

Subject

Maintenance, inspection and tests of fire-protection and fire fighting systems on board Singapore-registered ships (partly amended for the requirement of Low Pressure CO₂ Fire Extinguishing Installation)

ClassNK

Technical Information

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To whom it may concern

With reference to the maintenance, inspection and test of fire fighting equipment on board Singapore flag vessels, the flag requirements have been informed by ClassNK Technical Information No. TEC-0520 dated 1 May 2003 and No. TEC-0571 dated 4 March 2004. The Singapore Government has notified ClassNK of the abeyance for the requirement of Low Pressure CO₂ Fire Extinguishing Installation partly. Therefore, the instruction of the Singapore Government regarding the abeyance for low pressure CO₂ fire extinguishing installation is add to paragraph 3.(6).

This ClassNK Technical Information supersedes the previous ClassNK Technical Information No. TEC-0520 and No. TEC-0571.

1. Portable fire extinguishers

- (1) Containers of permanent pressurized portable and propellant bottles of portable fire extinguishers should be hydraulic pressure tested as follows:
 - (i) Powder extinguishers every 10 years
 - (ii) CO₂ extinguishers every 10 years, and
 - (iii) Other extinguishers every 10 year
- (2) Containers of non-permanently pressurized portable fire extinguishers should be hydraulic pressure tested every 10 years.
- (3) The condition of recharge of portable CO₂ gas fire extinguishers should be checked annually, and if the loss of gas by weight exceeds 10 % of the original charge, gas cylinders to be hydraulic pressure tested before being recharged.
- (4) The condition of recharge of portable fire extinguishers other than CO₂ gas fire extinguishers including propellant bottles should be checked annually, and if the loss of gas by weight exceeds 10 % of the original charge, they should be to be recharged.
- (5) Each portable fire extinguisher should be provided with a sigh indicating that it has been examined.

(To be continued)

NOTES:

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2. Fixed CO₂ gas fire-extinguishing systems

- (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 bottles should be checked once every 4 years. This may be carried out in batches of 25 % of the bottles annually, or 50 % of the bottles biennially or in accordance with the ship's maintenance plan prescribed in Reg. 14.4.2 (Maintenance, testing and inspections) of the Chapter II-2 of the 2000 amendments to the 1974 SOLAS so long as every CO₂ bottle is checked once every 4 years.
- (3) All stop valves should be checked monthly to ensure that they are in their proper open or closed position.
- (4) The installation should be checked monthly to ensure that there is no leakage.
- (5) All CO₂ bottle connection for cable operating system clips should 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 installation

- (1) The tanks, together with fittings shall be inspected externally every 5 years. At the external inspection, insulation material of the tank points most likely to suffer corrosion / deterioration and considered necessary shall be removed to facilitate the external inspection. 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. The external inspection shall also include maintenance inspection stipulated in the manufacturer's operation and maintenance manual.
- (2) At least once a year, a thorough external inspection of the tank supports, flange sockets and valves mentioned in (1) shall be carried out.
- (3) At the 5-yearly external inspection stipulated above paragraph (1), the tank should be stripped of all its insulation material for the inspection at 10-year interval. If the inspection show the signs of corrosion of the tank which warrants a shorter period of external inspection with the tank stripped of all its insulation material, then it shall be so carried out at the next 5-yearly external inspection. In any way, if the corrosion is serious enough as to render the inquiry and strength of the container doubtful, then a pressure test should be carried out.
- (4) Hydraulic tests of the pipes and tanks may be required at the discretion of the attending surveyor, in cases of corrosion / deterioration or the external or internal provided prudent to do so.
- (5) 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.
- (6) The requirement of above paragraph (3) is put in abeyance for the time being, at least for the next 2 years. However, should the CO₂ tanks be emptied or its external insulation completely removed in the course of specific or routine repairs or maintenance to the tanks or installation, owners/managers should inform ClassNK and request for an internal or external inspection of the CO₂ tanks as the case may be.

(To be continued)

4. 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, and
 - (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

5. 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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1. MSC/Circ.850

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

1 The Maritime Safety Committee, at its sixty-ninth session (11 to 20 May 1998), recognizing the importance of proper maintenance and inspection of fire-protection systems and appliances, approved Guidelines for the maintenance and inspection of fire-protection systems and appliances, as set out in the annex.

2 Member Governments are invited to bring the annexed Guidelines to the attention of shipowners, shipmasters, ships' officers and crew and all other parties concerned.

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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