Subject

Maintenance and inspection of Fire-Protection Systems and Appliances on board the Marshall Islands flagged ships

ClassNK
Technical Information

No. TEC-0874
Date 21 November 2011

To whom it may concern

The Marshall Islands Government has informed ClassNK of Marine Notice No.2-011-14 Rev4/11, "Maintenance and Inspection of Fire Protection system and Appliances". The essential points of the Notice are shown below. The previous ClassNK Technical Information No.TEC-0630 is now superseded. The requirements only are shown below. As necessary, please refer to the original text of the Notice which is available on Marshall Islands Government Internet Homepage (http://www.register-iri.com).

Main points of changes are as follows;

1. Fixed CO_2 Fire-Extinguishing Systems
   - Hydrostatic testing of high pressure cylinders
     [Old] All cylinders at 20 years interval
     [New] 10% cylinders at 10 years interval.
   - Flexible hoses
     To be replaced at the intervals recommended by the manufacturer or every 10 years
2. Hydrostatic testing of EEBD

The requirements of Notice are as follows;

PURPOSE:
This Notice addresses areas where the Maritime Administrator ("Administrator") has determined that additional clarification or requirements are necessary for the proper maintenance and inspection of fire protection systems, appliances and emergency equipment. It is not intended as an exhaustive listing of applicable requirements. It addresses general maintenance and inspection as well as the testing and examination of:
- fixed gas fire extinguishing systems;
- foam concentrates;
- portable fire extinguishers;
- Self-Contained Breathing Apparatus (SCBA); and
- Emergency Escape Breathing Devices (EEBDs).

(To be continued)

Importantly, this Notice reflects a change in Administrator policy with regard to the hydrostatic testing interval for fixed CO_2 fire extinguishing systems. This interval has been reduced from 20 years to 10 years in accordance with the Guidelines for the Maintenance and Inspection of Fixed Carbon Dioxide Fire Extinguishing Systems（reference MSC.1/Circ.1318）. It also articulates Administrator policy on Halogenated Hydrocarbon (Halon) and alternative fixed gas fire extinguishing systems.

APPLICABILITY:
This Notice applies to all ships, mobile offshore drilling units (MODUs) and mobile offshore units (MOUs).

REQUIREMENTS:

1.0 General

Ships's owners and officers shall be familiar with and follow the equipment manufacturers recommendations, Classification Society requirements and applicable requirements of the International Convention for Safety at Life at Sea, 1974, (SOLAS '74), as amended, the International Code for Fire Safety Systems (FSS Code), as amended, and MODU Code (1979, 1989 and 2009 editions) with respect to the maintenance and inspection of fire protection systems and appliances, except where such recommendations or requirements are superseded by this Notice.

2.0 Requirements for the Maintenance and Inspection of Fire Protection Systems and Appliances

The general requirements contained in this section are extracted from the Guidelines for the Maintenance and Inspection of Fire Protection Systems and Appliances (reference MSC/Circ.850). They provide a basic maintenance and inspection framework and should not be considered an all inclusive list of items to be maintained or inspected.

2.1 Operational readiness

All fire protection systems and appliances should 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 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. Prior to sailing or in the case of MODUs and MOUs engaging in operations with a fire protection system under repair, a dispensation must be obtained from the Administrator.

2.2 Maintenance and testing

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

(To be continued)

.1 maintenance and repair instructions;
.2 schedule of periodic maintenance;
.3 list of replaceable parts; and
.4 log for records of inspections and maintenance, listing identified non-conformities and their targeted completion dates.

2.3 Weekly testing and inspections

Weekly inspections should be carried out as part of the regular emergency training to ensure that:
.1 all public address systems and general alarm systems are functioning properly;
.2 all fireman's outfits and EEBDs are appropriately supplied, arranged, and in proper condition; and
.3 breathing apparatus cylinders do not present leakages.

2.4 Monthly examinations and inspections

Ship's officers are responsible for performing monthly examinations of firefighting system equipment and recording the examinations in the ship's official log book. Monthly inspections should be carried out to ensure that:
.1 all fire extinguishers, fire hydrants, hoses and nozzles are in place, properly arranged, and are in proper condition;
.2 all fixed fire-fighting system stop valves are in the proper open or closed position, dry pipe sprinkler systems have appropriate pressures as indicated by gauges;
.3 sprinkler system pressure tanks have correct levels of water as indicated by glass gauges;
.4 all sprinkler system pumps automatically operate on reduction of pressure in the systems;
.5 all fire pumps are operated; and
.6 all fixed fire-extinguishing installations using extinguishing gas are free from leakage.

2.5 Quarterly examinations and inspections

Ship's officers are responsible for performing quarterly tests and examinations of the following firefighting system equipment and recording the test and examinations in the ship's official log book. Quarterly inspections should be carried out to ensure that:
.1 all automatic alarms for the sprinkler systems are tested using the test valves for each section;
.2 the international shore connection is in proper condition;
.3 fire stations and lockers providing storage for fire-fighting equipment contain proper inventory and that missing or unserviceable equipment is replaced;
.4 all fire doors and fire dampers are tested for local operation; and
.5 all CO_2 bottle connections for cable operating system clips should be checked for tightness on fixed fire-extinguishing installations.

(To be continued)

2.6 Annual testing and inspections

As part of the annual statutory survey for the Safety Equipment Certificate (SEC), the following inspections and tests should be carried out to ensure that:

.1 all fire extinguishers are checked for proper location, charging pressure, and condition;
.2 fire detection systems are tested for proper operation, as appropriate;
.3 all fire doors and dampers are tested for remote operation;
.4 all foam-water and water-spray fixed fire-fighting systems are tested for operation;
.5 all accessible components of fixed fire-fighting systems are visually inspected for proper condition;
.6 all fire pumps, including sprinkler system pumps, are flow tested for proper pressures and flows;
.7 all hydrants are tested for operation;
.8 all antifreeze systems are tested for proper solutions;
.9 sprinkler system connections from the ship's fire main are tested for operation;
.10 all fire hoses are hydrostatically tested;
.11 breathing apparatus air recharging systems checked for air quality;
.12 control valves of fixed fire-fighting systems should be inspected; and
.13 air should be blown through the piping of extinguishing gas systems.

The verification of the examinations and tests described in Sections 2.2 thru 2.6 above are an integral part of the annual statutory surveys for the SOLAS SEC. The inspection and/or verification of the applicable items in Section 2.2 thru 2.7 shall be to the satisfaction of the attending Classification Society surveyor.

2.7 Five-year service

At least once every five (5) years, the control valves of fixed fire-fighting systems should be internally inspected.

3.0 Fixed Gas Fire-Extinguishing Systems

3.1 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.

3.2 Fixed CO_2 Fire Extinguishing Systems

(To be continued)

3.2.1 Maintenance

Fixed CO_2 fire-extinguishing systems should be maintained and inspected in accordance with the guidelines contained in MSC.1/Circ.1318, which are intended to demonstrate that the system is kept in good working order and readily available for use as specified in SOLAS '74, regulation II-2/14.2.1.2. These Guidelines supplement the fire-extinguishing system manufacturer's approved maintenance instructions.

3.2.2 CO_2 Containers –Minimum Recommended Maintenance

.1 At least biennially (intervals of 2 years ± 3 months) in passenger ships or at each intermediate, periodical or renewal survey in cargo ships, the following maintenance should be carried out:

(a) all high pressure 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 90% of the nominal charge. Cylinders containing less than 90% of the nominal charge should be refilled. The liquid level of low pressure storage tanks should be checked to verify that the required amount of carbon dioxide to protect the largest hazard is available.

(b) the hydrostatic test date of all storage containers should be checked. High pressure cylinders should be subjected to periodical tests at intervals not exceeding 10 years. At that inspection, a least 10% of the total number provided should be subjected to an internal inspection and hydrostatic test. If one or more cylinders fail, a total of 50% of the onboard cylinders should be tested. If further cylinders fail, all cylinders should be tested. Flexible hoses should be replaced at intervals recommended by the manufacturer, or if such recommendation is not provided, then at intervals not exceeding every 10 years;

Existing ships equipped with storage containers that are 10 years old or older shall have the storage containers hydrostatically tested at latest by the next intermediate or special survey; and

(c) the discharge piping nozzles should be tested to verify that they are not blocked. The test should be performed by isolating the discharge piping from the system and flowing dry air or nitrogen from the test cylinders or suitable means through the piping.

.2 At least biennially (intervals of 2 years ± 3 months) in passenger ships or at each renewal survey in cargo ships, maintenance should be carried out by trained service technicians/specialists in accordance with section 6.2 of MSC.1/Circ. 1318.

(To be continued)

3.3 Halon Systems

3.3.1 Minimum Recommended Maintenance

.1 Verification of Cylinder Contents

At least biennially (intervals of 2 years ± 3 months) as part of the survey for issuance of the SOLAS 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 90% of the nominal charge. Cylinders containing less than 90% 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, and by extinguisher manufacturer to perform this type of work. The facility must be acceptable to the attending Classification Society surveyor. The same facility should recharge the cylinders after testing to demonstrate serviceability.

3.3.2 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 cylinder has not been discharged during its service history;
- cylinder contents are verified by weighing or isotropic measurement;
- cylinder pressure/levels are verified to be acceptable;
- a thorough visual inspection of cylinders reveal no potential defects; and
- cylinders are gauged to the extent considered necessary, and the wall thickness readings kept on board for future comparative reference.

(To be continued)

.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.

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

4.1 Periodical Controls of Foam Concentrates Stored on Board

.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.

.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 the shipowner or operator via laboratories or authorized service suppliers deemed acceptable to the Classification Society.

.3 Protein-based alcohol-resistant foam concentrates should be subjected to a chemical stability test prior to delivery to the ship and annually thereafter.

4.2 Records

A record of the age of the foam concentrates and of subsequent controls should be kept on board.

5.0 Portable Fire Extinguishers

5.1 Annual Survey

The examination of the fire extinguishers is an integral part of the annual statutory surveys for the SOLAS SEC. The fire extinguishers should be examined and, if necessary, serviced annually. The annual servicing/examination of the portable fire extinguishers can be carried out by the crew, if the crew is properly trained and such servicing is acceptable to the ship's Classification Society, or by an authorized service facility. The Classification Society surveyor must be satisfied with the condition of the extinguishers.

(To be continued)

5.2 Servicing of Fire Extinguishers by the Crew of a Ship

A ship's crew may service powder, foam, or water-type portable fire extinguishers subject to the following:

.1 The equipment required to test, examine, and service the extinguishers is obtained and maintained in a calibrated and serviceable condition.

.2 The crew is properly trained in the testing and examination, and servicing of fire extinguishers and the extinguisher manufacturer's servicing instructions are followed.

.3 The testing and inspection is carried out to the satisfaction of the attending Classification Society surveyor, and if required by the surveyor, in the presence of the surveyor.

5.3 Verification of Fire Extinguishers Contents

Every two (2) years in conjunction with the issuance of the SOLAS SEC the contents of the cylinders must be verified. Weighing of the portable CO_2 cylinders in the presence of the Classification Society surveyor is an acceptable method of verification. Other methods of determining contents of the cylinders, such as isotropic measurement, may also be accepted provided the equipment is properly calibrated, the operator of the device is trained and qualified in its use, and the Classification Society surveyor is satisfied with the measurements. If an alternative method is used, spot checks of cylinder contents by weighing may be required to verify the accuracy and consistency of the measurement device.

5.4. Spare Charges, Additional Fire Extinguishers, and Refilling of Extinguishers

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

- 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).

.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 should be provided in lieu of spare charges.

.3 Instructions for recharging the extinguishers should be carried on board. Periodic refilling of the cylinders should be in accordance with the manufacturer's recommendations. Lacking same, 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.

5.5 Authorized Servicing Facilities

The Classification Society surveyor may also accept a servicing certificate from an authorized servicing facility acceptable to the Classification Society for both the annual and biannual examination, servicing and verification of the portable fire extinguishers.

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5.6 Hydrostatic Testing of Portable Fire Extinguishers

All portable extinguishers shall be hydrostatically tested every 10 years; however, a hydrostatic test may also be required by the Classification Society surveyor or Marshall Islands Nautical Inspector if visual examination indicates a potential defect in the cylinder. The hydrostatic test date must be permanently marked on the bottles.

5.7 Hydrostatic Testing Facilities

Hydrostatic testing must be performed by a servicing facility which has been certified by a government agency or Classification Society, and by the extinguisher manufacturer to perform this type of work. The facility must be acceptable to the attending Classification Society surveyor. This same facility should recharge the cylinder after testing to demonstrate serviceability.

6.0 Self-Contained Breathing Apparatus (SCBA)

6.1 Weekly Inspections

SCBA should be inspected weekly to ensure that they do not present leakages (see section 2.3.3 above).

6.2 Monthly Inspections

For ships subject to the International Gas Carrier Code and International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk, SCBAs, should be inspected at least once a month by a responsible officer and inspected and tested by an expert at least once a year.

6.3 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 MODU Code Certificate.

6.4 Hydrostatic Testing of SCBA Cylinders

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.

6.5 Spare Charges and Recharging of SCBA Cylinders

.1 Two spare charges suitable for use with the SCBA should be provided for each required apparatus.

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.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 spare charge is required for each required apparatus.

7.0 Emergency Escape Breathing Devices (EEBDs)

7.1 Maintenance and Care

.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.

.2 Sufficient spare EEBDs should be kept on board to replace units that are used, reach their expiry date, or otherwise become unserviceable.

.3 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.

8.0 Records

8.1 Records shall be maintained on board of:

.1 Weekly inspections;
.2 Monthly inspections;
.3 Annual inspections;
.4 Other maintenance and testing, including whether a pressure test was performed; and
.5 Deficiencies identified and corrective actions taken.

For any questions about the above, please contact:

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