

Subject

Maintenance, Inspection and Tests of Fire-Protection and Fire Fighting Systems on board Singapore Flagged Ships (Partly amended)

ClassNK

Technical Information

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To whom it may concern

The Singapore Government has notified that requirements of the maintenance, inspection and test of fire fighting equipment on board Singapore flag vessels were partly amended in Shipping Circular No.26 of 2005 and No.28 of 2006.

This ClassNK Technical Information supersedes the previous ClassNK Technical Information No.TEC-0628 dated 27 May 2005.

1. Portable fire extinguishers

- (1) Portable fire extinguishers shall be examined periodically but not exceeding one year by a competent person in accordance with the manufacturer's instructions and inspection guide in table 9.1.3 of IMO Resolution A.951(23).
- (2) A competent person can be determined and appointed by the Management Company in ISM Code.
- (3) At least one extinguisher of each type manufactured in the same year and kept on board a ship shall be test discharged at five yearly intervals as part of a fire drill.
- (4) Containers of permanently pressurized/non-pressurized portable fire extinguishers and propellant bottles of non-pressurized portable fire extinguishers shall be hydraulically pressure tested in accordance with the recognized standard or the manufacturer's instruction at interval not exceeding ten years.
- (5) Record of inspection shall be maintained. The records shall show the date of inspection, the type of maintenance carried out and whether or not a pressure test was performed.
- (6) Each portable fire extinguisher shall be provided with a label indicating that it has been examined and the date of examination.
- (7) Extinguishers shall be provided with a visual indication of discharge.
- (8) Instructions for recharging extinguishers shall be supplied by the manufacturer and be available for use on board.

2. Fixed CO₂ gas fire-extinguishing installations

- (1) CO₂ gas bottles should be hydraulic pressure tested 20 years after the date on which the bottles were put in use, and every 5 years thereafter.
- (2) The quantity of the medium in the CO₂ bottles shall be checked once every 4 years. This may be carried out in batches of 25 % of the CO₂ bottles annually, or 50 % of the bottles biennially or in accordance with the ship's maintenance so long as every CO₂ bottle is checked once every 4 years.

(To be continued)

NOTES:

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- (3) All stop valves should be checked monthly to ensure that they are in their proper open or closed position.
- (4) The installation shall be checked monthly to ensure that there is no leakage.
- (5) All CO₂ bottle connection for cable operating system clips shall be checked for tightness every 3 month.
- (6) All control valves should be inspected annually and internally inspected every 5 years.
- (7) Air should be blown through the piping of the installation annually.
3. Low pressure CO₂ fire extinguishing installations
 - (1) The tanks, together with fittings shall be inspected externally every 5 years.
 - (2) At the external inspection, insulation material of the tank at points showing signs of possible corrosion/deterioration of the tank beneath shall be removed to facilitate the external inspection.
 - (3) Pipes and valves at transitional points between insulated and uninsulated areas (cold-conducts) as well as tank supports, flange sockets and valves shall be included in the 5-yearly external inspection.
 - (4) The external inspection shall also include maintenance inspection stipulated in the manufacturer's operation and maintenance manual.
 - (5) At least once a year, a thorough external inspection of the tank supports, flange sockets and valves mentioned in (1) shall be carried out.
 - (6) No internal inspection is necessary unless the external inspection mentioned in (1) of this paragraph reveals corrosion or other defects which warrant an internal inspection.
 - (7) An internal inspection is necessary after every discharge of the contents.
 - (8) Hydraulic tests of the pipes and tanks may be required at the discretion of the attending surveyor, in cases of corrosion/deterioration of the external or internal of the pipes and tanks proves prudent to do so.
 - (9) In any case, hydraulic testing of the pipes and tanks shall be carried out after repairs to the tanks or pipes in case of cracks or holes.
4. Fixed dry powder fire extinguishing installations
 - (1) The system shall be inspected annually, and the dry powder charge shall be agitated with nitrogen, using "bubbling" connections where provided.
 - (2) In addition to regular shipboard inspections, the system shall be inspected at least once every two years by a service agent acceptable to the organization issuing the Safety Equipment Certificate. This inspection shall include:
 - (i) Blow-through with air to ensure associated pipes and nozzles are clear.
 - (ii) Operation test of local and remote controls and section valves.
 - (iii) Contents verification of propellant gas cylinders containing nitrogen (including remote operating stations).
 - (iv) Testing of the dry powder charge for moisture absorption.
 - (3) The replenishment and test regime for high pressure nitrogen cylinders shall be the same as for CO₂ cylinder in paragraph 2.
5. Fixed pressure water spray fire extinguishing installations

There are no specific instructions or test regime for these systems outside of normal shipboard testing. Service and maintenance shall conform with manufacturer's instructions.

(To be continued)

6. Maintenance plan

- (1) The maintenance plan should include, but not limited to the following fire protection systems and Fire-fighting systems and appliances, where installed.
 - (i) Fire mains, fire pumps and hydrants including hoses, nozzles and international shore connections
 - (ii) Fixed fire detection and fire alarm systems
 - (iii) Fixed fire-extinguishing systems and other fire extinguishing appliances
 - (iv) Automatic sprinkler, fire detection and fire alarm systems
 - (v) Ventilation systems including fire and smoke dampers, fans and their controls
 - (vi) Emergency shut down of fuel supply
 - (vii) Fire doors including their controls
 - (viii) General emergency alarm systems
 - (ix) Emergency escape breathing devices
 - (x) Portable fire extinguishers including space charges
 - (xi) Fire-fighter's outfit
- (2) In addition to the above;
 - (i) Passenger ships are required to develop a maintenance plan for low-location lighting and public address systems.
 - (ii) Tankers are required to develop a maintenance plan for
 - (a) Inert gas systems
 - (b) Deck foam systems
 - (c) Fire safety arrangements in cargo pump rooms, and
 - (d) Flammable gas detectors

7. Maintenance, inspection and tests

In addition to above, maintenance, inspection and tests of fire-protection and fire fighting systems should be carried out based on MSC/Circ. 850 as per attached.

For any questions about the above, please contact:

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Attachment:

1. Inspection Guide in IMO Resolution A951(23)
2. IMO MSC/Circ.850

ANNUAL INSPECTION	
Safety clip and indicating devices	Check to see if the extinguisher may have been operated.
Pressure indicating device	Where fitted, check to see that the pressure is within limits. Check that dust covers on pressure indicating devices and relief valves are in place.
External examination	Inspect for corrosion, dents or damage which may affect the safe operation of the extinguisher.
Weight	Weigh the extinguisher and check the mass compared to the fully charged extinguisher.
Hose and nozzle	Check that hoses and nozzles are clear and undamaged.
Operating instructions	Check that they are in place and legible.
INSPECTION AT RECHARGE	
Water and foam charges	Remove the charge to a clean container if to be reused and check if it is still suitable for further use. Check any charge container.
Powder charges	Examine the powder for reuse. Ensure that it is free flowing and that there is no evidence of caking lumps or foreign bodies.
Gas cartridge	Examine for damage and corrosion.
INSPECTION AT FIVE AND TEN YEAR INTERVALS	
INSPECTION AFTER DISCHARGE TEST	
Air passages and operating mechanism	Prove clear passage by blowing through vent holes and vent devices in the cap. Check hose, nozzle strainer, discharge tube and breather valve, as applicable. Check the operating and discharge control. Clean and lubricate as required.
Operating mechanism	Check that the safety pin is removable and that the lever is undamaged.
Gas cartridge	Examine for damage and corrosion. Weigh the cartridge to ascertain that it is within prescribed limits.
O-rings washers and hose diaphragms	Check O-rings and replace hose diaphragms if fitted.
Water and foam bodies	Inspect the interior. Check for corrosion and lining deterioration. Check separate containers for leakage or damage.
Powder body	Examine the body and check internally for corrosion and lining deterioration.
INSPECTION AFTER RECHARGE	
Water and foam	Replace the charge in accordance with the manufacturers instructions.
Reassemble	Reassemble the extinguisher in accordance with the manufacturers instructions.
Maintenance label	Fill in entry on maintenance label, including full weight.
Mounting of extinguishers	Check the mounting bracket or stand.
Report	Complete a report on the state of maintenance of the extinguisher.

Table 9.1.3 – Inspection guide

ANNEX

GUIDELINES FOR THE MAINTENANCE AND INSPECTION OF FIRE-PROTECTION SYSTEMS AND APPLIANCES

1 Application

These Guidelines apply to all ships, however it does not contain an exhaustive list of maintenance items and should be used as a recommendation only.

2 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 should be made to ensure safety is not diminished.

3 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:

- .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.

4 Weekly testing and inspections

Weekly inspections should be carried out to ensure that:

- .1 all public address systems and general alarm systems are functioning properly; and
- .2 breathing apparatus cylinders do not present leakages.

5 Monthly testing and inspections

Monthly inspections should be carried out to ensure that:

- .1 all fireman's outfits, fire extinguishers, fire hydrants, hose 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 installation using extinguishing gas are free from leakage.

6 Quarterly testing and inspections

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 lockers providing storage for fire-fighting equipment contain proper inventory and equipment is in proper condition;
- .4 all fire doors and fire dampers are tested for local operation; and
- .5 all CO₂ bottle connections for cable operating system clips should be checked for tightness on fixed fire-extinguishing installations.

7 Annual testing and inspections

Annual inspections 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.

8 Five-year service

At least once every five years, the following inspections and tests should be carried out:

- .1 hydrostatic testing for all SCBA's cylinders; and
- .2 control valves of fixed fire-fighting systems should be internally inspected.

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