained in the inner pipe. The space between the concentric pipes shall be pressurized with inert gas at a pressure greater than the fuel gas pressure (conduct a test of alarms provided to indicate loss of inert gas pressure between the pipes). -the gas fuel piping shall be installed within a ventilated pipe or duct. The air space between the gas fuel piping and the wall of the outer pipe or duct shall be equipped with mechanical underpressure ventilation having a capacity of 30 air changes per hour (may be reduced to 10 air changes per hour if arrangements are made to automatically fill the duct with nitrogen upon detection of gas).
7.0	Emergency Shutdown (ESD)-Protected Machinery Space
7.1	ESD protection is limited to machinery spaces that are certified for periodically unattended operation.
7.2	For ESD-protected machinery space, verify measures are applied to protect against explosion, damage of areas outside the machinery space, and ensure redundancy of power supply. The following arrangements shall be provided but are not limited to: 1. gas detection 2. shutoff valve 3. redundancy

	4. efficient ventilation
7.3	Verify distribution of engines between the different machinery spaces is such that shutdown of fuel supply to any one machinery space does not lead to an unacceptable loss of power.
7.4	Verify that ESD-protected machinery spaces have ventilation with a capacity of 30 air changes per hour.
7.5	Verify that the safety system is activated upon loss of ventilation in the engine-room.
7.6	Verify that all electrical equipment, not certified for zone 1, automatically disconnects if a gas concentration above 40% LEL is detected by two detectors in the space containing the gas-fueled consumers.
8.0	Fuel Storage
8.1	Verify liquid gas is stored with a Maximum Allowable Relief Valve Setting (MARVS) of up to 1.0 MPa. *MAWP shall not exceed 90% of the MARVS
8.2	Verify all tank connections, fittings, flanges and tank valves are enclosed in a gas tight connection space (unless the tank connections are on an open deck).
8.3	Piping connections to the fuel storage tank are to be mounted above the highest liquid level in the tanks (unless type C tanks). If piping is connected below the liquid level of the tank it has to be protected by a second barrier up to the first valve.
8.4	Verify drip trays are present if liquified gas fuel storage tanks are located on the open deck.
9.0	Fuel Piping
9.1	Fuel pipes and all other piping shall be color marked in accordance with EN ISO 14726:2008 (or equivalent) Ships and Marine Technology- Identification colors for the content of piping systems.
9.2	Where tanks or piping are separated from the ship's structure by thermal isolation, ensure the piping and tanks are electrically bonded to the ship structure.
9.3	Ensure where all pipelines or components which may be isolated in a liquid full condition shall be provided with relief valves.
9.4	Verify piping that contains low temperature fuel is properly thermally insulated to minimize condensation of moisture.
10.0	Maintaining Fuel Storage Condition
10.1	Fuel tank pressure and temperature shall be maintained at all times within their design range by means acceptable to the Administration by one of the following methods: 1. reliquefaction of vapors; 2. thermal oxidation of vapors; 3. pressure accumulation; or 4. liquefied gas fuel cooling
10.2	Verify that the overall capacity of the fuel system is such that pressure can be controlled within the designed parameters without venting to atmosphere.
10.3	Ensure refrigerants or auxiliary agents used for refrigeration are compatible with the fuel they may come in contact with.
10.4	Ensure that in the event of a single failure of the system, the fuel tank pressure and temperature can be maintained by another service/system.
10.5	Verify that heat exchangers that are solely necessary for maintaining the pressure and temperature of the fuel tanks within their design ranges have a standby heat exchanger (standby not needed if the capacity of the heat exchanger is in excess of 25% of the

	largest required capacity for pressure control and can be repaired onboard without external resources).
10.6	Ensure the capacity of the thermal oxidation unit is sufficient to consume the required quantity of vapors.
10.7	Verify there are gas sampling points provided for each fuel tank to monitor atmospheric changes.
11.0	Fuel Containment
11.1	*Note: The risk assessment includes an evaluation of the ship's liquified gas fuel containment system. If there are any additional safety measures put in place as a result of the risk assessment, ensure these measures are discussed ahead of time.
11.2	Drip Trays: drip trays shall be fitted where leakage may occur, causing potential damage to the ship structure. The drip tray shall be thermally insulated from the ship's structure so that the surrounding hull or deck structures are not exposed to extreme temperatures. Each drip tray shall be fitted with a drain valve to enable rainwater to be drained over the ship's side. Each tray shall have sufficient capacity to ensure the maximum amount of spill according to the risk assessment can be handled.
11.3	If piping is connected below the liquid level of the tank it has to be protected by a secondary barrier up to the first valve. (applicable to only type C)
12.0	Pressure Relief System
12.1	Verify all fuel storage tanks shall be provided with a pressure relief system.
12.2	Ensure liquified gas fuel tanks are fitted with a minimum of 2 pressure relief valves (PRVs). The setting of the PRVs shall not be higher than the vapor pressure used in the design of the tank. **Valves comprising not more than 50% of the total relieving capacity may be set at a pressure up to 5% above maximum allowable relief valve setting to allow sequential lifting.
12.3	Ensure interbarrier spaces are provide with pressure relief devices (refer to IACS unified interpretation GC9 "Guidance for sizing pressure relief systems for interbarrier spaces", 1988)
12.4	Ensure PRV is designed to operate regardless of ice formation on/near the valve.
12.5	Verify that in the event of a failure of a fuel tank PRV, a safe means of emergency isolation is available. These procedures shall be included in the operation manual. The procedure shall only allow for one of the installed PRVs for the liquified gas fuel tanks to be isolated.
12.6	Verify each PRV is connected to a venting system: -directed vertically upwards -designed to minimize ingress of water or snow -vent exit shall not be less than B/3 or 6 meters (whichever is greater) above the weather deck and 6 meters above working areas and walkways.
12.7	Verify that the outlet from the pressure relief valves is located at least 10 m from the nearest: 1. air intake, air outlet or opening to accommodation, service and control spaces, or other non-hazardous area; and 2. exhaust outlet from machinery installations.
12.8	Ensure protection screens of not more than 13 mm square mesh is fitted on PRV vent outlets.
13.0	Gas Supply System to consumers

13.1	Verify the main gas supply line to each gas consumer(s) is equipped with a manually operated stop valve and an automatically operated “master gas fuel valve” (MGVU) (can be coupled in series or a combined valve). Auto-shutdown of the MGFV shall be conducted and verified.
13.2	Ensure the automatic master gas fuel valve is operable from safe locations on escape routes inside the machinery space containing a gas consumer, the engine control room, outside the machinery space, and from the navigation bridge.
13.3	Verify each gas consumer is equipped with a “double block and bleed” valve arrangement (shall be of the fail-to-close type).
13.4	Verify that for each main gas supply line entering an ESD-protected machinery space, and each gas supply line to high pressure installations, there is a means provided for rapid detection of a rupture in the gas line in the engine-room. When a rupture is detected, a valve shall be automatically shut-off. This valve shall be located in the gas supply line before it enters the engine-room or as close as possible to the point of entry inside the engine-room. It can be a separate valve or combined with other functions, e.g., the master valve.
13.5	Verify that where pipes pass through enclosed spaces within the ship, that they are protected by a secondary enclosure. This enclosure can be ventilated duct or double wall piping. The duct or double wall piping system shall be mechanically underpressure ventilated with 30 air changes per hour, and gas detection. *This requirement need not be applied for fully welded fuel gas vent pipes led through mechanically ventilated spaces.
13.6	For gas-safe machinery spaces, ensure fuel piping is completely enclosed by a double pipe or duct. The space between the pipes shall be pressurized with inert gas at a pressure greater than the gas fuel pressure.
13.7	For ESD-protected machinery spaces, ensure the pressure in the gas fuel supply system does not exceed 1.0 MPa
13.8	Verify that readily visible notice giving instruction to not open the fuel supply line after the activation of the automatic shut-down valve until the reason for shut-down is identified and the necessary precautions are taken.
13.9	Verify instructions are posted in a prominent position within the machinery space to not operate the fuel supply system after a fuel leak is detected causing a shut-down of the system.
13.10	Ensure caution placard is permanently fitted in the machinery space containing gas-fueled engines stating that heavy lifting, implying danger of damage to the fuel pipes, shall not be done when the engine(s) are running on gas.
13.11	Verify that the fuel supply system is arranged for manual remote emergency stop from the following locations: -navigation bridge -cargo control room -onboard safety center -engine control room -fire control station -adjacent to the exit of fuel preparation rooms
14.0	Gas Detection System
14.1	Verify gas detectors are fitted in the following areas/spaces: -tank connection spaces

	-all ducts around fuel piping -machinery spaces containing gas piping, gas equipment, or gas consumers -compressor rooms and fuel preparation rooms -other enclosed spaces containing fuel piping or other fuel equipment without ducting -other enclosed or semi-enclosed spaces where the fuel vapors may accumulate including interbarrier spaces and fuel storage hold spaces of independent tanks other than type C -airlocks -gas heating circuit expansion tanks -motor rooms associated with the fuel systems -at ventilation inlets to accommodation and machinery spaces if required based on the risk assessment
14.2	For ESD-protected machinery space, ensure redundant gas detection systems are provided.
14.3	Verify the detection equipment is located where gas may accumulate and in the ventilation outlets.
14.4	Ensure all gas detection equipment is designed, installed, and tested in accordance with IEC 60079-29-1 (or equivalent), An operational test of the equipment shall be witnessed.
14.5	Verify alarm set points: -An audible and visual alarm shall be activated at a gas vapor concentration of 20% of the lower explosive limit (LEL). The safety system shall be activated at 40% of LEL at two detectors *unless self-monitoring type. -For ventilated ducts around gas pipes in the machinery spaces containing gas-fueled engines, the alarm limit can be set to 30% LEL. The safety system shall be activated at 60% of LEL at two detectors.
14.6	Verify audible and visual alarms from the gas detection equipment are located on the navigation bridge or in the continuously manned central control station.
15.0	Fuel Tank Monitoring
15.1	Verify each liquified gas fuel tank is fitted with liquid level gauging devices. The liquid level shall always be obtainable whenever the fuel tank is operational. Liquid level gauges can consist of the following: -indirect devices, which determine the amount of fuel by means such as weighing or in-line flow metering. -closed devices, which do not penetrate the liquified gas fuel tank, such as devices using radioisotopes or ultrasonic devices.
15.2	Verify each liquified gas fuel tank is fitted with a HIGH liquid level alarm that operates independently of other liquid level indicators, which gives an audible and visual alarm when activated.
15.3	Verify the presence of a direct reading gauge within the vapor space of the fuel tank. An indirect indication is to be provided on the navigation bridge, continuously manned central control station, or onboard safety center.
15.4	Verify pressure indicators are clearly marked with the highest and lowest pressure permitted in the fuel tank.
15.5	Verify a high-pressure alarm and, if vacuum protection is required, a low-pressure alarm shall be provided on the navigation bridge and at a continuously manned central

	control station or onboard safety center. The alarms shall be activated before the set pressures of the safety valves are reached.
15.6	For submerged fuel-pump motors and their supply cables, arrangements shall be made to alarm in low liquid level and automatically shut down the motors in the event of low-low liquid level. This shutdown shall give an audible and visual alarm on the navigation bridge, continuously manned central control station, or onboard safety center.
15.7	Except for independent tanks of type C supplied with vacuum insulation system and pressure build-up fuel discharge unit, each fuel tank shall be provided with devices to measure and indicate the temperature of the fuel in at least three locations; at the bottom and middle of the tanks as well as the top of the tank below the highest allowable liquid level.
16.0	Bunkering System
16.1	Verify that the bunker station is located on an open deck so that sufficient natural ventilation is provided. (Closed or semi-enclosed bunkering stations shall be subject to special consideration within the risk assessment).
16.2	Ensure the surrounding hull or deck is not exposed to unacceptable cooling, in case of leakage of fuel. Verify presence and condition of drip trays.
16.3	Verify pressure indicators are clearly marked with the highest and lowest pressure permitted in the liquefied gas fuel tank.
16.4	Verify local-reading manifold pressure indicator is provided to indicate the pressure between the ship's manifold valves and hose connections to the shore.
16.5	Suitable means shall be provided to relieve the pressure and remove liquid contents from pump suctions and bunker lines.
16.6	Verify that connections and piping is positioned and arranged that any damage to the fuel piping does not cause damage to the ship's fuel containment system resulting in an uncontrolled gas discharge.
16.7	Liquid and vapor hoses used for fuel transfers shall be compatible with the fuel and suitable for the fuel temperature. Hoses subject to tank pressure, or the discharge pressure of pumps or vapor compressors shall be designed for a bursting pressure of not less than 5X the maximum pressure the hose can be subjected to during bunkering.
16.8	The bunkering manifold shall be designed to withstand the eternal loads during bunkering. Verify that the connections at the bunkering station are a dry-disconnect type equipped with an additional safety dry break-away coupling/self-sealing quick release. The couplings shall be of a standard type.
16.9	Ensure an arrangement for purging fuel bunkering lines with inert gas is provided.
16.10	Verify that the bunkering system is arranged so that no gas is discharged to the atmosphere during filling of fuel tanks.
16.11	A manually operated stop valve and a remote operated shut-down valve in series, or a combined manually operated and remote valve shall be fitted in every bunkering line close to the connecting point. It shall be possible to operate the remote valve in the control location for bunkering operations and/or from another safe location.
16.12	A ship-shore link (SSL) or an equivalent means for automatic and manual ESD communication to the bunkering source shall be fitted.
16.13	Verify presence of audible and visual alarm at the bunkering control station to signal loss of ventilation in the ducting enclosing the bunkering lines.
16.14	Verify the presence of audible and visual alarm at the bunkering control station for when gas is detected in the ducting around the bunkering lines (emergency shutdown

	shall also be provided and tested to include timing of ESD valve closure as well as the operation of the valve itself).
16.15	Confirm fuel system schematic/piping and instrumentation diagram (P&ID) is permanently mounted at the ship's bunker station.
17.0	Bunker Control Location
17.1	Ensure the bunker control station is a safe space situated in a remote location from the bunkering station.
17.2	Verify the following items are actively monitored at the bunker control location: -tank pressure -tank temperature -tank level *alarms for any one of the items above shall be tested.
17.3	Verify remote control valves for water spray system and bunkering stop valves are operable from the bunker control station.
17.4	Verify overfill alarm and automatic shutdown is indicated at the bunker control station.
17.5	Ensure an audible and visual alarm is provided in the event that the ventilation in the ducting enclosing the bunkering lines stops.
17.6	Ensure if gas is detected in the ducting around the bunkering lines an audible and visual alarm as well as an emergency shutdown is provided.
17.7	Confirm fuel system schematic/piping and instrumentation diagram (P&ID) is permanently mounted at the ship's bunker control station and at the bunker control station.
18.0	Inert Gas Production
18.1	A continuous-reading oxygen content meter shall be fitted to the inert gas supply from the equipment and shall be fitted with an alarm set at a maximum of 5% oxygen content by volume.
18.2	Where a nitrogen generator or nitrogen storage facilities are installed in a separate compartment outside of the engine-room, the separate compartment shall be fitted with an independent mechanical extraction ventilation system, providing a minimum of 6 air changes per hour. A low oxygen alarm shall also be fitted in this space.
18.3	Ensure the inert gas system has arrangements to prevent back-flow of fuel vapor; inert gas supply line shall be fitted with two shut-off valves in series with a venting valve in between (double block and bleed valves). Additionally, a closable non-return valve shall be installed between the double block and bleed arrangement and the fuel system.
18.4	Where insulation spaces are continually supplied with an inert gas as part of a leak detection system, means shall be provided to monitor the quantity of gas being supplied to individual spaces.
19.0	Ventilation
19.1	Ensure air inlets for hazardous enclosed spaces are taken from non-hazardous areas and air inlets for non-hazardous areas are taken from non-hazardous areas at least 1.5 meters from the boundary of any hazardous area.
19.2	Ensure air outlets from non-hazardous spaces are located outside hazardous areas.
19.3	Verify the outlets from pressure relief vales are located at least 10 mm from the nearest: -air intake, air outlet or opening to accommodation, service and control spaces or other non-hazardous area; and

	-exhaust outlet from machinery installations
19.4	Verify presence of audible and visual alarm for any loss of the required ventilating capacity. Alarm shall sound on the navigation bridge or in a continuously manned central control station or safety center. *For ESD-protected machinery spaces the safety system shall be activated upon loss of ventilation in the engine-room.
20.0	Fire Detection
20.1	A fixed fire detection and fire alarm system complying with the Fire Safety Systems Code shall be provided for the fuel storage hold spaces and the ventilation trunk to the tank connection space and in the tank connection space, and for all other rooms of the fuel gas system where fire cannot be excluded. *Smoke detectors alone shall not be considered sufficient for rapid detection of fire.
21.0	Firefighting (Water Spray System)
21.1	Verify a water spray system is installed for cooling and fire prevention to cover exposed parts of fuel storage tank(s) located on open deck. The water spray system shall also provide coverage for boundaries of the superstructures, compressor rooms, pumprooms, cargo control rooms, bunkering control stations, bunker stations and any other normally occupied deck houses that face the storage tank on open decks unless the tank is located 10 meters or more from the boundaries.
21.2	Verify an operational test of the water spray system. The capacity of the water spray pump shall be sufficient to deliver the required amount of water to the hydraulically most demanding area.
21.3	Verify presence and operation of stop valves fitted within the water spray application main lines. Stop valves shall be located at intervals not exceeding 40 meters.
21.4	If the water spray system is not part of the of the fire main system, a connection to the ship's fire main through a stop valve shall be provided.
21.5	Verify remote starts of pumps supplying the water spray system and remote operation of any normally closed valves to the system shall be located in a readily accessible position which is not likely to be inaccessible in case of fire in the areas protected.
21.6	Water spray nozzles must be an approved full-bore type.
22.0	Firefighting (Fixed dry chemical powder extinguishing system)
22.1	Verify a permanently installed dry chemical powder fire-extinguishing system is installed in the bunkering station area to cover all possible leak points.
22.2	The system shall be arranged for easy manual release from a safe location outside the protected area.
22.3	One portable dry powder extinguisher of at least 5 kg capacity shall be located near the bunkering station.

Emergency Diesel Generator (EDG)	24.0
Reference	SOLAS II-1/42
Scope	The purpose of this test is to verify onboard arrangement of emergency power source to include egress of space, accessibility of space, fire suppression/detection, second means of starting, operation of manual mode, and operation of fuel shut-off valve.

1.0	Emergency Diesel Generator room (EDG room)
1.1	The EDG room is inspected to verify the following: -availability of two means of escape (they should be as widely separated as possible; the doors leading from such means of escape shall be in a position from which access is provided to the appropriate lifesaving embarkation deck) -the access to the space should be properly marked, kept normally locked and restricted to authorized personnel only. -availability of emergency means of communication (e.g., sound powered telephone) -type and arrangement of fixed fire suppression system relevant to the space and of fixed local application fire-extinguishing system (e.g., water-based system). -dielectric mats are in place in front of switchboards.
1.2	The EDG primary and secondary means of starting shall be tested (electric, local batteries, compressed air, hydraulic). The EDG shall be started in manual mode for a period of 5-10 minutes. While the EDG is running, the following shall be verified: -guards around rotating equipment -lagging is securely in place and not oil soaked -adequate lighting (generator and switchboard) -communication between EDG room and bridge -quick-closing fuel shut off valve when EDG is not running should be tested -emergency air compressor (if equipped): air compressor charges receivers in emergency generator space should be verified Exhaust piping for emergency air compressor is adequately insulated. -ventilation louvers should open, and fan motors should start automatically, -louvers should not open in a default (no power) situation.
1.3	The automatic starting of the EDG is verified during the emergency and transitional power test.

Emergency and Transitional Power	25.0

Reference	SOLAS II-1/42; II-1/13; II-2/13.3.2.5.1; II-2/9.4.1.1.5; III/4; III 5; III/11.4; III/11.5; III/16.7 MSC.1/Circ.1530.
Scope	The purpose of this test is to demonstrate proper operation of the following systems in emergency conditions: EDG, emergency lighting, centralized closing of watertight doors and fire screen doors, elevators, fire pump, bilge pump, navigation lights, steering gear, PA and GA systems, active fire suppression and detection systems, transitional battery power. *Note: The transitional power test is a very complex operation and may need to be customized dependent on vessel construction or arrangement. Figure 1. depicts the typical process, team arrangement and tasks during a transitional power test. This is a guide and not a prescriptive requirement.

1.0	Preparation
1.1	The ship should be cleared of all nonessential personnel: personnel not involved in the test (crewmembers, shipyard workers, sub-contractors) should be requested to leave the ship (i.e., to be sent ashore) prior to test. Any personnel remaining shall be prohibited from circulating throughout the ship and transiting through watertight, semi-watertight, and fire doors.
1.2	Shipyard/vessel personnel should verify that all watertight doors, semi-watertight doors and fire doors are open and clear of obstructions (e.g., cabling and equipment) so that they are able to close.
1.3	Shipyard personnel shall be positioned at watertight doors to avoid any unauthorized passage during the test.
1.4	General arrangement plans of the ship should be available for USCG's inspectors use: all ship's decks should be then divided in groups between USCG inspectors, including open decks and embarkation areas.
1.5	Each team typically consists of: - one USCG inspector - one Shipyard representative - one Class/R.O. representative - and one vessel/owner representative Designated Shipyard and USCG team leaders direct the test (Team 1). All teams should refer to team 1 during the test.
1.6	Following personnel should be provided by the Shipyard: -person on the bridge/safety center to operate general alarm, make continuous use of the public address system announcements (e.g., music), to inform all teams on each step of the test, and on still available time (e.g., every 5 minutes) -persons on the bridge/safety center to operate general closing of watertight doors, semi-watertight doors and fire doors; fire pump, the emergency bilge valves and pump, steering gear and navigation lights -dedicated team, with suitable testing equipment, to test fire alarms (smoke detectors and manual call points) and sprinkler/water-mist section valves (as applicable) throughout the ship -electricians in the emergency battery room and/or individual UPS units to record voltage and amps of emergency batteries starting at minute zero, minute

	one and then every 5 minutes and until 30 minutes are up. If separate, also GMDSS transitional batteries should be monitored. *Note: Battery readings shall be taken only at individual UPSs that provide power to safety equipment requiring connection to the transitional source of power circuit. Relevant list should be provided by the Shipyard to the USCG before starting the test. Readings are taken from the input side (battery source) of the UPS.
1.7	Ensure teams are equipped with, communications, vessel plans for area assigned, keys (owner and shipyard) to all locked spaces, and test equipment.
1.8	Identify and discuss operations of elevators as programmed.
1.9	Discuss operation of low location lighting (normally switched on, automatic operation, manual control from the bridge, etc.).
1.10	It should be confirmed, or verified, that the shore tie is disconnected. If shore tie should remain connected, then breaker should be opened and locked out for safety.
1.11	A dedicated meeting should be held prior to this test to delineate and clarify, step by step, the following: test procedures, personnel involved, team & deck assignments, announcements to expect, etc. The following "Step-by-step procedure" or similar scheme should be distributed to all groups prior to test.
2.0	Emergency Source of Power Test
2.1	Position all teams in their ready positions as identified in pre-test brief.
2.2	Secure all main generators (main generators in manual mode or disabled). Transitional source of power will temporarily supply emergency load.
2.3	The emergency generator should start and come on-line automatically within 45 seconds.
2.4	All elevators should move to programmed location and should be no longer operative. All teams should confirm with the bridge team whether elevators arrived at the designated deck. If elevator(s) do not get to the designated deck within the programmed time, the team leader should be informed of this discrepancy. Teams should then move to their designated starting point.
2.5	Before moving to the bridge, team 1 should check the opening of the retractable roof/magrodome (if fitted) by the emergency source of power.
2.6	When all above verifications are completed and all teams have confirmed that they are in position (at the designated starting point), the EDG is secured: the vessel is now on transitional source of power (batteries). The time is noted.
2.7	Before proceeding with the general closing of the watertight doors and fire doors, a print-out of the status of the doors should be available. The bridge remotely closes all watertight, semi-watertight, and fire doors. Take note of the identification number of doors that did not close/operate properly. Door closure switch should be reset to LOCAL MODE prior to starting the deck-by-deck verification.
2.8	The P.A. system must constantly be sounding (music) and the G.A. must be activated every 2-3 minutes throughout the test.
2.9	All teams should now start checking all assigned decks: spaces are spot checked throughout the ship to ensure that emergency lighting, PA/GA, LLL system, and escape signage are operating and adequate.

2.10	While conducting the deck verifications, teams should fully open and close watertight doors one more time completing three cycles using stored energy. Any discrepancies shall be noted. *Shipyard may assign a separate team solely responsible for conducting stored energy verification on doors.
2.11	While conducting the deck verifications, teams should operate sliding fire doors (if any) 10 times under stored energy. Any fire door that does not fully close shall be identified and noted. *Shipyard may assign a separate team solely responsible for conducting stored energy verification on doors.
2.12	Shipyard designated teams should test smoke/heat detectors, manual call points, and sprinkler/water-mist system section valves (alarms) to ensure that systems are on transitional source of power.
2.13	The walk-thru of the ship is performed for at least 30 minutes with the ship on emergency battery power. After 30 minutes, the final battery reading is taken and the EDG is re-started. Reading should be converted to percentage of power remaining in the batteries: more than a 12 % drop from nominal voltage is a failed test (refer to step 1.6).
2.14	After 30 minutes, power from the batteries is secured and the remainder of the transitional/emergency power test is conducted with the EDG supplying power to all required equipment and systems. While on the bridge, Team 1 should verify proper operation of the following systems while on emergency generator power: - fire pump: the pump is started and the fire main is tested (at least two hoses, one fwd. and one aft, on the uppermost deck) - bilge valves are operated and bilge pump starting (from ECR or W/H); - navigation lights (emergency lighting); - steering gear; - PA/GA.
2.15	If the teams have not completed the walk-thru while on battery power, the teams should complete it with the systems on EDG power.
2.16	When all teams have reported that they have completed their verification, the main generators are started so that they can assume the load. All teams should proceed to the meeting point for the final debriefing.

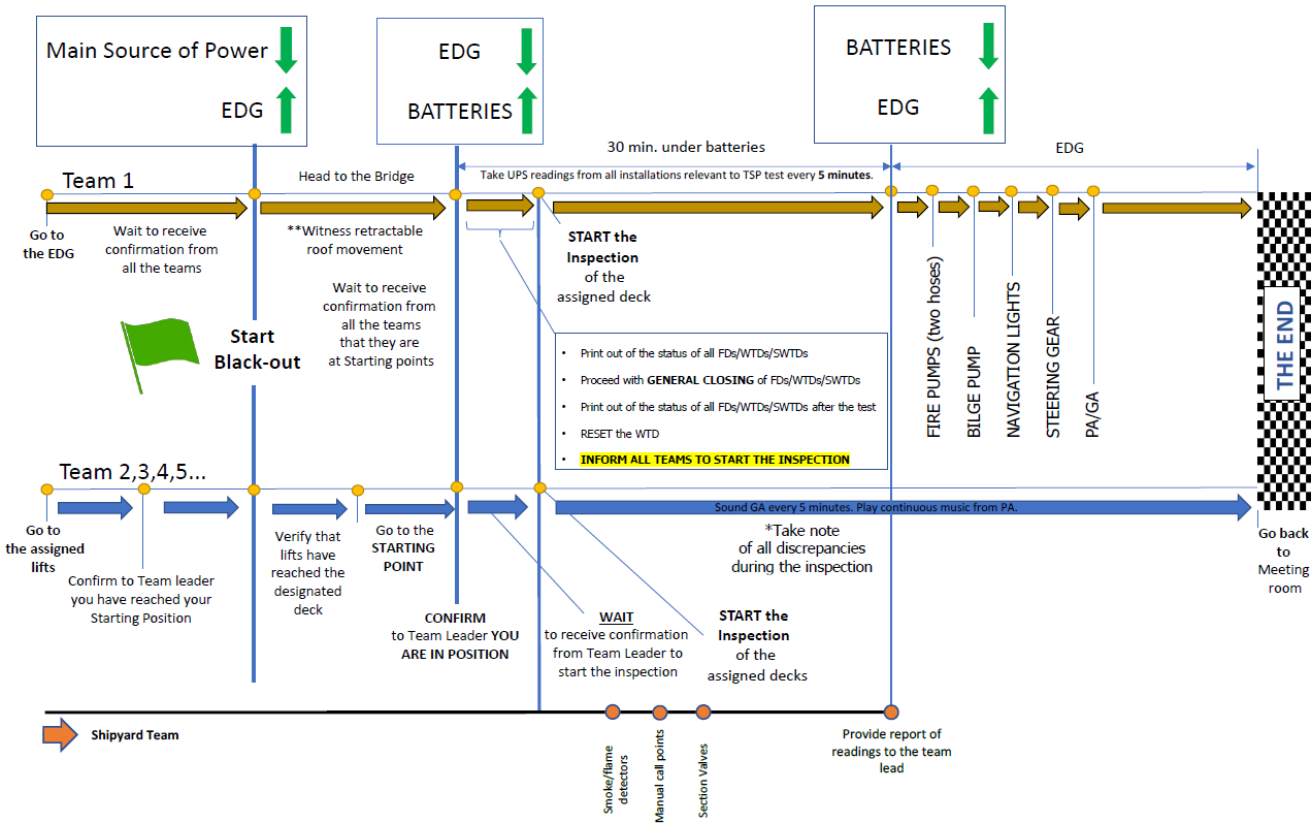

Figure 1: Transitional power process diagram developed by USCG Activities Europe. This diagram depicts the flow of a typical test with team assignments and milestones.

Reference	SOLAS II-1/42; II-2/10.4;
Scope	The purpose of this exam is to verify the general arrangement of the battery room, including means of escape, fire protection systems, proper markings and instructions.

1.0	Battery Room
1.1	The general arrangement of the room is inspected to verify regulatory compliance.
1.2	SAFETY NOTE: Ensure ventilation to the space is operational prior to entering the battery room(s).
1.3	Access to the space is properly marked, kept normally locked and restricted to allow access by authorized personnel only.
1.4	Type and arrangement of the fixed fire suppression system
1.5	Batteries are mounted properly, braced and connected.
1.6	Wet cell batteries have no excessive bubbling from batteries (it would indicate battery discharge)
1.7	Batteries are raised off deck.
1.8	Electrical fittings and equipment in battery rooms storing wet cell batteries are rated for hazardous locations

Navigation Equipment	27.0
Reference	SOLAS V Marine Safety: Port State Control, 16000.73
Scope	The purpose of this exam is to verify bridge safety and regulatory installations of navigation equipment.

1.0	Navigation Equipment Verifications
1.1	USCG Examiners shall examine vessel navigation equipment required by SOLAS Chapter V and 33 CFR Part 164, paying particular attention to the equipment requirements tied to the vessel's gross tonnage.
1.2	USCG Examiner shall assess navigation bridge visibility in accordance with SOLAS V/22. (ability to view sea surface from conning position, arc of blind sectors, etc.)
1.3	Verify presence of Position Fixing Device
1.4	Ensure (vessel over 10,000 GT) is equipped with an ARPA(s)
1.5	Echo Depth Sounder and Recorder
1.6	Verify presence of rate-of-turn indicator
1.7	Verify presence of marine radar: two radars on vessels over 10,000 GT (including true north stabilization features) (9GHz/3GHz)
1.8	Verify presence of Electronic Chart Display and Information System (ECDIS)
1.9	Verify presence of Automatic Identification System (AIS).
1.10	Verify presence of vessel FM radio: vessel has the capability to use VHF Channels 13, 16, and 22
1.11	Verify presence of magnetic steering compass (deviation table posted near the compass)
1.12	Verify display of Maneuvering information characteristics
1.13	Verify installation of Bridge navigational watch alarm system (BNWAS). Automatic and Manual OFF modes do not operate under any circumstances.
1.14	Verify vessel has charts available for intended area of navigation; Electronic charts forming part of an ECDIS system are acceptable if these are up-to-date and the system includes a suitable back-up approved by the Administration conforming to the standards in IMO Resolution A.817 (19).
1.15	Examine distress alert panel; shall be installed at the conning position. Panel shall contain either one single button which initiates a distress alert using all radio communication installations or one button for each individual installation. The distress alarm panel shall provide both visual and aural indication of any distress alert(s) received.
1.16	Verify Decision Support System (DSS) is present.
1.17	Verify presence of publications. Vessels must carry a currently corrected copy of, or applicable currently corrected extract from, the U.S. navigation publications (or foreign equivalents) listed in 33 CFR 164.33. Publications required include the following: [1] U.S. Coast Pilot. [2] Coast Guard Light List. [3] Tide tables. [3] Tidal Current Tables or River Current Publication.
1.18	Verify presence of daylight signaling lamp
1.19	Verify presence of Voyage Data Recorder (VDR)

Smoke Extraction System	28.0
Reference	SOLAS II-2/3.3; II-2/7.5.4; II-2/8.5; II-2/9.2.2.7 IMO MSC/Circ.1034
Scope	The purpose of this test is to verify the proper design and operation of the smoke extraction systems in atriums (i.e., multi-deck public spaces that extend three or more decks). The goal is to evaluate the capability of the fans to exhaust the entire volume within the space in 10 minutes to ensure the system is able to evacuate smoke as designed so that a functional view of escape can be provided.

1.0	Preparation
1.2	In case the ship is provided with more than one "SOLAS atrium", it is considered acceptable that only one is selected for full testing. To this purpose, the size of the spaces, their arrangement and complexity (e.g., recesses, overhangs, number of decks, etc.), as well as atriums already tested on previous sister vessels (if applicable) should be considered. * If possible, the atrium to undergo full testing should be identified before the ICOC exam (during the assessment exam of the ship).
1.3	For the remaining atriums, it is acceptable to just test proper operation of smoke extraction fans in manual mode, and the automatic starting function (i.e., automatic starting of the system, and general closing of fire doors at atrium boundary, following the activation of atrium smoke detection system.)
1.4	The shipyard shall provide a design manual identifying the volume of the atrium as well as the capacity of the extraction fans. It should be identified where the extracted smoke is discharged to ensure there are no underlying issues.
1.5	On the day of the test, onboard personnel (shipyard, subcontractors, ship's crew, etc.) shall be informed that the smoke extraction system in the designated area will be tested. Personnel aboard the vessel shall be prohibited from entering the space, or remaining in the space, during the test, except for authorized personnel (strictly persons involved in the test). In order to avoid such unauthorized access, proper warnings should be posted on the outside of the atrium. In addition, Shipyard's personnel should be placed on the outside of each door bounding the atrium to keep persons not participating in the test from entering the space.
1.6	Ensure that all obstructions are clear of all fire doors that bound the atrium to permit their proper closure.
1.7	Shipyard's personnel, and if available, one USCG examiner should be on the bridge, or safety center, to verify the actual activation of the system and the time at which the fans start. All other USCG examiners should be positioned on the decks within the atrium.
1.8	Two tests should be performed to demonstrate proper operation of the smoke extraction system: - the first test should verify the automatic starting of the system and the general closing of the fire doors at atrium boundary (if so designed) following the activation of any fire alarm (e.g., smoke detector, manual call point) - the second test is to verify that the smoke extraction system has sufficient capacity to extract one full volumetric air change in not more than 10 minutes.

2.0	Automatic Operation of the System
2.1	Before the test, all personnel aboard shall be informed (by P.A. system) of the impending smoke extraction system test and that they should remain clear of the atrium during the test.
2.2	The fire doors in the boundary of the atrium should be open (on their magnets).
2.3	The fans should be set for automatic operation.
2.4	One smoke detector (or manual call point) located within the boundary of the atrium should be activated: the relevant alarm shall not be acknowledged from the bridge/safety center. Two minutes are normally needed for the complete activation of the automatic sequence. Or If 2 fire alarms are activated, this should cause the immediate automatic starting of the system.
2.5	USCG examiners verify that: - the fire doors in the atrium's fire boundaries automatically close (if so designed); - the fans start automatically and extract air from the space.
2.6	Verification of the testing above shall be confirmed with the personnel located on the bridge/safety center.
3.0	Capacity of the Smoke Extraction System
3.1	Before the test, all personnel on board should be informed – by the P.A. system - of the impending smoke extraction system test and that they should remain clear of the atrium during the test.
3.2	All fire doors at the boundary of the atrium should be manually closed. All doors within the boundary of the atrium are opened. Shipyard personnel should be posted on the outside of each door to ensure only authorized personnel enter the atrium during the test.
3.3	The atrium smoke extraction system should be placed in the manual mode of operation; or otherwise, the system should be temporarily disabled so the atrium can be filled with smoke from the smoke-generating machines.
3.4	The atrium is completely filled up with smoke using an adequate number of smoke-generating machines (normally, theatrical smoke-generating machines are used to this purpose), or equivalent equipment.
3.5	Before starting the test, USCG examiners shall confirm that smoke has spread to all levels of the space (including recesses) and that visibility is reduced to obstruct all exit signage from a position centered between signs. Additionally, examiners must confirm that all parties agree to the test to commence the test.
3.6	Once the atrium has been completely filled up with smoke, the smoke-generating machines are stopped, and extraction fans are manually started. (confirmation should be provided from the bridge)
3.7	The extraction fans should run for a period of 10 minutes. During this period, the atrium doors are to remain closed, with no one entering or exiting the atrium. Note: MSC Circ.1034 outlines the testing requirements for the system. The 10-minute time starts at the moment the fans are manually activated regardless of damper settings/automation. As a best practice it is recommended one member of the team observe the activation from the bridge.
3.8	At the end of the 10 minutes, while the fans are still operating, proper operation of escape doors which open outwards should be verified (system is capable of maintain a

	negative pressure in relation to the surrounding spaces and that such a negative pressure does not impair escape door operation). After proper operation of the escape doors is verified, the fans can be secured.
3.9	At the completion of 10 minutes, USCG examiners should verify that the space is sufficiently free of smoke. The test is satisfactory if, on each level of the atrium, the smoke has sufficiently cleared to allow a person the ability to follow any of the escape signs to a designated exit.

Means of Escape/Escape Signage/Low Location Lighting	29.0
Reference	SOLAS II-2/13; II-2/5.3.3; III/8; 9; 11.5 FSS Code Ch. 13 IMO Res. MSC.410(97); Res. A.760(18) and MSC.82(70); Res. A.1116(30); MSC.1/Circ.1553; MSC/Circ.1167 & Circ.1168; MSC.1/Circ.1456; MSC.1/Circ.1511; MSC PRG SOLAS-01; 04; 06; 25; 26; 38; 49 Marine Safety: Port State Control, 16000.73
Scope	The purpose of this exam is to verify adequate escape routes, means of escape throughout the vessel, and relevant escape signage. A large portion of this test may be completed during the transitional power test.

1.0	Means of Escape
1.1	The Escape plan should be available to identify means of escape, escape stairway enclosures (including "horizontal-stairs"), potential "dead-end" corridors, room-in-room constructions with the arrangement of relevant mitigating measures (e.g., audible alarms).
1.2	Escapes routes are examined to verify that they are always available, clear of obstructions, free of storage, and that two means of escape are provided.
1.3	Direct access to stairway enclosures should be verified: only corridors, public toilets, lockers of non-combustible material for safety equipment, and large public spaces can have direct access to stairway enclosures.
1.4	Arrangement of furniture within category (2) stairway enclosures should be verified: only open information counters, and a maximum of six seating per deck, both of restricted fire risk characteristics, should be permitted.
1.5	Furniture along category (3) corridors, or within category (3) lobbies, which are not part of cabin escape routes should be verified: they should not obstruct the escape route, be fixed and of restricted fire risk characteristics. Furniture shall not be permitted in corridors forming escape routes in cabin areas.
1.6	In general, escape doors should open in way of the direction of escape, except for cabin doors and doors in vertical escape trunks.
1.7	Cabin doors and doors along escape routes shall not require keys to unlock them when moving in the direction of escape, including the ones to access assembly stations and the embarkation deck. In particular, normally latched escape doors in public spaces should be provided with quick release mechanism to open them in direction of escape (e.g., anti-panic bar, one-action locking system).
2.0	Escape Signage
2.1	The standard adopted for the on-board signage system is preliminarily discussed in order the design philosophy is understood and so that the consistency with the on-board arrangement can be verified. (IMO MSC.1/Circ.1553 and IMO Res. A.1116(30), i.e., ISO 24409) NOTE: ISO 24409 is mandatory for all passenger ships constructed on and after 1st January 2019. Anyway, the standard can be adopted also for ships constructed before such a date, on voluntary bases, following the acceptance of the Administration.
2.2	Escape signs and their arrangement shall be verified along escape routes in order to verify that they are adequate and consistent with the Escape plan. Escape signs should lead to assembly stations and to embarkation deck.

2.3	Signs should be photo-luminescent or visible in emergency lighting condition. If photo-luminescent, relevant material certification should be available for review. If electrically illuminated, they shall be powered by the emergency source of power.
2.4	In particular, it should be verified that: - all doors identified in the Escape plan are properly marked - primary escape routes, in accommodation and service spaces, are clearly identified and marked by the assembly station signs - visibility of escape signs along corridors and within large public spaces; if the exit signs fitted above exit doors are not adequately visible from any point of the space, additional signs leading to them should be provided along corridors or within public spaces - the signs are adequate in size and visible - Escape signs electrically powered should be verified under emergency power (observed during transitional power test).
2.5	Passenger cabins are spot checked in order to verify that instructions are posted on the inside of entrance doors to inform passengers of the designated assembly station, essential action in an emergency, LLL system, and on method of donning lifejackets. Verify instruction placards show correct direction of egress from cabin.
3.0	Low Location Lighting
3.1	Identify which type of system is used on board the ship: electrically powered system, or phosphorescent (photo-luminescent) system or both. If the phosphorescent system is used, relevant material certification should be available for review, as well as the relevant luminance measurements records (with ship's ambient light).
3.2	The arrangement and proper operation of the system should also be verified in emergency lighting conditions (observed during transitional power test)
3.3	The LLL system should be arranged only along means of escape (stairs and corridors) relevant to passenger and crew accommodation spaces
3.4	The arrangement of the LLL system is spot checked along escape routes in order to verify effectiveness and consistency of the system with applicable regulations and with the approved plan. In particular it should be verified that: - in corridors the LLL system should provide an un-obstructed view to persons crawling - LLL strips lead to exit doors and to their door handles - strips are located on both sides of corridors greater than 2 m wide - strips and relevant signs are not more than 300 mm above the deck - in order for passengers to identify escape routes and exits, LLL strips must be installed so that likely obstructions are avoided: insulation, linings, trim, decorations must be installed so as not to cover or restrict the view of the LLL to persons walking or crawling along the escape route - if fitted in way of fixed furniture (e.g., counters, seating, etc.) their arrangement should not obstruct the view of the LLL strip.

Muster/Assembly Stations	30.0
Reference	SOLAS III/8; III/11; III/25; III/37 FSS Code/Ch.13, 2.4; IMO Res. A.760(18); MSC/Circ.699; MSC.1/Circ.1553; Res. A.1116(30); MSC/Circ.777
Scope	The purpose of this exam is to verify size, location, signage, emergency lighting and accessibility at each muster station (consistency with approved "Abandon ship and evacuation plan" and with relevant Operator's evacuation and abandon ship procedure). Muster stations shall allow a ready access to lifeboats and liferafts.

1.0	Muster Stations
1.1	Muster Stations are readily and always accessible (entrance doors do not require keys to unlock them when moving in the direction of escape).
1.2	No obstructions which would reduce the available space for actual mustering.
1.3	Adequately sized to accommodate all persons assigned.
1.4	Proper location of exits towards lifeboats/liferafts (indoor spaces only).
1.5	Muster station is adequately illuminated (both in normal and emergency lighting condition; can be observed during transitional power test).
1.6	Marked by appropriate IMO symbols at each entrance and inside, and signs are posted to direct people to the embarkation deck and assigned lifesaving appliances.
1.7	The general alarm / public address systems are audible.
1.8	Instructions for donning a lifejacket are posted.
1.9	Essential actions passengers must take in an emergency are posted.
2.0	Muster lists and Emergency Instructions
2.1	The muster list is reviewed in order to verify that is complete and accurate. Verify the following: -contains details of the general alarm and public address system and actions to be taken by crew and passengers when the general alarm is sounded - shall specify how the general alarm is given - shall specify how the order to abandon the ship is given - shows the duties assigned to each crew member - specify officers assigned to lifesaving and fire appliances - specify substitutes for the key person who may become disabled - approved by the competent Authority
2.2	The muster list and emergency instructions should be posted in conspicuous places throughout the ship, within crew areas, including the navigation bridge, ECR, and crew public spaces such as meeting rooms, mess rooms; crew lounges, etc.
2.3	The muster list should be written in a language understood by crew.
2.4	Clear instructions to be followed in the event of an emergency shall be provided for every crew member; such instructions shall be drawn up in the language or languages required by the ship's Flag State and in the English language.

Lifeboats & Tender Vessels	31.0
Reference	SOLAS III/9 to 13; III/16; 21, 23, 24; 17-1 LSA Code Chapter IV/4.4; IV/4.5; IV/4.6 V/5.1; VI/6.1 MSC.1/Circ.1447 MSC Res.81(70) NVIC 03-08
Scope	The purpose of this test to demonstrate proper operation of lifeboats and of relevant launching appliances, by lowering and releasing all boats. Only lifeboats on ship's outboard side should be lowered to the water, in the shipyard; the lowering of the ones on the opposite side is deferred to first US port. USCG examiner shall also verify the required equipment/rations are available onboard the lifeboat.

1.0	Preparation
1.1	The Lifesaving plan is reviewed, and the on-board arrangement is checked, in order to verify that quantity and type of lifeboats are based on the maximum number of persons on board permitted by relevant SOLAS certificate (PSSC), as well as proper installation and stowage.
1.2	Operational procedure to lower to the water all ship's outboard side lifeboats is agreed between USCG and the Shipyard prior to test.
2.0	Verifications
2.1	Lifeboat markings should be checked: - number of persons approved for each lifeboat is clearly marked in permanent characters - name and port of registry of the ship is marked on each side of the lifeboat's bow - markings identifying the ship to which the lifeboat belongs (e.g., call sign or IMO number) and lifeboat number are visible from above - type approval plate - retro-reflective tapes - each seating position should be clearly indicated in the lifeboat.
2.2	Lifeboat launching instructions are posted at the launching position for each lifeboat.
2.3	In case the lifeboats have been the subject of an Alternative Design analysis - e.g., their capacity is more than the maximum one permitted by the LSA Code (150 persons) - the USCG inspector shall verify that the outcomes of the analysis have been implemented in the design of the boats.
2.4	The engine compartments shall be spot checked; the engine shall be provided with either a manual starting system, or with a power starting system with two independent rechargeable energy sources. Any necessary starting aids should also be checked. The starting systems shall not be impeded by the engine casing, seating or other obstructions.
2.5	Water-resistant instructions for starting and operating the engine shall be provided and mounted in a conspicuous place near the engine starting controls.
2.6	Means shall be provided for recharging lifeboat batteries from the ship's power supply at a supply voltage not exceeding 50 V, which can be disconnected at the lifeboat embarkation station, or by means of a solar battery charger.
2.7	Embarkation ladders are to be provided at each embarkation station, or at two adjacent stations; they are to be properly fitted and their location marked by relevant IMO

	symbol. In case such ladders are replaced by approved equivalent devices (e.g., descent devices) at least one embarkation ladder should be anyway provided on each side of the ship.
3.0	Lifeboat Equipment
3.1	Verify that lifeboat equipment is in compliance with LSA Code. If equipment is unavailable, equipment check will be deferred to first US port of call. At least one lifeboat should be fully equipped so that it can be verified by the USCG that the equipment fits in their stowage location; the remaining equipment is displayed inside cabins (one cabin for each boat). The following equipment shall be verified: • Except for free-fall lifeboats, sufficient buoyant oars (thole pins, crutches or equivalent arrangements provided for each oar). • Two boat hooks • A buoyant bailer and two buckets • A survival manual • Illuminated compass • Sea anchor • Two efficient painters • Two hatchets • Watertight receptacles containing a total of 3 liters of fresh water for each person the lifeboat is permitted to accommodate, of which either 1 liter per person may be replaced by a desalting apparatus capable of producing an equal amount of fresh water in 2 days, or 2 liters per person may be replaced by a manually powered reverse osmosis de-salinator capable of producing an equal amount of fresh water in 2 days • Rustproof dipper with lanyard • Rustproof graduated drinking vessel • Food rations totaling not less than 10,000 kJ for each person the lifeboat is permitted to accommodate; in airtight packaging and stowed in a watertight container • Four rocket parachute flares, six hand flares and two buoyant smoke signals • One waterproof electric torch suitable for Morse signaling with one spare set of batteries and one spare bulb in a waterproof container • One daylight signaling mirror with instructions for signaling to ships and aircraft • One copy of the life-saving signals on a waterproof card or waterproof container • One whistle or equivalent sound signal • First-aid outfit in a waterproof • Anti-seasickness medicine sufficient for at least 48 hours and one seasickness bag for each person • Jack-knife to be kept attached to the boat by a lanyard • Three tin openers • Two buoyant rescue quoits, attached to not less than 30 m of buoyant line • If not automatically self-bailing, a manual pump suitable for effective bailing • One set of fishing tackle • Sufficient tools for minor adjustments to the engine and its accessories

	• Portable fire-extinguishing equipment of an approved type suitable for extinguishing oil fires • Searchlight with horizontal and vertical sector of at least 6 and measured luminous intensity of 2500 candle power which can work continuously for not less than 3 hours • An efficient radar reflector, unless a survival craft radar transponder is stowed in the lifeboat • Thermal protective aids sufficient for 10% of the number of persons the lifeboat is permitted to accommodate or two, whichever is the greater Note: MSC Circular MSC.1 Cir1597 Unified Interpretations - twin engine lifeboats (tenders) do not need to have the buoyant oars.
3.2	The lifeboat equipment listed above should be secured within the boats by lashings, storage in lockers or compartments, storage in brackets or similar mounting arrangements or other suitable means. Moreover, the boathooks shall be kept free for fending off purposes. The equipment shall be secured in such a manner as not to interfere with any abandonment procedures. All items of lifeboat equipment shall be packed in a suitable and compact form.
4.0	Lowering Lifeboats to the Water
4.1	The lifeboats located on the outboard side of the ship shall be lowered to the water, released, operated, and recovered. During this test the winches, davits, wires, and overall mechanical operation of the lifeboat lowering equipment shall be examined.
4.2	The inboard lifeboats will not be lowered and operated, however, the USCG examiner will verify the engine and rudder are operational for each inboard lifeboat.
5.0	Tender Vessel Verifications
5.1	If the approved Lifesaving plan contemplates lifeboats used also as tenders or the PSSC, such tenders should fully comply with IMO requirements for lifeboats, i.e., SOLAS and the LSA Code, including the equipment.
5.2	Where tenders maintained aboard the vessel are not lifeboats and are issued a PSSC or Lifeboat/Tender Safety Equipment Certificate, a Certificate of Compliance should be issued to each such tender after satisfactory examination. *Use the equipment list from the Tender Safety Equipment Certificate as a guide of equipment/systems to verify.

Rescue Boats & Fast Rescue Boats	32.0
Reference	SOLAS III/17; III/14; III/21.2 LSA Code Chapter V/5.1; VI/6.1 MSC.1/Circ.1447
Scope	The purpose of this test to verify presence of required equipment, demonstrate proper operation of rescue boats and the relevant launching appliances.

1.0	Rescue Boats
1.1	The rescue boat shall be capable of carrying at least 5 seated persons and a person lying on a stretcher, all wearing immersion suits and lifejackets if required.
1.2	Rescue boat shall have sufficient fuel and be capable of maneuvering at a speed of at least 6 kts and maintaining that speed for a period of 4 hours. (2 kts when fully loaded)
1.3	Rescue boat shall be fitted with an inboard engine or outboard motor. If fitted with an outboard motor, the rudder and tiller may form part of the engine. Petrol-driven outboard engines with an approved fuel system, may be fitted in rescue boats provided the fuel tanks are specially protected against fire and explosion.
1.4	Verify suitable arrangements for towing.
1.5	Verify rescue boat has effective means to bailing or be automatically self-bailing.
1.6	Verify that the rescue boat shall be constructed to permit embarkation of stretcher cases.
1.7	The following rescue boat equipment shall be verified: • sufficient buoyant oars (thole pins, crutches or equivalent arrangements provided for each oar). • buoyant bailer • binnacle containing an efficient compass with suitable means of illumination • sea-anchor and tripping line • painter • one buoyant line • one waterproof electric torch suitable for morse signaling (one spare set of batteries and one spare bulb in a waterproof container) • one whistle or equivalent sound signal • first aid kit in waterproof container • two buoyant rescue quoits • a searchlight • radar reflector • thermal protective aids sufficient for 10% of the number of persons the rescue boat is permitted to accommodate or two, whichever is the greater • portable fire-extinguishing equipment of an approved type • buoyant bailer • buoyant bailer Every rigid rescue boat shall also include: • a boathook • a bucket • a knife or hatchet Every inflated rescue boat shall also include:

	• buoyant safety knife • two sponges • efficient manually operated bellows or pump • a repair kit • a safety boat hook
1.8	The rescue boat on the outboard side shall be lowered to the water, released, operated, and recovered. During this test, the mechanical operation of the lowering equipment shall be examined.
2.0	Fast Rescue Boats
2.1	Fast rescue boats shall comply with the equipment carriage requirements for a rescue boat as per the LSA Code, Chapter V.
2.2	Fast rescue boats shall have a hull length of not less than 6m and not more than 8.5m
2.3	Sufficient fuel, and capable of maneuvering for a period of a t least 4 hours at a speed of at least 20 kts in calm water with a crew of 3 persons and at least 8 kts when loaded with its full complement of persons and equipment.
2.4	Fast rescue boats shall be self-bailing or be capable of being rapidly cleared of water.
2.5	The fast rescue boat on the outboard side shall be lowered to the water, released, operated, and recovered. During this test, the mechanical operation of the lowering equipment shall be examined.
2.6	Arrangements for steering by a wheel at the helmsman's position remote from the tiller. An emergency steering system providing direct control of the rudder, water jet, or outboard motor shall be provided.
2.7	Engines in fast rescue boats shall stop automatically or be stopped by the helmsman's emergency release switch, should the rescue boat capsize.
2.8	Fast rescue boars shall, if possible, be equipped with an easily and safely operated fixed single-point suspension arrangement or equivalent.
2.9	Normal equipment of a fast rescue boat shall include a VHF radio communication set which is hands-free and watertight.

Marine Evacuation System (MES)	33.0
Reference	SOLAS III/15 LSA Code Chapter VI/6.2; V/5.1.1.7; IMO Res. 81(70), Part 1.12 and 2.7 Marine Safety: Port State Control, 16000.73
Scope	The purpose of this test is to verify the arrangement and operation of the MES and associated equipment. During the shipyard portion of the ICOC, examiners must v verify the initial MES deployment was properly completed, and the new system has been properly re-installed.

1.0	Preparation
1.1	At least 50% of MESs shall be subjected to a trial deployment after installation. If the remaining untested MES units differ substantially from the deployed units, witness the deployment of the remaining units as well. In case inflatable liferafts are associated with the MES – i.e., they are to be used in conjunction with the MES in order to comply with the requirement of SOLAS III/21.1.1 (50%+50% capacity on each ship's side) – they should be launched after the MES deployment in order to demonstrate that they can be associated to the main system.
1.2	For new installations, witness a partial evacuation test in accordance with Part 2, Section 7 of Resolution MSC.81 (70). This partial evacuation test is not required during the ICOC for existing vessels with existing MES installations. The partial evacuation test does not involve a timed evacuation.
1.3	Prior to the test, a step-by-step deployment procedure should be introduced by MES manufacturer personnel. This introduction should be done during a dedicated meeting. A full explanation on MES characteristics and deployment procedure shall be provided.
1.4	Proper arrangement of the MES stations is verified on board. Locations should be in such positions as to ensure safe launching. The MES stowage must be such that neither the physical placement nor operational arrangements interfere with the operation of any other life-saving appliance, and that its liferafts are clear of obstructions (e.g., propellers and stabilizers).
1.5	Verify that the ship's side does not have any openings between the embarkation station of the MES and the sea level in the lightest seagoing condition (no permanent openings, recessed promenades, or temporary openings - such as shell doors, windows or ports). Windows and side scuttles of the non-opening type are allowed in this area if complying with SOLAS Reg.II-2/9.4.1.3.3. Should means be provided to protect the system from any opening (as required by SOLAS III/15.1) - which may include, but not be limited to, status indication panel of any side shell door or platform between the MES embarkation station and the waterline in the lightest seagoing condition - location and functionality of such equipment should also be discussed and verified.
1.6	MES container markings are verified in accordance with LSA Code VI/6.2.4: maker's name or trademark; serial number; name of approval authority and the capacity of the system; SOLAS; date of manufacture; date and place of last service (if applicable); maximum permitted height of stowage above waterline; stowage position on board.

1.7	Launching instructions are verified: they should be accurate, posted in a suitable visible location on or in the vicinity of the container, and should be readable under emergency lighting conditions (verified during transitional power test).
1.8	Number of persons who are supposed to descent the system is discussed and agreed between USCG, Class, Shipyard and the Owner/Operator.
2.0	Deployment Test
2.1	It should be demonstrated that the passage (chute), and the platform (if fitted), or liferafts in any other case, can be deployed from the container by one person in a sequence prescribed in the manufacturer's instruction. If more than one action is necessary to operate the system, means should be provided to prevent incorrect operation.
2.2	When the liferafts are fully inflated and in position, the system leader should examine the chutes to make sure they are ready to be used. Take note of any defects or discrepancies observed.
2.3	If the passage (chute) gives direct access to the liferaft(s), it should be demonstrated that it can be easily and quickly detached (quick-release arrangement). This should be done as soon as the partial evacuation is completed, and the rafts are moved from the ship's side.
3.0	Partial Evacuation
3.1	Before descending the chute, the team leader must prepare the persons and show them the correct method of descent.
3.2	Descent of additional persons into the chute (shipyard's volunteers and ship's crew members, or MES manufacturer's personnel) shall be observed to demonstrate the evacuation flow. This partial evacuation test does not involve timed evacuation. USCG examiner should be informed on the number of persons involved and verify that each of them don the correct type of lifejacket.
4.0	Associated Liferafts
4.1	Any inflatable liferaft used in conjunction with the MES should: - be situated close to the system container but capable of dropping clear of the deployed system and boarding platform - be capable of release one at a time from its stowage rack with arrangements which will enable it to be moored alongside the platform -be stowed with its painter line attached to the ship -be stowed with a float-free arrangement so that each float free and inflates automatically when the ship sinks - be provided with pre-connected or easily connected retrieving lines to the platform.
4.2	It should be demonstrated that: - the liferafts can be deployed from their stowage position, and moored alongside the platform, if fitted, before being inflated, and bowsed in ready for boarding. - the liferafts can be deployed from their stowage positions independently of the Marine Evacuation System.

Liferafts	34.0
Reference	SOLAS III/9 to 13; III/16; III/21: III/23; III/24; III/20 LSA Code, IV/4.1; 4.2; VI/6.1 MSC Res.81(70);
Scope	The purpose of this examination is to verify the arrangement of liferaft stations, float-free arrangements, launching and embarkation appliances and arrangements, and relevant launching procedures.

1.0	Preparation
1.1	General arrangement of liferaft launching stations is examined and discussed; Capacity of each liferaft and number of rafts to be lowered to the water within 30 minutes are discussed (e.g., 3, 4 or 5 rafts each davit).
1.2	Training/spare liferafts, if any, should be of the same size and type of the rafts used for primary lifesaving.
2.0	Verifications
2.1	Stowage, container markings, and arrangement for securing liferafts to the vessel.
2.2	Structure and foundation of davits is sound. Wire renewal dates are within five years.
2.3	Roller tracks lubricated and not wasted.
2.4	No obstruction to lowering and accessible embarkation arrangement.
2.5	Limit switches are present and function as designed.
2.6	Launching instructions are present in vicinity of launching controls and should be easily seen under emergency lighting conditions.
2.7	Hydrostatic releases are properly connected to the liferafts.
2.8	Verify hook approvals and fall prevention device installation.
2.9	Embarkation ladders and/or descent devices should be properly fitted, and their location properly marked by relevant IMO symbol.
3.0	Liferaft Inflation and Arrangement Verification
3.1	Historically, liferafts were not inflated and launched during the ICOC exam at the shipyard. A liferaft should now be inflated during the shipyard portion of the ICOC to verify proper davit configuration and alignment of embarkation deck with the raft. Additionally, examiners should verify at least one raft properly inflates.
4.0	Liferaft Launching at First U.S. Port
4.1	During the abandon ship drill, the USCG must assess the crew's proficiency with launching a liferaft. Therefore, liferaft deployment should be discussed with the ship Master during the when the ICOC exam is completed at the arrival of the ship in the first US port of call. If a USCG examiner deems it necessary to launch a liferaft, during the ICOC exam in the shipyard, the procedures should be discussed and agreed upon prior to testing.

Lifesaving Equipment	35.0
Reference	SOLAS III/7; III/8.4.3; III/18; III/22 LSA Code, Ch. II; VII/7.1
Scope	The purpose of this exam is to spot check proper operation and arrangement of lifesaving equipment (personal lifesaving appliances, distress signals, line-throwing appliance and communication systems) against the approved Lifesaving plan.

1.0	Lifebuoys
1.1	Lifebuoys should be so distributed as to be readily available on both sides of the ship and fitted according to the approved Lifesaving plan and their stowage position is indicated by relevant IMO sign
1.2	Lifebuoys should be stowed as to be capable of being rapidly and easily released (i.e., not permanently secured in any way).
1.3	Each lifebuoy shall be marked with the name and port of registry of the ship on which it is carried.
1.4	At least one lifebuoy on each side of the ship shall be fitted with a buoyant lifeline complying with the LSA Code equal in length to not less than twice the height at which it is stowed above the waterline in the lightest seagoing condition, or 30 m, whichever is greater.
1.5	Not less than one half of the total number of lifebuoys shall be provided with self-igniting lights.
1.6	Two of these lifebuoys shall be provided with self-activating smoke signal and light and shall be capable of quick release from the navigation bridge: the functionality of the system should be verified.
2.0	Lifejackets
2.1	Lifejackets shall be provided for every person onboard the ship. Lifejackets shall be placed as to be readily accessible with their position plainly indicated.
2.2	Ensure sufficient number of infant's lifejackets; for voyages of less than 24 hours, a number of infant lifejackets equal to at least 2.5% of the number of passengers on board shall be provided. For voyages of 24 hours or greater, infant lifejackets shall be provided for each infant onboard.
2.3	Ensure sufficient number of children's lifejackets; at least 10% the number of passengers onboard shall be provided (more may be required to provide a lifejacket for each child onboard).
2.4	Verify how the quantity and type of oversized lifejackets has been determined (sufficient number of suitable accessories shall be available to accommodate larger individuals).
2.5	Verify a sufficient number of lifejackets are carried for persons on watch and for use at remotely located survival craft stations. The lifejackets carried for persons on watch shall be stowed on the bridge, in the ECR, and a t any other manned watch station.
2.6	In general, the following should be checked: - lifejackets condition, retro-reflective material, lights, whistles, stowage and marking.
2.7	If lifejackets are stowed in cabins, a spot check is conducted to verify that lifejackets are readily accessible, and their stowage position is indicated by relevant IMO sign. Lifejackets donning instructions shall be posted inside passenger cabins, on the internal side of the entrance door or in vicinity of the stowage location.

2.8	Lifejackets on embarkation deck and/or at assembly stations: -proper IMO symbols shall be fitted on the outside of the cabinet/locker. - quantity of lifejackets, for each type, (adults, children, infants and for over-sized persons) shall be indicated in each cabinet/locker (the quantity may be marked on the inside of the cabinet/locker) - lifejackets donning instructions shall be conspicuously displayed at assembly stations and at embarkation deck; - lifejackets should be stowed so that their distribution and donning does not impede orderly movement to assembly stations and to survival craft embarkation stations.
3.0	Immersion Suits
3.1	Location, proper stowage, quantity and marking (by IMO symbol) of the immersion suits, or anti-exposure suits, provided for every person assigned to crew the rescue boats, or assigned to the MES party, should be verified against the approved Lifesaving appliances plan.
4.0	Distress Signals
4.1	Not less than 12 rocket parachute flares – stored in watertight compartment - are carried on, or near, the navigation bridge.
	Check expiration dates.
4.2	Their location should be properly marked by relevant IMO symbols.
4.3	The Lifesaving signal table and the International Code of Signals should be posted on the navigation bridge.
5.0	Line-throwing Appliance
5.1	Location, proper stowage in watertight containers, and marking (by IMO symbol).
5.2	It should be stowed at/near the bridge, be provided with 4 charges, and ready for use.
6.0	Communication Systems
6.1	Verify at least 3 two-way VHF radiotelephone apparatus are onboard. Additionally, verify SART and EPIRBs are onboard.
6.2	An emergency means comprised of either fixed or portable equipment or both shall be provided for two-way communications between emergency control stations, assembly stations and embarkation stations, and strategic positions onboard.
6.3	On ships fitted with a MES, communication between the embarkation station and the platform, or the survival craft, shall be ensured.
7.0	Descent Devices and/or Embarkation Ladders
7.1	In good condition and secured.
7.2	Verify material condition of deck pad-eyes.
7.3	Sufficient length.
7.4	Descent units approved by Recognized Organization.
7.5	Verify area is adequately illuminated by emergency lighting.

MARPOL- Annex I- Prevention of Pollution by Oil	36.0
Reference	NVIC 04-04: Environmental Inspection Checklist; Addendum to Foreign Passenger Vessel Examination Book

	MARPOL Annex I; MPC Res. 107(49) Marine Safety: Port State Control, COMDTINST 16000.73 USCG 33 CFR 151.25; 151.26; 155.430; 155.450, 155.700; 155.720; 155.800; 156.170 USCG COMDT (G-MOC) Policy letter 04-13 series (Guidelines for the inspection of oily water monitor and separator systems. on Oily water monitor and separator systems) USCG COMDT (G-PCV) Policy letter 06-01 (Guidance for the Enforcement of MARPOL Annex I during Port state control exams),
Scope	The purpose of this exam is to verify the ship's compliance with applicable regulations of MARPOL Annex I/USCG regulations, and verify the vessel is operating per its waste stream management procedures.

1.0	Oil Pollution Placards
1.1	Oil pollution placards should be posted throughout the ship, in conspicuous places in machinery spaces such as: -bunker stations -oily water separator and OWS overboard valve -bilge pump and ballast pump control station -ECR and on the Bridge The placards should be in the language, or languages, understood by crew.
2.0	Oily Water Separator (OWS)
2.1	MARPOL approval number for ship's Oily Water Separator (OWS) and overboard monitor should be checked.
2.2	Oily content meter should have current calibration certificate and tamper seals.
2.3	Operational test should be witnessed, and alarms at 15 parts per million and automatic shutdown should be verified.
2.4	Testing should be as per manufacturer's test procedures. Sticks, tea, coffee, or similar methods shall not be used to test the OCM. Refer to COMDT (G-PCV) Policy letter 06-01 (see Reference) as guidance.
3.0	Bunker Stations
3.1	Verification of arrangement and size of oil containment enclosure (coamings), of associated drains, and where they drain. All hose to pipe (including any pipe spool) connections should be located within the containment area.
3.2	Any transfer hoses (tender, lifeboat refilling, etc.) shall be hydrostatically test with liquid to 1 ½ time their max working pressure and documentation attesting to the test provided. Each hose should be able to be identified to match the test report provided.
3.3	Following equipment and arrangements should be checked: -bunker station markings -normal and emergency lighting within the space (the emergency lighting can be checked during the transitional power test) and relevant switch (explosion-proof type) -standard discharge connections -means of communication (radios or telephone)
3.4	Oil pollution placards shall be posted within the space.
3.5	Oil transfer procedures and system line diagrams shall be posted within the space. Verify the following:

	-written in the working language of the crew -contain a description of the transfer system including: a line diagram of piping, number of persons required on duty, duties by title for each person (person-in-charge designation), means of communication, procedures to report oil discharge, etc.

Prevention of Pollution by Sewage/MSD	37.0
Reference	MARPOL Annex IV/9; MEPC.2(VI) 33 CFR 159.7; 159.55; 159.59. NVIC 04-04: Environmental Inspection Checklist; Addendum to Foreign Passenger Vessel Examination Book
Scope	The purpose of this examination is to verify MSD arrangement and relevant type approval.

1.0	Grey Water
1.1	Grey water includes discharges from galley, sinks, washbasin drains, showers, and baths. It does not include drains and sinks from medical spaces. Other waste streams such as hazardous waste or medical waste must not mix with grey water. Drains from hospitals, photo labs (if hazardous substances are used and stored therein), and slops must be separate from the grey water system.
1.2	It should be verified that combined amount of grey water/black water passing through the Advanced Waste Water Systems (AWWS) does not exceed the amount permitted by the same system.
1.3	If ballast tanks hold grey water in port, the ballast system isolation from overboard discharge should be verified.
2.0	Black Water
2.1	Verify an approved black water system is onboard. Black water includes MSDs and other systems to treat, store, and discharge sewage. The system should be of adequate capacity, or throughput, for the number of persons allowed onboard.
2.2	A durable nameplate, attached to the device, should show the following information: - name of the manufacturer - name and model number of the device - month and year of completion of manufacture - serial number The nameplate may contain the required markings as required by the issued type certification issued by the Flag's Recognized Organization. **Note- if the nameplate designates that the system is manufactured to and meets the requirements of MARPOL 73/78 Annex IV, the system is equivalent to 33 CFR part 159 and does not require a USCG certificate as per 2.2
2.3	Operating instructions should be posted.
2.4	Each Type I, Type II, or Type III device should be capable of being secured in a manner which prevents discharge of treated or untreated sewage. Following methods of securing the device are considered acceptable: a. closing the seacock and removing the handle b. padlocking the seacock in the closing position c. using a non-releasable wire-tie to hold the seacock in the closed position.
3.0	Verification at first U.S. port
3.1	The system should be provided with: - USCG Certificate of Approval, - Valid International Pollution Prevention Certificate (ISPPC) indicating the system complies with MARPOL requirements; or

	- Voluntary compliance with International Sewage Regulations in Annex IV to MARPOL 73/78, Navigation and Vessel Inspection Circular (NVIC) 1-09.
3.2	Verify MSD treatment methods, testing, and disposal records.

MARPOL- Annex V- Prevention of Pollution by Garbage	38.0
Reference	MARPOL Annex V; 2012 Guidelines for the Implementation of MARPOL Annex V Res. MEPC.295(71) NVIC 04-04: Environmental Inspection Checklist; Addendum to Foreign Passenger Vessel Examination Book
Scope	The purpose of this examination is to verify compliance with applicable MARPOL and USCG regulations, incinerator operational procedures and onboard garbage management plan.

1.0	Placards
1.1	MARPOL placards should be posted throughout the ship to notify passengers and crew of the disposal into the sea requirements of plastics, packing and lining materials, food waste, paper products, rags, glass, metal, bottles, crockery, and similar refuse, etc. In general, the placards should be posted: - in prominent places where crew will be working and living, and in areas where bins are placed for collection of garbage. These places include galley spaces, mess room(s), wardroom, bridge, main deck and other areas of the ship, as appropriate. - displayed at line-of-sight height and be printed in the working language of the crew. Where the ship carries passengers, placards also should be placed in prominent places where passengers are accommodated and congregate. These include cabins, all deck areas for recreational purposes open to passengers.
1.2	The placards shall be accurate and written in the working language of the ship's personnel (and in English, or French or Spanish).
2.0	Non-hazardous waste management
2.1	Non-hazardous shipboard waste includes plastics and synthetic material, medical waste, food waste, and recyclables such as glass, cardboard, aluminum, and metal cans.
2.2	Garbage cold rooms should be protected by adequate fire detection (e.g., heat or flame detectors) and suppression systems, e.g., pre-action valve or glycol filled pipe water mist system.
3.0	Verification at first U.S. port
3.1	The garbage management plan shall be verified: the plan should provide written procedures for collecting, storing, processing, and disposing of garbage, including the equipment onboard. (if not present during time of overseas ICOC, the garbage management plan shall be certified during the ICOC exam at the first U.S. embarkation port).
3.2	The plan shall be written in the ship's working language.
3.3	The garbage management plan should designate the person in charge of carrying out the plan.
3.4	Garbage management diagram should be posted in the garbage treatment room, or in the incinerator room, as applicable.
3.5	Verify waste sorting to prevent hazardous waste from entering non-hazardous waste stream and means to prevent plastic or synthetics discharge overboard.
3.6	Shipboard spaces used for collecting, processing, storing and discharging ship-generated garbage should be examined.

3.7	Non-combustible waste receptacles should be used except for wet food wastes, glass, and metal.

MARPOL-Annex VI- Prevention of Pollution by Air	39.0
Reference	MARPOL Annex VI Implementation of Compliance/Enforcement Policy for MARPOL Annex VI, Regulation 14, including IMO 2020 Sulfur Cap CG-CVC WI-022 (series)Policy letter 12-04 USCG Prevention of Air Pollution from Ships, CG-543 Policy letter 09-01 (Guidelines for Annex VI MARPOL 73/78, pollution of air from ships. Guidelines for Ensuring Compliance with Annex VI to the MARPOL 73/78. Relevant to all Annex VI regulations except Regulation 14
Scope	The verification is directed to ensure compliance with applicable MARPOL and US regulations for what concerns prevention of air pollution from ships and Emission Control Areas (ECA).

1.0	Verification of Certificates & Equipment
1.1	International Air Pollution Prevention (IAPP) Certificate: Ships of 400 gross tons and above, engaging on international voyages - voyages to ports or offshore terminals under the jurisdiction of a party to Annex VI, must demonstrate compliance with Annex VI through possession of an IAPP Certificate.
1.2	The approved method, including alternatives, i.e., scrubber, used to comply with MARPOL, in the ship's IAPP supplement (if issued by Class). U.S. Coast Guard receipt of an equivalence proposal from the Flag Administration (MARPOL 73/78).
1.3	Engine International Air Pollution Prevention (EIAPP) Certificate: Ships engaged on international voyages with engines over 130kW/175 horsepower installed on vessels constructed on or after January 1, 2000, are required to have a valid EIAPP Certificate issued by the ship's Flag Administration. The EIAPP indicates NOx compliance to Tier I, II or III, which depend on build date or other factors. For U.S. flagged vessels the EIAPP is issued by the US Environmental Protection Agency (EPA).
1.4	Review type approval certificate for the incinerator and ensure no prohibited materials are incinerated: -MARPOL Annex I, II, and III cargo residues -Polychlorinated biphenyls (PCBs) -Garbage as define by MARPOL Annex V containing more than traces of heavy metals (e.g., some televisions, computers, monitors, radios, etc. could contain heavy metals) -Refined petroleum products with halogen compounds (e.g., some lubricants may contain halogen compounds) -Polyvinyl chlorides (PVC) (unless incinerator is specifically type approved by the Coast Guard/IMO for that use).

Safety Center	40.0
Reference	SOLAS II-2/23
Scope	The purpose of this exam is to verify compliance with requirement to provide a space to assist with the management of emergency situations, in conjunction with safe return to port requirements relevant to operation and monitoring of emergency equipment, systems, and alarms from the designated safety center. *Note: required for passenger vessels constructed on or after 01 July 2010.

1.0	Verifications
1.1	Identify if the designated safety center is continuously manned or not (where the safety center is not part of the navigation bridge, it may or may not be continuously manned).
1.2	When the safety center is a part of the navigation bridge, the following shall apply: 1. It is acceptable to consider nearby members of the bridge team as being sufficient to make the safety center "continuously manned" 2. Alarms in the safety center should be audible at the conning position for responsible members of the bridge team to make them aware of the alarm condition. 3. At least one member of the on-watch bridge team should be properly trained and authorized to take appropriate initial and interim actions in the event of an emergency or in response to an alarm, until the safety center is fully manned.
1.3	When the safety center is not continuously manned, there should be capability on the navigation bridge to alert the bridge team of developing shipboard emergencies, to respond to them appropriately by taking initial and interim actions, and to allow necessary monitoring functions after the safety center is manned properly by trained persons.
1.4	The hierarchy of control between the navigation bridge and safety center should be specified within the shipboard safety management system (SMS). The following shall apply: 1. An adequate number of properly trained personnel should be available for immediate response to the safety center in an emergency while maintaining an effective navigational watch. 2. The duties of the safety center personnel and navigation bridge personnel should not overlap. 3. Coordination of emergency management actions and communications should be assured through established emergency procedures and harmonized with the onboard Decision Support System (DSS).
1.5	In carrying out the various functions on the navigation bridge and safety center an integrated computer technology may be used. When using computer-based technology, the following shall apply: 1. The hierarchy of control of the various computer stations and locations should be clearly documented. 2. The computer system and programming should be designed to assure that failure of the system does not cause loss of any of the ship's safety systems. 3. The operational status and failures of the computer system or its communications should be indicated.
1.6	The following systems shall have the outlined functional requirements within the safety center:

SYSTEM	Operation & Control	Monitoring	Alarm
Powered Ventilation Systems	X	X	X
Fire Doors	X	X	
General Emergency Alarm System	X		
Public Address System	X		
Electrically powered evacuation guidance systems	X		
Watertight & Semi-Watertight Doors	X	X	X
Indicators for shell doors, loading doors, and other closing appliances		X	X
Water leakage of any inner/outer bow doors, stern doors, and any other shell doors		X	X
Television Surveillance System		X	
Fire Detection and Alarm System	X	X	X
Fixed Fire-Fighting local application system(s)		X	X
Sprinkler and Equivalent Systems		X	X
Water-based systems for machinery spaces	X		
Alarm to summon crew	X		
Atrium smoke extraction system	X		
Flooding Detection Systems			X
Fire Pumps & Emergency Fire Pumps	X	X	

1.7	The above systems and their functional requirements shall be verified during the emergency and transitional power test. Note: All system monitoring capabilities and alarms can be verified by the examiner from the safety center. Not all systems, however, will be operationally tested from the safety center. Examiners should select a minimum of three systems to verify operational and control at the safety center.

CVSSA Requirements	41.0
Reference	Title 46, United States Code 3507 Passenger Vessel Security & Safety Requirements Title 46 United States Code 3508 Crime Scene Prevention Training for Passenger Vessel Crew Members CG-543 Policy Letter 11-09 Cruise Vessel Security & Safety Act of 2010 Implementation Procedures CG-543 Policy Letter 11-10 Cruise Vessel Security and Safety Act Implementation of Training Standards & Curricula
Scope	CVSSA applies to all passenger vessels that are authorized to carry at least 250 passengers, have onboard sleeping facilities for each passenger, voyages that embark/disembark passengers in the U.S., and are not engaged in a Coastwise voyage. Some of the CVSSA items will need to be verified during the domestic, U.S. portion of the exam.

1.0	CVSSA Verifications
1.1	Verify ship rail heights; the height of these rails should not be less than 42 inches (1067 mm). This requirement pertains to deck-edge guard rails or bulwarks around all open-air decks that are available for general passenger use, such as public decks, balconies of cabins, etc. Lower heights are acceptable where the 42-inch height would interfere with other special arrangements (such as boarding areas around lifeboats, etc.). Non-deck edge guard rails, such as on stairways, are not subject to this special height requirement and need only meet the Loadline Convention requirements.
1.2	Verify each passenger stateroom and crew cabin is equipped with entry doors that include peep holes or other means of visual identification. Peep holes should provide a clear view of the corridor. Peep holes constructed of metal housings and glass (not plastic) lenses and limited to peep hole frame outside diameter of not more than 1 inch (25 mm) arc acceptable without any further review by the flag Administration or Recognized Organization. (Other means of identification could include an equivalent system, such as a video camera system providing coverage equivalent to a peep hole and viewable within the stateroom. Any other means of identification requiring electrical power should be provided with backup emergency power for no less than 30 minutes.)
1.3	Ensure each passenger stateroom and crew cabin is equipped with security latches and time-sensitive key technology. Any installed security latch (door chain, door bar, dead bolt, etc.) shall not prevent the crew from performing fire prevention response and other applicable emergency requirements
2.0	Verifications for first U.S. port
2.1	Ensure applicable safety information is present and available. Cruise vessels must submit a copy of the information in their security guide to the Federal Bureau of Investigation (FBI) for review. USCG examiners shall verify the "security guide" is available to passengers. Spot check compliance with the requirement to provide the locations of the United States embassy and consulates for each country the vessel will visit during a voyage. These locations should be provided in each passenger stateroom and posted in areas readily accessible to the crew. *This can be verified at first U.S. port.

2.2	Ensure proper procedures are in place for occurrences of sexual assault onboard (normally done when checking the hospital space): - ship maintains an adequate and in-date supply of anti-retroviral medications and other medications designed to prevent sexual transmitted diseases. - ship maintains equipment and materials for performing a medical examination in sexual assault cases to evaluate the patient for trauma, provide medical care, and preserve medical evidence - vessel has a medical staff which complies with the credentialing and experience outlined in the CVSSA
2.3	Verify ship has procedures to prepare, provide to the patient, and maintain written documentation of the findings of such examination that is signed by the patient.
2.4	Confirm that the patient/victim has free and immediate access to contact information for specified law enforcement personnel, U.S. embassies and Consulates, and the National Sexual Assault Hotline or equivalent hotline service and a private telephone line and computer terminal with internet access providing confidential access to law enforcement officials, an attorney, and support services.
2.5	Confirm that the vessel has established and conforms with shipboard policy to limit crew access to passenger staterooms. Crew members should only have access to the extent that their official duties require such access (for example, hotel staff/cleaning service, fire parties, repair personnel all have needs to access staterooms subject to appropriate restrictions).
2.6	Verify logbook and reporting requirements.

Fire and Abandon Ship Drills	42.0
Reference	SOLAS CH II-2/15 SOLAS CH III/19 SOLAS CH III/30
Scope	This component is evaluated during the ICOC completion exam at the first embarkation port in the U.S. The purpose of the fire and abandon ship drills is to verify the competency and proficiency of the vessel's firefighting and lifesaving procedures, training plan, and crew performance.

1.0	Pre-drill Brief
1.1	The examination team will discuss drill and abandon ship drill together with the ship's Master, and appropriate officers and crew. This discussion can be held during the initial meeting with the vessel Master, depending on ship's procedures, or as a separate discussion.
1.2	Coordinate with the vessel master and/or ship's safety officer to determine the best time and location in which to hold the fire drill. Consider locations where the ship is most likely to experience a fire and try to avoid locations where the most recent fire drills have been held. Examiners should try, to the extent possible, to minimize disruptions to passenger operations while conducting the drill.
1.3	Allow the vessel master or the safety officer to describe what takes place during the drill to inform examiners on what to expect while witnessing the drill. The examiner needs be aware of what the vessel's procedures are and what events and procedures are required to take place while the fire drill is ongoing. Emphasize during the pre-drill meeting that the safety of the crew is the most important thing, and that everyone is expected to speak up and voice concerns over a safety issue.
1.4	Examiners will evaluate the ship's drill and must not direct the Master or crew on where or how to conduct the drill.
1.5	Examiners may ask whether the crew will be using any resources, such as a smoke-generating machine or means to simulate casualties or injured persons, to make the drill as realistic as possible. Information on what to expect can assist examiners as they evaluate the crew's actions and performance.
2.0	Fire Drill
2.1	Evaluate effective implementation of Decision Support System on the bridge through the following verifications: - Communications between bridge personnel and emergency teams. Orders are passed down the chain of command and information and reports passed up smoothly. - General alarm is audible (if drill procedure is to sound it). - Fire control plans available and used. - Log being kept. - Emergency/test messages sent/simulated. - Presence of an assigned GMDSS operator (with no other duties).

	- The vessel master's ability to maintain control of the emergency and direct different aspects of the emergency response. - Witness closure of fire doors by the bridge team.
2.2	Examiners at the scene of the "fire" will verify the following: - The manner in which the crew initiates drill. Evaluate whether initial response is realistic and in accordance with vessel procedures. - Vessel's fire alarm/general alarm is sounded and is audible in drill locations. - Witness the closing of fire screen doors by the bridge team to contain the fire. - Assess adequate communications are established between control stations and the fire team. - Firefighter's outfits are properly donned and include proper gear. - Crew uses firefighting methods to attack the simulated fire per the vessel's procedures.
2.3	To prevent confusion and keep the flow of the drill process, examiners shall not debrief local elements of the drill to individual crew, fire teams, or on-scene leaders). Examiners will debrief the vessel master and other designated crew upon the completion of the drill.
2.4	Examiners will evaluate the following at the staging area: - Proper command and control - Location is safe
2.5	If the drill includes use of a medical team, the examiners will evaluate: - That medical personnel are staged and ready to deploy. - That the team has the necessary equipment to respond to the specific casualty or injury. - That the team uses appropriate egress routes as if responding to a real emergency.
2.6	Examiners will evaluate the boundary cooling teams by verifying the following: - All surrounding spaces (all six sides surrounding the fire) are protected and verified per vessel's procedures. - Crew followed the vessel's procedure for evacuating cabins (if applicable).
3.0	Abandon Ship Drill
3.1	Coordinate with the team to ensure examiners are assigned to evaluate all aspects of abandon ship drill to include: muster, lifeboat lowering, and liferaft deployment.
3.2	Verify the general alarm is audible if drill procedure is to sound it.
3.3	Verify stairwell guide and muster station leader knowledge: - Spot check muster station and stairway guide personnel's knowledge, familiarity of duties, and passenger interaction by asking questions related to their duties in that position and appropriate emergency response and passenger assistance topics. - Crewmembers assigned to assist passengers must be able to communicate at least enough information to direct a passenger to the proper muster area through verbal and/or non-verbal means.
3.4	Examiners must verify that crewmembers muster at their appropriate abandon ship stations, and that exempted personnel are accounted for during the mustering process.
3.5	All crewmembers should be appropriately dressed with lifejacket, and appropriate identifiers, for the drill as required by the vessels procedures.

3.6	Examiners must verify all embarkation emergency lighting.
4.0	Lifeboat Operation and Lowering
4.1	Examiners must witness the crew start the engines for all lifeboats and verify the ability to steer and provide both forward and astern propulsion. For outboard lifeboats, the rudder movements and propulsion tests are conducted by lowering the lifeboats to the water and witnessing their operation.
4.2	The unit must ensure the vessel mooring arrangements allow for deployment of the lifeboats not lowered during the overseas or shipyard ICOC. Examiners must witness all outboard lifeboats being lowered from the embarkation deck level to the water. Examiners must evaluate the crew's ability to maneuver lifeboats in the water, and to communicate effectively with team leaders on the vessels.
4.3	All lifeboats, including those with water-cooled engines, are required to be run weekly for 3 minutes to ensure proper operation of propulsion engine, in accordance with SOLAS.
4.4	Examiners must assess the crew's performance of aspects of abandon ship and lifeboat lowering operations and their ability to communicate effectively.
5.0	Liferaft Launching
5.1	Examiners will evaluate the crew's ability to safely launch all primary liferafts services on one davit within 30 minutes, by launching one liferaft and extrapolating the time.
5.2	Do not accept a training liferaft unless it is substantially the same size and type liferaft used for primary lifesaving.
5.3	Examine the following elements of davit-launches lifesaving appliances: - Structure and foundation of davit is sound. - Roller tracks lubricated and not wasted. - Wire renewal dates are not more than 5 years. - No obstructions to lowering. - Limit switches are present and function as designed. - Launching instructions are present. - Lifeboat hook approvals and fall prevention devices installed.
5.4	Verify descent units are in good condition and readily accessible with dedicated mounting points near the device.
5.5	Verify condition of embarkation ladders.
6.0	Post-Drill Brief
6.1	Exam flow and efficiency rests depends on an efficient discussion focused on the issues which merit attention to enable the team to continue with the rest of the exam.
6.2	Prior to a de-brief with the vessel master, the USCG examination team must discuss drill observations and go over any concerns, potential deficiencies, and feedback to the provided to the vessel crew.
6.3	The examination team lead will be the USCG's voice in debriefing overall drill performance, examiners' observations, and areas to improve upon or address, with vessel master and designated crew. The team lead may have specific team members provide additional information to clarify discussed issues if needed.

Polar Code	43.0
Reference	SOLAS XIV & Polar Code
Scope	Applies to ships operating in polar waters.

1.0	Documents
1.1	Polar Ship Certificate
1.2	Polar Water Operational Manual Shall be carried on board. Shall include risk-based procedures for: 1. voyage planning to avoid ice and/or temperatures exceeding design limitations. 2. Arrangements for receiving forecasts of the environmental conditions. 3. Addressing any limitations of the hydrographic, meteorological and navigational information available. 4. Operation of equipment required under other chapter of this Code. 5. Implementation of special measures to maintain equipment and system functionality under low temperatures, topside icing and the presence of sea ice. 6. Contacting emergency response providers for salvage, search and rescue (SAR), spill response, etc. 7. In the case of ships ice strengthened in accordance with chapter 3, procedures for maintaining life support and ship integrity in the event of prolonged entrapment by ice. 8. Measures to be taken in the event of encountering ice and/or temperatures which exceed the ship's design capabilities or limitations. 9. Monitoring and maintaining safety during operations in ice, including any requirements for escort operations or icebreaker assistance. Different operation limitations may apply depending on whether the ship is operating independently or with icebreaker escort. The manual should specify both options. 10. Information on the icing allowance including the stability calculations.
1.3	
2.0	Lifesaving
2.1	Ensure a proper sized insulated immersion suit or a thermal protective aid is be provided for each person on board
2.2	Ensure ships intended to operate in extended periods of darkness, are equipped with searchlights suitable for continuous use to facilitate identification of ice are provided for each lifeboat
2.3	Ensure the crew is trained in the use of the personal survival equipment and group survival equipment
3.0	Water/Weathertight Conditions
3.1	Verify ships intended to operate in low air temperature, watertight and weathertight doors, hatches and closing devices which are not within a habitable environment and require access while at sea shall be designed to be operated by personnel wearing heavy winter

4.0	Propulsion and Auxiliary Machinery
4.1	Verify that machinery installations and associated equipment are protected against the effect of ice accretion and/or snow accumulation, ice ingestion from seawater, freezing, and increased viscosity of liquids, seawater intake temperature and snow ingestion.
4.2	Verify working liquids are maintained in a viscosity range that ensures operation of the machinery.
4.3	Verify seawater supplies for machinery systems are designed to prevent ingestion of ice, or otherwise arranged to ensure functionality.
4.4	Verify ships intended to operate in low air temperatures, exposed machinery and electrical installation and appliances can function at the Polar Service Temperature.
4.5	Verify ships intended to operate in low air temperatures, are provided a means to ensure that combustion air for internal combustion engines driving essential machinery is maintained at a temperature in compliance with the criteria provided by the engine manufacturer.
5.0	Fire Safety
5.1	Verify all two-way portable radio communication equipment are operable at the Polar Service Temperature.
5.2	Verify fire pumps including emergency fire pumps, water mist and water spray pumps are located in compartments maintained above freezing.
5.3	Verify the fire main is arranged so that exposed sections can be isolated and means of draining of exposed sections are provided. Fire hoses and nozzles need not be connected to the fire main at all times, and may be stored in protected locations near the hydrants.
5.4	Verify firefighter's outfits are stored in warm locations on the ship.
5.5	Verify portable and semi-portable extinguishers are located in positions protected from freezing temperatures, as far as practical. Locations subject to freezing are to be provided with extinguishers capable of operation at the Polar Service Temperature.
5.6	Verify ships exposed to ice accretion, are equipped with a means to remove or prevent ice and snow accretion from escape routes, muster stations, embarkation areas, survival craft, their launching appliances and access to survival craft.
5.7	Verify exposed escape routes are arranged so as not to hinder passage of persons wearing suitable polar clothing.
6.0	Safety of Navigation
6.1	Verify ships have either two independent echo-sounding devices or on echo-sounding device with two separate independent transducers.
6.2	Verify ships operating in areas and during periods where ice accretion is likely to occur, are provided a means to prevent the accumulation of ice on antennas required for navigation and communication.
6.3	Verify Category A and B ships have the bridgewings enclosed or designed to protect navigational equipment and operating personnel.
6.4	Verify ships have two non-magnetic means to determine and display their heading. Both means shall be independent and shall be connected to the ship's main and emergency source of power.
6.5	Verify ships proceeding to latitudes over 80 degrees shall be fitted with at least one GNSS compass or equivalent, which shall be connected to the ship's main and emergency source of power.

6.6	Verify ships are equipped with two remotely rotatable, narrow beam search lights controllable from the bridge to provide lighting over an arc of 360 degrees or other means to visually detect ice.
6.7	Verify ships involved with operations with an icebreaker escort are equipped with a manually initiated flashing red light visible from astern to indicate when the ship is stopped. This light shall have a range of visibility of at least two nautical miles.
7.0	Life Saving Appliances
7.1	Verify every crew member are made familiar with the procedures and equipment contained or referenced in the Polar Water Operational Manual relevant to their assigned duties.