REPUBLIC OF THE MARSHALL ISLANDS

MARITIME ADMINISTRATOR

Marine Notice

No. 2-011-14

Rev. June/2016

TO: **ALL SHIPOWNERS, OPERATORS, MASTERS AND OFFICERS OF MERCHANT SHIPS, AND RECOGNIZED ORGANIZATIONS**

SUBJECT: **Maintenance and Inspection of Fire Protection Systems and Appliances**

References:

(a) **SOLAS,** *International Convention for the Safety of Life at Sea, Consolidated Edition 2014*, as amended

(b) **FSS Code,** *International Code for Fire Safety Systems 2015 Edition*, as amended

(c) **IMO Circular MSC.1/Circ.1395/Rev.2,** *Lists Of Solid Bulk Cargoes For Which A Fixed Gas Fire-Extinguishing System May Be Exempted Or For Which A Fixed Gas Fire-Extinguishing System Is Ineffective*, issued 12 June 2015

(d) **IMO Circular MSC.1/Circ.1432,** *Revised Guidelines for the Maintenance and Inspection of Fire Protection Systems and Appliances*, issued 31 May 2012, amended by **IMO Circular MSC.1/Circ.1516**, issued 08 June 2015

(e) **IMO Circular MSC.1/Circ.1318,** *Guidelines for the Maintenance and Inspections of Fixed Carbon Dioxide Fire-Extinguishing Systems*, issued 11 June 2009

(f) **IMO Circular MSC.1/Circ.1315,** *Guidelines for the Approval of Fixed Dry Chemical Powder Fire-Extinguishing Systems for the Protection of Ships Carrying Liquefied Gases in Bulk*, issued 10 June 2009

(g) **IMO Circular MSC.1/Circ.1313,** *Guidance for Application of Chapters 4 to 7 and 9 of the FSS Code, as Amended by Resolutions MSC.206(81) and MSC.217(82)*, issued 10 June 2009

(h) **IMO Circular MSC.1/Circ.1275,** *Unified Interpretation of SOLAS Chapter II-2 on the Number and Arrangement of Portable Fire Extinguishers on Board Ships*, issued 03 June 2008

(i) **IMO Circular MSC/Circ.1085,** *Use of Smoke Helmet-Type Breathing Apparatus*, issued 13 June 2003

(j) **IMO Circular MSC/Circ.1081,** *Unified Interpretation of the Revised SOLAS Chapter II-2*, issued 13 June 2003

(k) **IMO Circular MSC/Circ.849,** *Guidelines for the Performance, Location, Use and Care of Emergency Escape Breathing Devices (EEBDs)*, issued 08 June 1998

(l) **RMI Publication MI-108,** *Maritime Regulations*, §2.11 as amended

(m) **RMI Marine Notice 2-011-11,** *Systems Using Halogenated Hydrocarbons (Halons) and Other Ozone Depleting Substances*, as amended

Inquiries concerning the subject of this Notice should be directed to the Maritime Administrator, Republic of the Marshall Islands, c/o Marshall Islands Maritime and Corporate Administrators, Inc., 11495 Commerce Park Drive, Reston, VA 20191-1506 USA.

PURPOSE:

This Notice addresses general maintenance, testing and inspection of fire protection systems, appliances, and emergency equipment. It incorporates the provisions of International Maritime Organization (IMO) Circular MSC.1/Circ.1432, *Revised Guidelines for the Maintenance and Inspection of Fire Protection Systems and Appliances*, as amended by IMO Circular MSC.1/Circ.1516. The amendments emphasize the importance of testing and maintaining the quality of water in automatic sprinkler systems, in accordance with the manufacture guidelines. This Notice also includes the addition of a chart (Appendix 1) that summarizes the intervals for the maintenance, testing, and inspection of the fire protection systems and appliances and designates the entity required to conduct the inspection. IMO Circular MSC.1/Circ.1315 has also been incorporated into this Notice. This Notice supersedes Rev. May 2016. It has been revised to correct a typo (removal of a % sign) in section 8.6 that inadvertently changed the SOLAS requirement.

This Notice is not intended as an exhaustive listing of applicable requirements, but addresses those provisions where the Republic of the Marshall Islands (RMI) Maritime Administrator ("the Administrator") requirements differ or where the Administrator has deemed additional clarification or emphasis necessary.

Any questions about the inspection, service, or testing requirements of this Notice should be directed to: technical@register-iri.com.

APPLICABILITY:

This Notice applies to all ships and mobile offshore units (MOUs).

REQUIREMENTS:

1.0 Safety Management-Onboard Maintenance Plan

1.1 International Convention for the Safety of Life at Sea (SOLAS) Regulation II-2/14 requires ships to carry on board, and make available for inspection, a plan that details the maintenance, testing, and inspection of fire protection systems and appliances. The Administrator requires the onboard maintenance plan to be consistent with the ship's Safety Management System (SMS).

1.2 Certain maintenance procedures and inspections may be performed by competent crewmembers who have completed an advanced fire-fighting training course, while others should be performed by persons specifically trained in the maintenance of such systems. The onboard maintenance plan shall indicate, in accordance with Appendix 1 of this Notice, the inspections and maintenance that are to be completed by competent crew members versus other trained personnel.

1.3 Prior to performing any work, a plan consistent with the ship's SMS for carrying out safe maintenance, inspection, and testing shall be developed to account for all

personnel and all foreseeable hazards. The plan shall establish an effective communications system between the inspection personnel and on-duty crew.

2.0 Application of Requirements, Guidelines, and Recommendations

2.1 With respect to the maintenance, testing, and inspection of fire protection systems and appliances, ships' owners and officers shall be familiar with and follow the applicable requirements of SOLAS, as amended, the International Code for Fire Safety Systems (FSS Code), as amended, the Code for the Construction and Equipment of Mobile Offshore Drilling Unites (MODU Code) (1979, 1989 and 2009 editions), and Classification Society requirements.

2.2 Minimum recommended levels of maintenance, testing, and inspections to be included in an onboard maintenance plan are laid out in various IMO guidance documents (see References section above). This guidance has been adopted by the Administrator, except where superseded by this Notice.

2.3 Equipment manufacturers' recommendations, where existent, shall be followed by ships' owners and officers in the maintenance, testing and inspection of such equipment. Manufacturer maintenance manuals should be available on board where appropriate.

2.4 Where particular arrangements create practical difficulties, alternative testing and maintenance procedures shall be to the satisfaction of the Administrator.

3.0 Operational Readiness

3.1 All fire protection systems and appliances shall at all times be in good order and available for immediate use while the ship is in service. If a fire protection system is under maintenance, testing, or repair, then suitable arrangements acceptable to the ship's Classification Society and the Administrator shall be made to ensure fire protection capability is not diminished through the provision of alternative fixed or portable fire protection equipment or other measures.

3.2 While underway or prior to sailing or in the case of MOUs engaging in operations with a fire protection system under repair, a dispensation or short term certificate, as appropriate, must be obtained from the Administrator.

4.0 Maintenance, Testing, and Inspection

4.1 Onboard maintenance, testing, and inspections shall be carried out in accordance with the ship's maintenance plan at the intervals indicated in Appendix 1 of this Notice, as appropriate.

4.2 Instructions for on-board maintenance, not necessarily by the ship's crew, and testing of active and passive fire protection systems and appliances shall be easily understandable. They should be illustrated wherever possible, and, as appropriate, include for each system or appliance:

.1 maintenance and repair instructions;

.2 schedule of periodic maintenance;

.3 list of replaceable parts; and

.4 log for records of inspections and maintenance (see also §12.0).

5.0 Fixed Gas Fire-Extinguishing Systems

5.1 General

Shipbuilders/shipyards, Classification Societies, insurers, owners/operators, system service personal, and all others involved shall carefully and critically review, routinely inspect and maintain, and verify and test their fixed gas fire-extinguishing systems to ensure that they will operate correctly during an emergency.

5.1.1 Flexible Hoses

As of 31 May 2013 and in accordance with IMO Circular MSC.1/Circ.1432, paragraph 10.1.2, flexible hoses should be replaced at the intervals recommended by the manufacturer and not exceeding every 10 years.

5.1.2 Two (2)-year Inspection/Service

Every two (2) years (i.e., during the second or third periodical survey), fixed gas fire-extinguishing systems, except fixed Carbon dioxide (CO_2) extinguishing systems which are addressed in §5.2, shall be checked by an authorized service facility acceptable to the vessel's Classification Society.

.1 all high pressure extinguishing agents cylinders and pilot cylinders should be weighed or have their contents verified by other reliable means to confirm that the available charge in each is above 95% of the nominal charge. Cylinders containing less than 95% of the nominal charge could be refilled; and

.2 blow dry compressed air or nitrogen through the discharge piping or otherwise confirm the pipe work and nozzles are clear of any obstructions. This may require the removal of nozzles, if applicable.

5.1.3 10-year (Hydrostatic Testing)

At least once every 10 years, a hydrostatic test and internal examination of 10% of the system's extinguishing agent and pilot cylinders shall be conducted. If one or more cylinders fail, a total of 50% of the onboard cylinders shall be tested. If further cylinders fail, all cylinders shall be tested.

In cases where cylinders for fixed-gas fire-fighting systems (except Halon systems) have been date stamped prior to delivery of a vessel, the first 10-year hydrostatic test may be harmonized with drydocking at the Second Special Survey under the IMO

Harmonized System of Survey and Certification, provided that the initial date stamp (month/year) on the cylinder does not exceed 12 months before the vessel delivery date.

5.2 Fixed CO_2 Fire-Extinguishing Systems

5.2.1 Every two (2) years, fixed CO_2 extinguishing systems shall be checked by an authorized service facility acceptable to the vessel's Classification Society.

5.2.2 Fixed CO_2 fire-extinguishing systems shall be maintained and inspected in accordance with the guidelines contained in IMO Circular MSC.1/Circ.1318, *Guidelines for the Maintenance and Inspection of Fixed Carbon Dioxide Fire-Extinguishing Systems*, which are intended to demonstrate that the system is kept in good working order and readily available for use as specified in SOLAS Regulation II-2/14.2.1.2. These guidelines supplement the fire-extinguishing system manufacturer's approved maintenance instructions.

5.2.3 In addition to the maintenance and inspection requirements of §5.2.2, at least once every five (5) years, all control valves of fixed CO_2 systems are to be internally examined.

5.2.4 The survey requirements for cargo ships under paragraph 6.1 of IMO Circular MSC.1/Circ.1318 should be carried out during the second or third periodical survey under the IMO Harmonized System of Survey and Certification.

5.3 Halon Systems

5.3.1 Use of Halon Systems

SOLAS Regulation II-2/10 permits the use of Halons as fire-extinguishing media on ships built before 01 October 1994. The Administrator has not established a phase-out date for existing Halon systems. However, it should be noted that the release of Halons into the atmosphere when testing existing systems is prohibited. In addition, the European Commission considers that supply of a non-European Union (EU) flagged ship in an EU-port with Halon an illegal export. Therefore, in a case where Halon is discharged for whatever reason, refilling of such systems on non-EU flagged ships with Halon is not possible and that ship will be detained until a new fixed fire-fighting system is installed on board. See RMI Marine Notice 2-011-11, *Systems Using Halogenated Hydrocarbons (Halons) and Other Ozone Depleting Substances*, for additional information.

5.3.2 Minimum Recommended Maintenance

.1 Verification of Cylinder Contents

At least biennially (intervals of two (2) years ± three (3) months) as part of the survey for issuance of the SOLAS Safety Equipment Certificate (SEC), the contents of the Halon cylinders should be weighed or have their contents verified by other reliable means to confirm that the available charge in each is above 95% of the nominal charge as far as reasonably practicable, as

determined by the Administrator. Cylinders containing less than 95% of the nominal charge should be refilled.

.2 Hydrostatic Testing

a. All Halon cylinders must be hydrostatically tested as follows:

- after each 20 years of service;
- prior to recharging a discharged cylinder; or
- when visual inspection reveals a potential defect.

b. Hydrostatic test dates must be stamped on the cylinders. Hydrostatic testing must be performed by an authorized servicing facility which has been certified by a government agency or Classification Society. The facility must be acceptable to the attending Classification Society surveyor. The same facility should recharge the cylinders after testing to demonstrate serviceability.

c. Visual inspection and non-destructive testing (NDT) of Halon cylinders may be performed in lieu of hydrostatic testing by an authorized servicing facility which has been certified by a government agency or Classification Society.

5.3.3 Relaxed Maintenance Schedule

.1 Based on the logistical difficulties associated with locating servicing facilities and suppliers for the testing and maintenance of existing fixed Halon fire suppression systems and components, the Administrator will consider a relaxed maintenance schedule with regard to the hydrostatic testing of the Halon storage cylinders.

.2 Consideration for the application of the relaxed hydrostatic testing requirements for the fixed Halon system storage cylinders will be given on a case-by-case basis, and must be approved in writing by the Administrator.

.3 Under the relaxed maintenance schedule, the hydrostatic testing interval of 20 years for the Halon storage may be extended by five (5) years provided the following conditions are met:

a. a cylinder has not been discharged during its service history;

b. cylinder contents are verified by weighing or isotropic measurement;

c. cylinder pressure/levels are verified to be acceptable;

d. a thorough visual inspection of cylinders reveal no potential defects; and

e. cylinders are gauged to the extent considered necessary, and the wall thickness readings kept on board for future comparative reference.

.4 In addition, a thorough examination shall be made of all accessible component parts of the Halon system, including control valves and connections, to verify satisfactory condition and freedom from leakage, and selected control valves shall be opened out for internal examination to the extent necessary.

.5 Any suspect cylinders that do not meet the provisions stated above must be tested or taken out of service.

.6 The cylinder inspection and thickness gauging shall then be repeated annually as part of the annual servicing requirement of the system, until the end of the five (5) year period of extension.

5.4 Alternative Fixed Gas Fire-Fighting Media and Systems

The Administrator recognizes that there are other media (e.g., NOVEC™ 1230 fluid, INERGEN®, FM 200®, etc.) that can be used in fixed gas fire-extinguishing systems for machinery spaces and cargo pump rooms. Use of such alternatives shall be subject to approval with any attached conditions, as appropriate, by the Administrator and in accordance with SOLAS Chapter II-2 requirements for alternative fire-fighting systems and relevant guidance[1]. Maintenance and inspection of these systems shall be carried out in accordance with manufacturer's instructions and/or Classification Society requirements.

5.5 Alternative to Ineffective Fixed Gas Fire-Fighting Systems

Water supplies as defined in SOLAS Regulation II-2/19.3.1.2 are considered as an acceptable alternative for the ineffective fixed gas fire-extinguishing system, for ships when allowed to carry any of the cargoes contained in Table 2 of IMO Circular MSC.1/Circ.1395/Rev.2, *Lists of Solid Bulk Cargoes for Which a Fixed Gas Fire-Extinguishing System May be Exempted or for Which a Fixed Gas Fire-Extinguishing System is Ineffective*.. Such an arrangement when provided for the carriage of any of the above cargoes should be verified for compliance by the vessel's Classification Society.

6.0 Fixed Dry Chemical Powder Fire-Extinguishing Systems

6.1 Such system is to be serviced and tested in accordance with the manufacturer's requirements and the Classification Society's requirements, should it have any.

[1] Such guidance includes, but is not limited to, *Revised Guidelines for the Approval of Equivalent Fixed Gas Fire-Extinguishing Systems*, as referred to in SOLAS for Machinery Spaces and Cargo Pump-Rooms (MSC/Circ.848, issued 08 June 1998, as amended by MSC.1/Circ.1267, issued 04 June 2008); *Guidelines for the Approval of Fixed Aerosol Fire-Extinguishing Systems Equivalent to Fixed Gas Fire-Extinguishing Systems*, as referred to in SOLAS, for Machinery Spaces (MSC/Circ. 1007, issued 26 June 2001) and *Revised Guidelines for the Approval of Equivalent Water-Based Fire Systems for Machinery Spaces and Cargo Pump-Rooms* (MSC/Circ. 1165, issued 10 June 2005 and as amended by MSC.1/Circ.1386, issued 10 December 2010).

Particular attention is to be paid to the condition of the powder for any sign of moisture ingress and that its properties remain as per type approval.

6.2 In accordance with IMO Circular MSC.1/Circ. 1432, two (2)-year inspections shall be carried out on fixed dry chemical powder systems. The inspections shall be conducted by an authorized service facility acceptable to the vessel's Classification Society or the attending Class Surveyor(s) who is (are) to perform a general examination of the distribution piping and installation of the dry chemical powder fire-extinguishing system to confirm, to the extent possible, that the system has not been modified from its original installation. Part of such verification should include also the following minimum requirements:

.1 The piping distribution system is to be blown through with Nitrogen (N_2) or dry air to ensure it is free of any obstruction. The nozzles, if any, are to be removed to ensure that they are free and not blocked during the blow-through operation.

.2 Operational test of local and remote controls and section valves.

.3 The contents verification of propellant gas cylinders containing N_2 including remote operating stations is to be confirmed.

.4 Flexible discharge hoses are to be inspected to confirm that they are maintained in good condition and have not perished, especially when located on open decks. In case of any doubt the hoses are to be subjected to a full working pressure test.

.5 The dry chemical powder containment tank and its associate safety valves are to be inspected for signs of corrosion or deterioration which may affect the safety of the system. In case of any doubt the tank is to be tested and safety valve set points adjusted and confirmed at the shop.

6.3 High pressure cylinders, including N_2 cylinders, shall be subjected to periodical tests at intervals not exceeding 10 years as provided in paragraph 6.1.2 of IMO Circular MSC.1/Circ.1318. See also §5.1.3 of this Notice regarding harmonization with drydocking.

6.4 For ships carrying liquefied gases in bulk, the guidelines for the approval of fixed dry chemical powder fire-extinguishing systems are contained in IMO Circular MSC.1/Circ. 1315, *Guidelines for the Approval of Fixed Dry Chemical Powder Fire-Extinguishing Systems for the Protection of Ships Carrying Liquefied Gases in Bulk.*

7.0 Foam Concentrates for Fixed Fire-Extinguishing Systems and Portable Foam Applications

7.1 Applicability

The revised guidelines contained in IMO Circular MSC.1/Circ.1312, *Performance and*

Testing Criteria, and Surveys of Foam Concentrates for Fixed Fire-Extinguishing Systems, as corrected by IMO Circular MSC.1/Circ.1312/Corr.1, should be applied to the foam concentrates (not their generating equipment) used for:

.1 fixed deck foam fire-extinguishing systems required for:

a. tankers by SOLAS Regulations II-2/10.8 and chapter 14 of the FSS Code; and

b. chemical tankers as specified by SOLAS Regulation II-2/1.6.2.1.2 and the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code).

.2 fixed foam fire-extinguishing systems in:

a. machinery spaces according to chapter 6 of the FSS Code; and for

b. portable foam applications according to chapter 4 of the FSS Code.

7.2 Type Approval of Foam Concentrates

7.2.1 Foam concentrates for all fixed systems and for portable foam applicators placed on ships should be type approved. Tests, including fire tests, should be performed in accordance with paragraphs 3.1 to 3.14 of IMO Circular MSC.1/Circ.1312 *Revised Guidelines for the Performance and Testing Criteria and Surveys of Foam Concentrates for Fixed Fire-Extinguishing Systems* by the foam concentrate manufacturer at laboratories acceptable to the Classification Society.

7.2.2 Type approvals conducted in accordance with the Guidelines in IMO Circulars MSC/Circ.582, MSC/Circ.582/Corr.1, and MSC/Circ.799, which are superseded by MSC.1/Circ.1312 remained valid only until 01 July 2012.

7.3 Periodical Controls of Foam Concentrates Stored on Board

7.3.1 Certain installation conditions such as excessive ambient storage temperature, contamination of the foam concentrate, and incomplete filling of the tank may lead to abnormal ageing of the concentrates. As a result, periodic testing of concentrates is necessary.

7.3.2 The first periodical control of foam concentrates (except for protein-based alcohol resistant foam concentrates) should be performed not more than three (3) years after being supplied to the ship, and after that, every year. These tests should be performed by laboratories or authorized service suppliers deemed acceptable to the Classification Society.

7.3.3 Protein-based alcohol-resistant foam concentrates should be subjected to a chemical stability test prior to delivery to the ship and annually thereafter. See paragraph 3.14 of

IMO Circular MSC.1/Circ.1312.

7.3.4 Guidance on performance and testing criteria and surveys of low-expansion concentrates, medium-expansion concentrates and high-expansion concentrates for fixed fire-extinguishing systems are found in IMO Circulars MSC.1/Circ. 1312, MSC/Circ.798 and MSC/Circ. 670, respectively.

8.0 Portable Fire Extinguishers

8.1 General

8.1.1 All portable fire extinguishers shall be subject to periodical inspections in accordance with the manufacturer's instructions.

8.1.2 All portable fire extinguishers should be provided with a visual indication of discharge and instructions for recharging should be provided by the manufacturer and be available onboard.

8.1.3 Service and inspection should only be undertaken by, or under the supervision of, a person with demonstrable competence, based upon the inspection guide (Table 9.1.3) contained in IMO Resolution A.951(23), *Improved Guidelines for Marine Portable Fire Extinguishers.*

8.2 Annual Inspection/Service

All portable fire extinguishers shall be serviced at intervals not exceeding one (1) year.

8.3 Five (5)-year Inspection/Service

At least one (1) extinguisher of each type manufactured in the same year and kept on board a ship should be test discharged at five (5) year intervals as part of a fire drill.

8.4 Ten-year Inspection/Service

All fire extinguishers together with propellant cartridges shall be hydrostatically tested in accordance with the recognized standard or the manufacturer's instruction at intervals not exceeding 10 years. However, a hydrostatic test may be also required by the Classification Society Surveyor or RMI Nautical Inspector if visual examination indicates a potential defect in the cylinder. The hydrostatic test date must be permanently and clearly marked on the bottles. The test must be performed by a servicing facility which has been certified by a government agency or Classification Society and is acceptable by the vessel's Classification Society, or by the extinguisher manufacturer to perform this type of work. The same facility should recharge the cylinder after testing to demonstrate serviceability.

8.5 Number and Arrangement of Portable Fire Extinguishers on Board Ships

Vessels constructed on or after 01 January 2009 should use the table shown in IMO Circular MSC.1/Circ.1275, Unified Interpretation of SOLAS Chapter II-2 on the

Number and Arrangement of Portable Fire Extinguishers on Board Ships, as reference for determining the number and arrangement of portable fire extinguishers in accommodation spaces, service spaces, control spaces, control stations, machinery spaces of category A, other machinery spaces, cargo spaces, weather decks, and other spaces onboard ships. Vessels which may not comply with the above should be brought into compliance by the first renewal or intermediate Safety Equipment survey coming after 01 November 2011.

For vessels constructed prior to 01 January 2009, shipowners and operators are encouraged to implement the unified interpretation of IMO Circular MSC.1/Circ.1275.

8.6 Spare Charges, Additional Fire Extinguishers, and Refilling of Extinguishers

8.6.1 For fire extinguishers of the same type, capable of being recharged on board, the spare charges shall be provided as follows:

.1 100% for the first 10 extinguishers and 50% for the remaining extinguishers but not more than 60 (fractions to be rounded off to next whole number).

8.6.2 For extinguishers which cannot be recharged by the crew, additional portable fire extinguishers of the same quantity, type, capacity, and number as determined in the paragraph above shall be provided in lieu of spare charges.

8.6.3 Instructions for recharging the extinguishers shall be carried on board. Periodic refilling of the cylinders shall be in accordance with the manufacturer's recommendations. Lacking manufacturer's recommendations, refill is required when the extinguishing media starts to lose effectiveness. Partially emptied extinguishers should also be recharged. Only refills approved for the fire extinguisher in question may be used for recharging.

9.0 Water Mist, Water Spray, and Sprinkler Systems

9.1 Ten-Year Service

The hydrostatic test and internal examination for gas and water pressure cylinders shall be conducted in accordance with *Transportable Gas Cylinders – Periodic Inspection and Testing of Seamless Steel Gas Cylinders* (EN 1968:2002 +A1), or equivalent Classification Society requirements. See also §5.1.3 of this Notice regarding harmonization with drydocking.

10.0 Self-Contained Breathing Apparatus (SCBA)

10.1 Weekly Inspections

SCBA should be inspected weekly to ensure that they are in the correct pressure range.

10.2 Monthly Inspections

For ships subject to the *International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk* (IGC Code), IBC Code, and *Code for the*

Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (BCH Code), SCBAs shall be inspected at least once a month by a responsible ship's officer.

10.3 Annual Examination

All SCBAs shall be examined at least annually as part of the annual statutory survey for the SEC or MODU Code Certificate. If applicable, the SCBAs air recharging systems should be checked for air quality as part of the annual statutory survey for the SEC or *Compressed Air Breathing Quality* (BS EN 12021), or equivalent standard acceptable to the attending Classification Society surveyor.

10.4 Hydrostatic Testing of SCBA Cylinders

10.4.1 Hydrostatic testing of SCBA cylinders shall be carried out once every five (5) years. The hydrostatic test date must be permanently marked on the bottles. Intervals for hydrostatically testing cylinders of the ultra lightweight type may vary and will depend upon the requirements of the cylinder manufacturer and the ship's Classification Society. Servicing of the cylinders must be performed to the satisfaction of the Classification Society surveyor.

10.4.2 In cases where SCBA cylinders have been date stamped prior to delivery of a vessel, the first five (5)-year hydrostatic test may be harmonized with drydocking at the First Special Survey under the IMO Harmonized System of Survey and Certification, provided that the initial date stamp (month/year) on the cylinder does not exceed six (6) months before the vessel delivery date.

10.5 Spare Charges and Recharging of SCBA Cylinders

10.5.1 Two (2) interchangeable spare charges suitable for use with the SCBA should be provided for each required apparatus.

10.5.2 Passenger ships carrying not more than 36 passengers and cargo ships equipped with suitable located means for fully recharging the air cylinders free from contamination, only one (1) interchangeable spare charge is required for each required apparatus.

10.5.3 Passenger ships carrying more than 36 passengers constructed on or after 01 July 2010 shall be fitted with a suitably located means for fully recharging breathing air cylinders, free from contamination. The means for recharging shall be either:

.1 breather air compressors supplied from the main and emergency switchboard, or independently driven, with a minimum capacity of 60 *l*/min per required breathing apparatus, not to exceed 420 *l*/min; or

.2 self-contained high-pressure storage systems of suitable pressure to recharge the breathing apparatus used on board, with a capacity of at least 1,200 *l*/per required breathing apparatus, not to exceed 50,000 *l* of free air.

10.5.4 On or after 01 July 2014, all ships unless provided with an onboard means of recharging breathing apparatus cylinders, shall have a suitable number of spare cylinders to replace those used during training or drills. The Administrator does not prescribe any minimum number, however the shipboard SMS needs to include provisions that sufficient spares corresponding to the number of breathing apparatus being used during drills, are available onboard.[2]

10.6 Smoke Helmet

Recognizing the problems and operational drawbacks associated with the use of a smoke helmet type breathing apparatus as identified in SOLAS Regulation II-2/15.2.11, in force before 01 July 2002, the Administrator does not permit the use of such apparatus onboard those ships which may still be able to carry this type of equipment as permitted prior to the 2002 amendments to SOLAS Chapter II-2. Accordingly, additional SCBAs shall be provided to replace any smoke helmet-type breathing apparatus where these devices may form part of the minimum equipment requirement.[3]

11.0 Emergency Escape Breathing Devices (EEBDs)

11.1 Number and Locations

11.1.1 SOLAS requires at least two (2) EEBDs to be located in the accommodations and additional EEBDs to be placed in the machinery spaces. The Administrator considers "machinery spaces" to mean Category A Machinery Spaces such as engine rooms and boiler rooms. Auxiliary Machinery Spaces such as Steering Gear Compartments, Refrigeration Machinery Rooms, Bow Thruster Compartments, and the like do not have to be fitted with EEBDs.

11.1.2 Inasmuch as IMO Circular MSC/Circ.849, *Guidelines for the Performance, Location, Use and Care of Emergency Escape Breathing Devices*, is referenced in SOLAS Regulations II-2/13.3.4 and 13.4.3, the Administrator is treating the guidelines contained in the Circular as mandatory.

11.1.3 For compliance with the last sentence in paragraph 4.6 of IMO Circular MSC/Circ.849, only those control spaces and workshops that are remotely located from the machinery space escape routes need be considered.

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[2] At the March 2016 meeting of Ship Systems and Equipment 3 (SSE 3), the sub-committee considered a proposal to promulgate a new International Association of Classification Societies (IACS) Unified Interpretation (UI) SC275 with respect to SOLAS II-2, Regulation 15.2.6. It was proposed that the term "suitable number of spare cylinders" must be understood to mean that a suitable number of spare cylinders must include at least one "set of cylinders" for each mandatory breathing apparatus unless additional spare cylinders are required by the SMS; applicable to all ships regardless of construction date. Following discussion, SSE3 endorsed the draft text of this UI of SOLAS II-2, Regulation 15.2.6, which will be submitted to MSC 97 (21-25 November 2016) for approval. Once adopted at MSC 97, this will become the Administrator's official policy on the suitable number of spare cylinders.

[3] The prohibition on the use of smoke helmet-type breathing apparatuses is a National requirement based on the risks associated with their use and guidance contained in IMO Circular MSC/Circ.1085.

11.1.4 In achieving compliance with paragraph 4.6 of IMO Circular MSC/Circ.849, a minimum of two (2) EEBDs should be located on each level of the machinery space. If a machinery space contains an enclosed primary escape trunk having a door at each level, only one (1) EEBD need be located on each level[4].

11.1.5 Under no circumstances shall an EEBD be used to enter an enclosed shipboard space in which the atmosphere is known or suspected to be oxygen-depleted, oxygen-enriched, toxic, or flammable.

11.2 Maintenance and Care

11.2.1 The EEBD should be examined and maintained in accordance with the manufacturer's instructions, including any instructions for hydrostatic testing. It should be noted that when an EEBD is fitted with a small capacity oxygen cartridge (two (2) inches or less in diameter), some manufacturers specify a fixed service life without scheduled hydrostatic pressure testing. In the absence of manufacturer's instructions, hydrostatic testing should be carried out at intervals not exceeding five (5) years, unless specifically prohibited by the manufacturers.

11.2.2 In cases where EEBD cylinders have been date stamped prior to delivery of a vessel, the first hydrostatic test may be harmonized with drydocking at the First Special survey under the IMO Harmonized System of Survey and Certification, provided that the initial date stamp (month/year) on the cylinder does not exceed six (6) months before the vessel delivery date.

11.2.3 Sufficient spare EEBDs should be kept on board to replace units that are used, reach their expiry date, or otherwise become unserviceable. See IMO Circular MSC/Circ.1081, which addresses the number of EEBDs, including spares, required under SOLAS II-2.

11.2.4 Maintenance requirements, manufacturer's trademark and serial number, shelf life with accompanying manufacture date, and name of approving authority should be printed on each EEBD.

12.0 Records

12.1 Records of the inspections shall be carried on board the ship, or may be computer based. They shall include as appropriate:

.1 weekly inspections;

.2 monthly inspections;

[4] The term "level" should be interpreted as meaning a deck where watchstanding personnel reside, workshops and control stations are located, or the crew may be employed during routine maintenance. In essence, two (2) EEBDs are required only on those deck "levels" where people are likely to be employed. Platform decks that serve to divide long ladders into segments and partial decks where personnel are not likely to be employed for any significant period of time are not considered as "levels" and do not require EEBDs.

.3 quarterly inspections;

.4 annual inspections;

.5 biennial (two (2)-yearly) inspections;

.6 five (5)-year inspections;

.7 10-year inspections:

.8 20-year inspections;

.9 other maintenance and testing, including whether a pressure test was performed;

.10 records of water quality in automatic sprinkler systems

.11 age of foam concentrates and subsequent controls; and

.12 deficiencies identified and corrective actions taken.

12.2 In cases where the inspections and maintenance are carried out by trained service technicians other than the ship's crew, inspection reports shall be requested to be provided at the completion of the testing. These reports shall be included in the records of inspections.

Appendix 1 - Fire-fighting Systems and Appliances
Summary of Maintenance, Testing and Inspection Intervals

Note: This chart is intended as reference tool and should not be substituted for an actual reading of circulars referred to within this Notice. The numbers within parentheses under the inspection interval refer to the IMO Circular(s) noted in the first column.

	Weekly	**Monthly**	**Quarterly**	**Annually**	**Biennially (two (2)-year intervals)**	**Five (5)-year**	**10-year (Hydrostatic testing)**	**20-year (Hydrostatic testing)**
Breathing Apparatus (includes SCBA) (MSC.1/Circ.1432)	Ship[2] (4.5)	Tanker: Ship[2], see §10.2 of this Notice		Ship[2] (7.8)		Shore[3](9.4)		
EEBDs (MSC.1/Circ.1432)	Ship[2] (4.5)			Ship[2] (7.8)		hydrostatic testing- see §11.2.1 of this Notice		
Ventilation system and fire dampers (MSC.1/Circ.1432)			Ship[2] (6.3)	Ship[2] (7.6)				
Fixed fire detection and alarm systems (MSC.1/Circ.1432)	Ship[2] (4.1)	Ship[2] (5.10)		Ship[2] (7.2)				
Fire doors (MSC.1/Circ.1432)	Ship[2] (4.3)		Ship[2] (6.4)	Ship[2] (7.7)				
Fire hoses, fire hydrants, fire main, fire nozzles and fire pumps (MSC.1/Circ.1432)		Ship[2] (5.1)	Ship[2] (6.1)	Ship[2] (7.1)		Ship[2] (7.1.4)		
International shore connections			Ship[2](6.1)					
Fireman's outfit (MSC.1/Circ. 1432)		Ship[2] (5.5)						

	Weekly	Monthly	Quarterly	Annually	Biennially (two (2)-year intervals)	Five (5)-year	10-year (Hydrostatic testing)	20-year (Hydrostatic testing)
Fire stations and lockers		Ship[2] (5.5)						
Fixed Gas fire-extinguishing systems (except CO_2 & Halon) (MSC.1/Circ. 1432)	Ship[2] (4.2)	Ship[2] (5.2)		Ship[2] (7.3)	Shore[3] (8.1) or Ship[2]	Shore[3] (9.1)	Shore[3] (10.1)	
Fixed CO_2 fire-extinguishing systems (MSC.1/Circ.1318)		Ship[2] (4)		Ship[2] (5)	Passenger ships (± three (3) months):Shore[3] (6.1) (6.2) Cargo ships (intermediate, periodical or renewal survey*): Shore[3] (6.1) Cargo ships (renewal survey*) Shore[3] (6.2)	Internal examination of all control valves (Shore[3])	Shore[3] (6.1.2)	
Fixed Halon fire-extinguishing systems (MSC.1/Circ.1432/ MN 2-011-14)		Ship[2] (5.2)		Ship[2] (7.3)	Shore[1]	Shore[3] (9.1)		Shore[3] (10/§5.3))
Fixed Dry Chemical Powder fire-extinguishing systems (MSC.1/Circ.1432)		Ship[2] (5.6)		Ship[2] (7.9)	Shore[3] (8.2)		Shore[3] (10.3)	
Fixed aerosol extinguishing systems (MSC.1/Circ.1432)		Ship[2] (5.7)		Ship[2] (7.10)			Shore[3] (10.4)	
Foam fixed fire-extinguishing systems (MSC.1/Circ.1432)		Ship[2] (5.3)	Ship[2] (6.2)	Ship[2] (7.4)		Shore[3] (9.2)		

	Weekly	Monthly	Quarterly	Annually	Biennially (two (2)-year intervals)	Five (5)-year	10-year (Hydrostatic testing)	20-year (Hydrostatic testing)
Foam concentrates stored on board for the foam fixed fire-extinguishing system (MSC.1/Circ.1312)				Shore[4] (5); After first three (3) years-; For alcohol resistant protein; prior to delivery and annually thereafter				
Portable foam applicators and foam concentrate stored on board for portable foam applicators (MSC.1/Circ.1432/MSC.1/Circ.1312)		Ship[2](5.8)		Ship[2](7.11)				
				Concentrate: Prior to delivery and annually thereafter, Ship[4](7.11/5)				
				Concentrate: Protein based/alcohol resistant, Ship[4](7.11/5)				
Portable fire extinguishers (IMO Resolution A.951(23))				Ship[2] (9.1 & Table 9.1.3)		Ship[2] (9.1.1)	Shore[3] (9.1.2)	
PA + gen. alarm systems (MSC.1/Circ.1432)	Ship[2] (4.4)							
Water-mist, water spray and sprinkler systems (MSC.1/Circ.1432)	Ship[2] (4.7)	Ship[2] (5.4)		Ship[2] (7.5)		Shore[3] (9.3)	Shore[3] (10.2)	
Wheeled (mobile) fire extinguishers (MSC.1/Circ.1432)		Ship[2](5.9)		Ship[2] (7.12)		Shore[3] (9.6)	Shore[3] (10.5)	

	Weekly	Monthly	Quarterly	Annually	Biennially (two (2)-year intervals)	Five (5)-year	10-year (Hydrostatic testing)	20-year (Hydrostatic testing)
Galley and deep fat cooking fire-extinguishing systems (MSC.1/Circ.1432)				Ship[2] (7.13)				
Low location lighting systems (MSC.1/Circ.1432)	Ship[2](4.6)					Shore [3](9.5)		

Key: Entity to Conduct Inspection

[1] Shore service as part of the annual statutory survey for the SEC: The inspection and/or verification shall be to the satisfaction of the attending Classification Society surveyor.

[2] Ships officers are responsible for performing tests and examinations of these fire-fighting systems or equipment, unless manufacturers require annual servicing by authorized agent. The tests and examinations may be required to be carried out in the presence of the Classification Society, if deemed necessary by either the Administrator or an entity acting for and on behalf of the Administrator.

[3] checked by an authorized service facility acceptable to the vessel's Classification Society.

[4] tests should be performed by the shipowner or operator via laboratories or authorized service suppliers deemed acceptable to the Classification Society.

* Refer to survey guidelines under the Harmonized System of Survey and Certification, 2007(resolution A. 1053(27)).

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