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GUIDELINES ON THE MEANS OF ACCESS TO STRUCTURES FOR INSPECTION AND MAINTENANCE OF OIL TANKERS AND BULK CARRIERS

(SOLAS reg. XI/2)

1 In the context of the Guidelines on the enhanced programme of inspections during surveys of bulk carriers and oil tankers, adopted by Assembly resolution A.744(18), the Maritime Safety Committee instructed the Sub-Committee on Ship Design and Equipment to develop requirements for access to tanks and ballast space structures.

2 At its sixty-fifth session (9 to 17 May 1995), the Committee approved Guidelines on the means of access to structures for inspection and maintenance of oil tankers and bulk carriers, annexed hereto, which provide recommendations on the access to tanks, cargo holds and ballast spaces to enable the hull structure to be examined in a safe and practical way, when the overall and close-up surveys complying with the provisions of SOLAS regulation XI/2 and resolution A.744(18) are being performed.

3 Member Governments are invited to apply these Guidelines to new ships. In the case of existing ships, the Guidelines should be applied in so far as the Administration deems reasonable and practicable.

ANNEX

General

1 These Guidelines provide recommendations on the access to tanks, cargo holds and ballast spaces of oil tankers and bulk carriers, to enable the hull structure to be examined in a safe and practical way, when performing the overall and close-up surveys required in SOLAS regulation XI/2 and in the relevant Guidelines on the Enhanced Programme of Inspections during Surveys of Bulk Carriers and Oil Tankers, adopted by Assembly resolution A.744(18).

2 These Guidelines recall SOLAS regulation II-1/12-2 on the "Access to Spaces in Cargo Area of Oil Tanker", which applies to oil tankers constructed on or after 1 October 1994, the "Recommendation on Safe Access to and Working in Large Tanks and Recommendation on Safe Access to and Working in Large Cargo Holds of Bulk Carriers", adopted by resolution A.272(VIII) and the "Amendment to the Recommendation on Safe Access to and Working in Large Tanks (resolution A.272(VIII), Annex 1) to Include Large Water Ballast Tanks", adopted by resolution A.330(IX). They also take into account general Principles of the ILO publication on Safety and Health in Dockwork.

3 These Guidelines should apply to new ships. In case of existing ships, the Guidelines should be applied in so far as the Administration deems reasonable and practicable.

4 These Guidelines recommend the owner to agree with the shipyard, in consultation with the Administration or an organization recognized by the Administration, to develop and incorporate, at the time of construction of new oil tankers or bulk carriers, secure and practical means of access to tanks, ballast spaces and cargo holds for an efficient and effective inspection and maintenance, taking into consideration the following aspects.

5 Safe access to enclosed spaces can only be provided if an adequate standard of cleaning, ventilation and testing is achieved prior to entry.*

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* Refer to chapter 11 of the International Safety Guide for Oil Tankers and Terminals (ISGOTT) - Entry into and work in enclosed spaces and to IMO Guidelines on entry into enclosed spaces, to be developed by the Organization.

ACCESS TO AND WITHIN TANKS AND DOUBLE HULL SPACES OF OIL TANKERS

Access from weather deck

6 Tanks, and subdivision of tanks, having lengths of 35 m and above, should be fitted with at least two access hatchways and ladders, as far apart as practicable longitudinally. Where the tanks are of confined construction, two separate means of access from the weather deck are recommended, one each at either end of the tank space.

7 Access to cofferdams, vertical wing and double bottom space of ballast tanks, cargo tanks and other spaces in the cargo area should be direct from the open deck and such as

to ensure their complete inspection. Access to double bottom spaces, particularly with regard to double hull tankers, may be interpreted to include a ladder/platform arrangement that leads from the open deck to the double bottom space through the double hull space. Access to double bottom spaces may be through a cargo pump-room, pump-room, deep cofferdam, pipe tunnel or similar compartments, subject to consideration of ventilation aspects.

Accessibility for personnel safety and inspection

8 The dimensions of any access hatchway should be sufficient to allow a person wearing a self-contained breathing apparatus to ascend or descend the ladder without obstruction and also to provide a clear opening to facilitate the removal of an injured person from the space. Alternatively, one of the deck access hatches can be enlarged and fitted with a hinged top ladder and with clear vertical straight access down to the tank bottom.

9 For access through horizontal openings, hatches and manholes, the minimum clear opening should be not less than 600 mm by 600 mm. Openings of 600 mm by 600 mm minimum clearance, or larger, should be provided in each horizontal girder in vertical alignment within the vertical wing space. The term minimum clear opening of not less than 600 mm by 600 mm means that such openings may have corner radii up to 100 mm maximum, due regard being given to stress concentration.

10 Any opening or open hatchway larger than 200 mm diameter on bulkhead stringers and horizontal girders should be fitted with gratings or safety guide rails of adequate design and construction. The free edge of walkways, bulkhead stringers and horizontal girders should be fitted with two-tier guide rails and vertical plate at least 50 mm high around edge of platform except in way of ladder. Guide rails or fencing should be free from sharp edges and should consist of an upper rail at a height of 900 mm and an intermediate rail at a height of 500 mm. The rails may, where necessary, consist of taut wire or taut chain. Step rungs and grip rails should be provided on inclined or curved surfaces to assist footing.

11 For access through vertical openings, or manholes providing passage through the length and breadth of the space, the minimum clear opening should be not less than 600 mm by 800 mm, at a height of not more than 600 mm from the bottom shell plating or stringer unless gratings or other footholds are provided. Such openings should be provided with grab bars. The term minimum clear opening of not less than 600 mm by 800 mm also includes an opening with corner radii of 300 mm. For inspection purposes, an adequate number of vertical access openings should be provided.

12 Smaller dimensions may be approved by the Administration in accordance with SOLAS regulation II-1/12-2.5.

Access methods for inspection of tank structures

13 The access methods for the inspection of tank structures may include:

.1 Permanent access arrangement such as:

.1 the fitting of permanent staging;

.2 the fitting of bulkhead stringers as walkways;

.3 the fitting of horizontal girders as walkways;

.4 the fitting of independent horizontal walkway,
.5 the use of enlarged longitudinal girders as walkways;
.6 the fitting of step rungs on face plates of longitudinal girders;
.7 the fitting of vertical climbing rails on face plates of longitudinal girders;
.8 the fitting of vertical or inclined ladders on face plates of longitudinal girders;
.9 the fitting of vertical and inclined ladders on transverse bulkheads;*

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* Refer to recognized standards for inspection and maintenance of lifting equipment.

.10 the fitting of step rungs and grip rails on inclined or curved surfaces; and
.11 the fitting of permanent lugs, clips and pad eyes for temporary staging or portable staging support.

.2 Temporary staging
.3 Portable staging/mobile platform/mechanical arms
.4 Temporary/portable ladder
.5 Rafting
.6 Remotely operated vehicles
.7 Use of divers
.8 Remotely-operated video system.

Inspection in cargo tanks

14 Rafting and climbing are possible in open type cargo tanks. However, it is recommended that the following should also be provided:

.1 Permanent staging and/or walkway at strategic locations below the deckhead to monitor possible structural fractures and corrosion.
.2 Permanent walkways along the longitudinal and transverse bulkheads.
.3 Large access openings in swash bulkheads and centreline and side girders for raft passage, where feasible. Alternatively, large deck access hatches should be provided on both sides of the swash bulkhead.

Inspection in vertical wing spaces

15 Rafting in the double hull vertical wing space is not considered practical and is deemed unsafe. Permanent access arrangements, therefore, should be provided.

16 Permanent horizontal walkways with clear width of 600 mm or greater, positioned at intervals harmonized with the design of ship's structures, should give an adequate coverage for inspection purposes. These may be formed by horizontal girders or enlarged longitudinal girders, as opposed to purpose-built walkways. Such permanent walkways could be incorporated in the design of the ship's structures during the design stage.

17 Step rungs, grab bars and vertical ladders should be considered only as secondary means to assist in reaching those vertical areas which cannot readily be visually inspected from the walkways. These should also be limited to 3 to 4 metre extent.

ACCESS TO AND WITHIN CARGO HOLDS OF BULK CARRIERS

Access to cargo holds

18 If separate hatches are used to access the ladders required in each cargo hold, each hatch should have a clear opening of at least 600 mm by 600 mm. The access hatch and associated ladders should, unless used solely for inspection and maintenance and not for operational access, be located such that a person using them will not enter the volume defined by the vertical projection upwards and downwards of the uppermost cargo hatchway. Accesses and ladders should be so arranged that personnel equipped with self-contained breathing apparatus may readily enter and leave the cargo hold. Access hatch coamings having a height greater than 450 mm should be fitted with steps or footholds inside the coaming and, if greater than 900 mm, should also have steps on the outside in conjunction with cargo hold ladders.

Access within cargo holds and ballast tanks

19 Each cargo hold should be provided with at least two ladders as far apart as practicable longitudinally. If possible, these ladders should be arranged diagonally, e.g., one ladder near the forward bulkhead on the port side, the other one near the aft bulkhead on the starboard side, from the ship's centreline. Ladders should be so designed and arranged that the risk of damage from the cargo handling gear is minimized.

20 Vertical ladders should be at an angle of not less than 70 degrees to the horizontal and should comprise one or more ladder linking platforms spaced not more than 6 m apart vertically and displaced to one side of the ladder. Adjacent sections of ladder should be laterally offset from each other by at least the width of the ladder.

21 Tunnels passing through cargo holds should be equipped with ladders or steps at each end of the hold so that personnel may easily get across such tunnels.

22 Where it may be necessary for work to be carried out within a cargo hold or ballast tanks, consideration should be given to suitable arrangements for the safe handling of staging or movable platforms. Such staging and platforms should always be adequately supported and fitted with handrails. Planks should be free from splits and lashed down. In topside and lower hopper tanks, it may be necessary to arrange staging to provide close-up examination of the upper parts of the tank, particularly the transverse web frames, especially where protective coatings have broken down or have not been applied.

23 Hydraulic arm vehicles ("Cherry Pickers") may be used for close-up examination of the cargo hold bulkheads and the upper parts of the cargo hold structure. The standing platform should be fitted with a safety harness. For those vehicles equipped with a self-levelling platform, care should be taken so that the locking device is engaged after completion of manoeuvring to ensure that the platform is fixed.

24 Extending/articulated ladders (frame walk) may be used to enable close-up examination of both the lower and upper portions of side shell frames and end brackets. These ladders incorporate a hydraulic locking system and a built-in safety harness. Portable equipment requires regular maintenance and inspection and this should be confirmed prior to its use.

25 When a short portable ladder is used to gain access to the lower portion of the side shell plating, frames and lower brackets, they should be fitted with adjustable feet, lashings or other safe means, to prevent them from slipping and falling.