

Subject

ClassNK provisional interpretations for fixed local application fire-fighting system

ClassNK

Technical Information

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To whom it may concern

In SOLAS chapter II-2 as amended in 2000, the following vessels having machinery spaces of category A above 500 m³ in volume are required to be installed with a fixed water-based or equivalent local application fire-fighting system (hereinafter, referred to as “the system”) to protect the fire hazard portions in the machinery spaces.

- (1) Passenger ships of 500 gross tonnage and above, and cargo ships of 2000 gross tonnage and above, constructed on or after 1 July 2002; and
- (2) Passenger ships of 2,000 gross tonnage and above, constructed before 1 July 2002. (the system should be installed not later than 1 October 2005)

The system is required to be of approved in accordance with the guidelines developed by IMO (MSC/Circ.913), however, the unified interpretations for the guidelines are still being discussed in IMO/FP and IACS WP/FP&S.

As the interpretations for the guidelines partially informed in previous ClassNK Technical Information No. TEC-0453, in addition, please be notified of ClassNK provisional interpretations for the system on the basis of the interpretations agreed in IMO, IACS and/or the sectional meeting of The Shipbuilding Research Association of Japan (Sectional meeting Code : RR-S4) so far, as follows;

1. Definitions

- (1) Protected space is a machinery space, which the system is installed in accordance with the requirements of Reg.II-2/10.5.6 of SOLAS amendments.
- (2) Protected area is an area which is required to be protected by the system in accordance with the requirements of Reg.II-2/10.5.6 of SOLAS amendments.
- (3) Assigned protected area is an area which is assigned according to the result of tests based on MSC/Circ.913. (Refer to Fig.1)
- (4) Water mist affected area is, in general, as follows:
 - (i) horizontally, within radius of S (maximum allowable spacing between nozzles determined as one of the design criteria of the fire fighting systems) of each nozzle. (Refer to Fig.1)
 - (ii) vertically, from the level of nozzles down to the nearest deck or similar construction.
- (5) Overhead crane operation area is an area which maneuvering of the crane and move of goods is affected by the installation of the system.

(To be continued)

NOTES:

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2. Activation/Operation

- (1) The control position for the system provided outside the protected space, in general, should be fire control station. In case of ships without fire control station or ships with fire control station in wheel house, the operation control may be provided at easily accessible positions outside the protected space.
- (2) The operation controls for the system provided inside the protected space, in general, should be located with the distance of at least 7 m from each protected area. Where a large installation or a steel wall provided between the operating position and each protected area is considered as a shielding, the distance may be reduced.
- (3) The operation controls for manual activation of the system provided inside the protected space are recommended to be provided near by the control positions to isolate the fuel line for each engine.
- (4) Where each protected area is surely and safely observed from a position provided near the operation controls (where the system can be activated quickly after confirmation of the fire condition at each protected area from outside of engine control room in the protected space), the operation controls specified in (2) and (3) above may be grouped in the engine control room.
- (5) Where an automatic activation is required, a function for manual override should be provided.
- (6) Operating instructions for the system should be displayed at each operating position.
- (7) Where an automatic activation is required, a warning notice stating the type of medium used and the possibility of automatic release should be displayed outside each entrance of the protected space including an enclosed protected area (e.g. purifier room) within the protected space, if any.
- (8) Engine control room within protected space is not to be considered as the outside of protected space, in view of the installation of the operation controls.

3. Isolation for ventilation and water supply

- (1) Where the system uses a common water supply with other installations, means should be provided for isolating water supply to the installations from a safe position even in case of fire.
- (2) Where a fixed foam fire-extinguishing system is used for the full scale extinguishment for the protected space, measures for shutting out the water supply to the system should be provided to prevent the foam from putting out by the water from the system at a safe position, in general, outside the protected space. In this case, operating instructions stating that water supply to the system should be shut out at the release of the full scale extinguishing should be displayed at the position.
- (3) For continuously manned machinery spaces, where measures for manual stop are provided nearby the operating positions of the system together with the operating instructions indicating that which ventilation should be stopped at the activation of the system from the position, the requirement for automatic stop of the ventilation upon activation of the system may not be required. These measures may be grouped at a position where all protected areas can be surely and safely observed.

(To be continued)

4. Activation alarm/Fire detection

- (1) Where an automatic activation is required, an activation alarm should be activated by the water flow nearby each nozzle or the operation of the pump and each sectional valve. The activation alarm should be capable of indicating that which system has been activated for a specific protected area on the control panels and distinguishing from other alarms such as fire alarms and/or alarms for other fire-fighting systems.
- (2) In general, an activation alarm provided in the engine control room within the protected space need not to indicate the protected area activated the system. Activation alarms provided in the protected space may be grouped at some positions where the protected areas can be surely observed.
- (3) Smoke type fire detectors are not accepted as a measure to determine the location of a specific fire, except where such detectors are used in an enclosed protected area or their effectiveness are verified by tests in all aspects.
- (4) Flame type fire detecting system should be complied with the relevant requirement of chapter 9 of FSS Code.
- (5) In general, each flame type fire detector should not be detected a fire in the areas other than the protected areas and the protected areas other than the protected area monitored by itself by appropriate means (e.g. masking).

5. Nozzle arrangement

- (1) Consideration should be given to obstacles to spraying extinguishing medium when deciding the position of nozzle.
- (2) Where the nozzle direction is intended not to be vertically downward, the followings should be complied with;
 - (i) Tests should be carried out under the conditions of actual direction of nozzles to verify the fire-extinguishing capabilities for the equivalent to that specified in MSC/Circ.913, in addition to the approval test in accordance with MSC/Circ.913.
 - (ii) Nozzle arrangement should be decided in accordance with the test result.
 - (iii) Water mist affected area of the system should be considered individually, based on Fig.1.
- (3) Where a protected area is not protected by the nozzle arrangement within the approval condition of the nozzles, the nozzle arrangement may be accepted, provided that additional nozzle is installed appropriately.

6. Electrical equipment

- (1) Electrical equipment used for pressure units of the system should be, in general, of IP44 or a higher grade except those located outside the protected space.

(To be continued)

- (2) Items of electrical equipment installed in any water mist affected area should be of IP44 or higher grade except where;
 - (i) the electrical equipment is sheltered by a fixed means from water mist
 - (ii) for combinations of the specific system using fresh water and electrical equipment with rating voltage less than a.c.500V, it has been proved through an appropriate test that there are no risk of causing either any electrical shock or short-circuit; or
- (3) The test mentioned above (2) (i) should be conducted in the following manner.
 - (i) Each one of test specimens shall be prepared:
 - (a) IP22 Self cooling electrical-rotating machines with air filter
 - (b) IP22 Static electrical equipment (e.g. motor control panel)
 - (ii) Nozzles should be fitted in 2 x 2 grid and be directed vertically downward. The spacing nozzles should be the maximum allowable space.
 - (iii) The electrical equipment should be placed at the position that is horizontally center of the nozzle grid and vertically at the distance D (the minimum allowable distant determined as one of the design criteria of the systems) from the nozzles.
 - (iv) The system should be operated with maximum allowable pressure determined as one of its design criteria) for 20 minutes while the electrical equipment also being operated.
- (4) Test results should be met the followings.
 - (i) it should be checked that no water drip is on live parts
 - (ii) the insulation resistance between each conductors and earth, and between conductors shall be met Table H2.17, Part H of the Rules
- (5) Issuance of Letter of Compliance
Where the test results is found in order, ClassNK issues Letter of Compliance described in which IP22 rotating machines with air filters and IP22 static electrical equipment are allowed to install in the area where they are supposed to be effected by water mist.

7. Others

- (1) Turbo charger should be considered as the fire hazard portion and accordingly, in general, protected by the system as a part of protected area including each engine.
- (2) Inside of piping should be resistant to corrosion (i.e. SUS, Galvanized pipe, etc.).
- (3) The materials for piping used for the system may be, in general, the same as those of Group III.
- (4) Spare nozzles should be provided for 10% of the total number of required nozzles.
- (5) Function for stop of the operation should be provided.
- (6) For ships not provided with a fresh water generator having water generating capability greater than the daily consumption, a pre-set water level of the low level alarm for the fresh water should be determined by accounting a certain allowance for the daily consumption. In addition, the low level alarm should be taken account of ship's trim (10 degrees) and heels (22.5 degrees).

(To be continued)

For any questions about the above, please contact:

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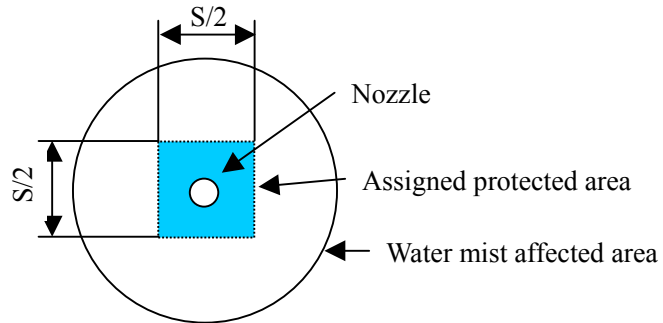
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1. Fig.1 - Assigned protected area and water mist affected area in each nozzle arrangement

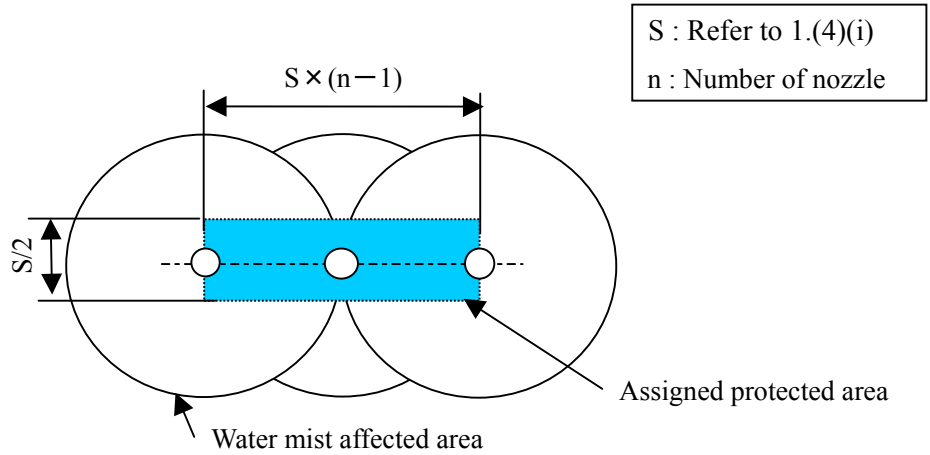
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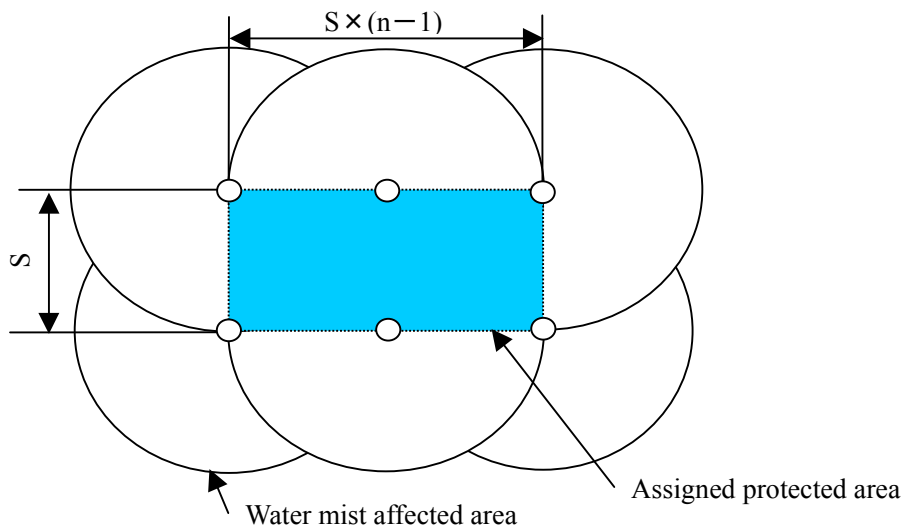
Fig.1 – Assigned protected area and water mist affected area in each nozzle arrangement



(a) Single nozzle arrangement



(b) Single row nozzle arrangement



(c) Grid nozzle arrangement