GUIDELINES FOR STATUTORY SURVEYS OF SEA-GOING SHIPS ENGAGED ON NON-INTERNATIONAL VOYAGES

PART NINE
ADDITIONAL REQUIREMENTS FOR OFFSHORE SUPPLY VESSELS

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Chapter 1 ADDITIONAL REQUIREMENTS FOR CONSTRUCTION AND EQUIPMENT OF OFFSHORE SUPPLY VESSELS

1 General

1.1 Application

1.1.1 This Chapter applies to new offshore supply vessels of 20 m and over and engaged on non-international voyages.①

1.1.2 When an offshore supply vessel is used for special purposes, such as diving assistance or oceanographic surveys, the persons on board in connection with these special purposes should be treated as special personnel.

1.1.3 Unless expressly provided otherwise in this PART, offshore supply vessels should also comply with other requirements applicable to cargo ships of the Guidelines.

1.2 Definitions

For the purpose of this Chapter:

1.2.1 **Offshore supply vessel** means a vessel:

.1 which is primarily engaged in the transport of stores, materials and equipment to offshore installations; and

.2 which is designed with accommodation and bridge erections in the forward part of the vessel and an exposed cargo deck in the after part for the handling of cargo at sea.

1.2.2 The terms "length(L) of a vessel", "breadth(B) of a vessel", "perpendiculars", "weathertight" and "summer load line" have the meanings as defined in PART THREE of the Guidelines.

2 Intact stability

2.1 For offshore supply vessels, the intact stability in the basic loading conditions as follows should be checked in accordance with the criteria of Chapter 7, PART FOUR of the Guidelines.

(1) full load departure, and cargoes on and below the deck should be distributed in accordance with the condition most unfavorable to stability and cargo loading requirements limited by design. Where cargo tanks are provided, consideration should be given to the condition where such tanks are full and empty respectively;

(2) full load arrival, other conditions are same as (1);

(3) ballast departure;

(4) ballast arrival.

2.2 If it is difficult for the angle of heel θ_m corresponding to the ship's maximum righting lever to meet the requirements of 2.2.4, Chapter 7 of PART FOUR, such angle can be less than 25°, but not to be less than 15°. The area under the righting lever curve before the angle of heel corresponding to the maximum righting lever should not be less than:

$$0.055+0.001(30^\circ-\theta_m) \quad \text{m•rad}$$

2.3 Where pipes are loaded on the deck, consideration should be given to accumulation of water within and around pipes. The water volume is calculated in percentage of the volume of stowing shape of pipe cargoes. Where the freeboard amidships is equal to or less than 0.015L (L is length of a vessel as defined in 1.2.2 of this Chapter), such percentage is 30%. Where the freeboard amidships is equal to or greater than 0.03L, such percentage is 10%. Where the freeboard amidships is an intermediate value, such percentage is obtained by interpolation.

2.4 A minimum freeboard of 0.005L should be maintained at the stern in any operational condition.

3 Subdivision and damage stability

3.1 General provisions

3.1.1 For offshore supply vessels of more than 100 m in length L, the damage stability should

① Provisions for offshore supply vessels carrying more than 12 industrial personnel are not included in this Chapter.

comply with the requirements of 1.6, Chapter 2-1, PART FOUR of the Guidelines.

3.1.2 Taking into account the loading conditions required by 2.1 of this Chapter and the damage assumptions in 3.2 and 3.3, offshore supply vessels of not exceeding 100 m in length *L* should comply with the damage stability criteria as specified in 3.4.

3.1.3 Subdivision should comply with relevant requirements for cargo ships given in Chapter 2-1, PART FOUR of the Guidelines.

3.2 Damage assumptions

3.2.1 Damage should be assumed to occur anywhere in the vessel's length between transverse watertight bulkheads.

3.2.2 The assumed extent of damage should be as follows:

(1) longitudinal extent: vessels with length (*L*) not greater than 43 m, 10% of *L*; vessels with length (*L*) greater than 43 m and less than 80 m, 3 m plus 3% of *L*; vessels with length (*L*) from 80 m to 100 m, $1/3L^{2/3}$. Where the distance between transverse bulkheads is less than such extent, one transverse bulkhead should be assumed to be damaged;

(2) transverse extent: vessels with length (*L*) less than 80 m, 760 mm; vessels with length (*L*) from 80 m to 100 m, *B*/20 or 760 mm (whichever is greater). Transverse extent is measured inboard from the side of the vessel perpendicularly to the centreline at the level of the summer load waterline;

(3) vertical extent: from the underside of the cargo deck, or the continuation thereof, for the full depth of the vessel.

3.2.3 For a vessel with length (*L*) less than 80 m, a transverse watertight bulkhead extending from the vessel's side to a distance inboard of 760 mm or more at the level of the summer load line joining longitudinal watertight bulkheads may be considered as a transverse watertight bulkhead for the purpose of the damage calculations. For a vessel with length (*L*) from 80 m to 100 m, a transverse watertight bulkhead extending from the vessel's side to a distance inboard of *B*/20 or more (but not less than 760 mm) at the level of the summer load line joining longitudinal watertight bulkheads may be considered as a transverse watertight bulkhead for the purpose of the damage calculations.

3.2.4 If pipes, ducts or tunnels are situated within the assumed extent of damage, arrangements should be made to ensure that progressive flooding cannot thereby extend to compartments other than those assumed to be floodable for each case of damage.

3.2.5 If damage of a lesser extent than that specified in 3.2.2 results in a more severe condition, such lesser extent should be assumed.

3.2.6 Where a transverse watertight bulkhead is located within the transverse extent of assumed damage and is stepped in way of a double bottom or side tank by more than 3.05 m, the double bottom or side tanks adjacent to the stepped portion of the transverse watertight bulkhead should be considered as flooded simultaneously.

3.3 Assumptions for calculating damage stability

3.3.1 The permeability of compartments assumed to be damaged should be as follows:

Spaces	Permeability
Appropriated to stores	0.60
Occupied by accommodation	0.95
Occupied by machinery	0.85
Void spaces	0.95
Intended for dry cargo	0.95

The permeability of tanks should be consistent with the amount of liquid carried.

3.3.2 The free surface effect should be calculated at an angle of heel of $0°$ or $5°$ for each individual compartment, or the effect of free liquid in a tank should be calculated over the range of positive residual righting arm, by assessing the shift of liquids by moment of transference calculations.

3.3.3 Free surface for each type of consumable liquid should be assumed for at least one transverse pair of tanks or a single centreline tank. The tank or tanks to be taken into account should be those where the effect of free surface is the greatest.

3.3.4 Alternatively, the actual free surface effect may be used during calculation.

3.4 Damage stability criteria

3.4.1 The final waterline should be below the lower edge of any opening through which progressive flooding may take place. Such openings should include air pipes and those which are capable of being closed by means of weathertight doors or hatch covers and may exclude those openings closed by means of watertight manhole covers and flush scuttles, small watertight cargo tank hatch covers which maintain the high integrity of the deck, remotely operated watertight sliding doors and sidescuttles of the non-opening type.

3.4.2 In the final stage of flooding, the angle of heel due to unsymmetrical flooding should not exceed 15 °. This angle may be increased up to 17 °if no deck immersion occurs.

3.4.3 The stability in the final stage of flooding should be investigated and may be regarded as sufficient if the righting lever curve has, at least, a range of 20 °beyond the position of equilibrium in association with a maximum residual righting lever of at least 100 mm within this range. Unprotected openings should not become immersed at an angle of heel within the prescribed minimum range of residual stability unless the space in question has been included as a floodable space in calculations for damage stability. Within this range, immersion of any of the openings referred to in 3.4.1 and any other openings capable of being closed weathertight may be authorized.

3.4.4 The stability is sufficient during intermediate stages of flooding.

4 Transport of hazardous and noxious liquid substances in bulk

4.1 A offshore supply vessel involved in the transport of limited quantities of hazardous and noxious liquid substances in bulk should comply with Chapter 2 of this PART, i.e. Additional requirements for the transport and handling of limited amounts of hazardous and noxious liquid substances in bulk on offshore supply vessels.

Chapter 2 ADDITIONAL REQUIREMENTS FOR THE TRANSPORT AND HANDLING OF LIMITED AMOUNTS OF HAZARDOUS AND NOXIOUS LIQUID SUBSTANCES IN BULK ON OFFSHORE SUPPLY VESSELS

1 General

1.1 Application

1.1.1 This Chapter applies to offshore supply vessels, regardless of size or voyage, that carry in limited quantities the substances identified in 1.2.2.

1.1.2 For the purpose of this Chapter, "limited quantities" means that the aggregate quantity of bulk liquids identified in 1.2.2 that is carried is any amount not exceeding a maximum of 800 m^3 or a volume in cubic m equal to 40% of the vessel's deadweight calculated at a cargo density of 1.0 t/m^3, whichever is the less. For ships referred to in 1.3.4(2), such as well-stimulation vessels, the carriage of more than the maximum amount specified above may be permitted subject to agreement.

1.1.3 For other ships, the carriage of more than the relevant maximum amount specified above may be permitted subject to agreement, provided that the survival capability requirements of chapter 2 of the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code) or chapter 2 of the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code) are complied with.

1.1.4 This Chapter applies only in the case of bulk carriage involving transfer of the cargo to or from its containment which forms part of the vessel or remains on board.

1.1.5 Carriage and handling of dangerous goods and marine pollutants in packaged form, including carriage of dangerous goods in portable tanks, should be in accordance with the recommendations of the International Maritime Dangerous Goods Code.

1.1.6 This Chapter applies in addition to Chapter 1 of this PART, i.e. Additional Requirements for Construction and Equipment of Offshore Supply Vessels. Where this Chapter sets forth alternative safety standards, the standards in this Chapter should be followed.

1.2 Scope

1.2.1 The provisions of this Chapter have been developed so that limited quantities of cargoes regulated under this Chapter may be carried in bulk with minimum risk to the offshore supply vessel, its crew, and to the environment.

1.2.2 Products which may be carried subject to this Chapter are:

(1) those hazardous and noxious liquids listed in appendix 1 and those other products which may be assigned to appendix 1 based on the following criteria:

① products which for safety reasons may be assigned for carriage on a type 3 ship as defined by the IBC Code and which are not required to meet the requirements for toxic products in section 15.12 of that Code;

② hazardous and noxious liquid substances which would be permitted for carriage on a type 3 ship;

(2) flammable hazardous and noxious liquid substances.

1.2.3 Additives which are considered to fall outside the scope of products in 1.2.2 may be carried in limited amounts in accordance with requirements acceptable to CCS. The aggregate amount of such additives which may be transported should not exceed 10% of the vessel's maximum authorized quantity of products subject to this Chapter. An individual tank should contain not more than 10 m^3 of these additives. The discharge of these additives into the sea from offshore supply vessels is prohibited.

1.2.4 Carriage of products not listed in appendix 1 should be undertaken in accordance with relevant provisions.

1.2.5 Carriage of cargoes in Chapter 18 of the IBC Code need not meet requirements for construction and equipment of this Chapter, but category Z substances of that chapter should meet relevant requirements for pollution prevention.

1.3 Definitions

Unless expressly provided otherwise, the definitions in Chapters 1 and 4 of the IBC Code apply to

this Chapter.

1.3.1 Cargo area is that part of the offshore supply vessel where cargo and cargo vapours are likely to be present and includes cargo tanks, cargo pump-rooms, hold spaces in which independent tanks are located, cofferdams surrounding integral tanks and the following deck areas:

(1) within 3 m of a cargo tank installed on deck;

(2) within 3 m of a cargo tank outlet in case of independent tanks installed below deck;

(3) within 3 m of a cargo tank outlet in case of integral tanks installed below deck and separated from the weather deck by a cofferdam;

(4) the deck area above an integral tank without an overlaying cofferdam plus the deck area extending transversely and longitudinally for a distance of 3 m beyond each side of the tank;

(5) within 3 m of any cargo liquid or vapour pipe, flange, cargo valve, gas or vapour outlet, or entrance or ventilation opening to a cargo pump-room.

1.3.2 Deadweight means the difference in metric tons between the displacement of an offshore supply vessel in water of a density of 1.025 t/m^3 at the load waterline corresponding to the assigned summer freeboard and the lightweight of the ship.

1.3.3 Lightweight means the displacement of an offshore supply vessel in metric tons without cargo, fuel, lubricating oil, ballast water, fresh water and feed water in tanks, consumable stores, and passengers and crew and their effects.

1.3.4 Hazardous substance is any substance either listed in chapter 17 of the IBC Code or having a hazard more severe than one of the minimum hazard criteria given in criteria for hazard evaluation of bulk chemicals as approved by the International Maritime Organization.

1.3.5 Pollution hazard only substance means a substance having an entry only of "P" in column d in chapter 17 of the IBC Code.

1.3.6 Safety hazard substance means a substance having an entry of "S" or "S/P" in column d in chapter 17 of the IBC Code.

1.3.7 Flammable liquid is any liquid having a flashpoint not exceeding 60℃(closed cup test).

1.3.8 Offshore supply vessels are:

.1 vessels which are primarily engaged in the transport of stores, materials and equipment to and from mobile offshore drilling units, fixed and floating platforms and other similar offshore installations; or

.2 vessels, including well-stimulation vessels, but excluding mobile offshore drilling units, derrick barges, pipelaying barges and floating accommodation units, which are otherwise primarily engaged in supporting the work of offshore installations.

1.4 Survey and certification

1.4.1 Following a satisfactory initial survey of an offshore supply vessel, the ship survey organization should issue a Certificate of Fitness for Transport of Limited Amounts of Hazardous and Noxious Liquid Substances in Bulk on Offshore Supply Vessels, suitably endorsed to certify compliance with the provisions of this Chapter. The certificate should indicate the cargoes regulated by this Chapter that the vessel is permitted to carry with any relevant carriage conditions and should have a period of validity not to exceed five years.

1.4.2 The certificates issued under this Chapter should have the same force and receive the same recognition as Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk for Ships at Sea, Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk for Ships at Sea or Certificate of Fitness for the Carriage of Liquefied Gases in Bulk for Ships at Sea issued under the Guidelines.

1.4.3 When the vessel is constructed to carry substances having only a marine pollution hazard, then the Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk for Ships at Sea may be suitably endorsed and serve the purpose of 1.4.1.

1.4.4 The validities of the certificates referred to in 1.4.1 and 1.4.3 should be subject to the surveys required by Chapters 17 and 12, PART ONE of the Guidelines.

2 Stability and cargo tank location

2.1 Stability

2.1.1 Offshore supply vessels built in accordance with this Chapter should be designed to meet

the requirements for intact stability and for subdivision and damage stability contained in Chapter 1 of this PART, i.e. Additional Requirements for Construction and Equipment of Offshore Supply Vessels.

2.1.2 Well-stimulation vessels which are permitted to carry more than the limited amounts as specified in 1.1.2 should be designed to meet the requirements for intact stability and for subdivision and damage stability contained in Chapter 1 of this PART, but with the damage given in 3.2 of Chapter 1 of this PART occurring anywhere in the ship's length at any transverse watertight bulkhead.

2.1.3 For offshore supply vessels carrying more than the limited amounts as specified in 1.1.2 other than those mentioned in 2.1.2 above, the subdivision and damage stability should meet the requirements of 1.8 or 1.9, Chapter 2-1, PART FOUR of the Guidelines.

2.2 Cargo tank location

2.2.1 Cargo tanks containing products subject to the provisions of this Chapter should be located at least 760 mm measured inboard from the side of the vessel perpendicular to the centreline at the level of the summer load waterline.

3 Requirements for construction and equipment of ships

3.1 Cargo segregation

3.1.1 Tanks containing cargo or residues of cargo subject to the provisions of this Chapter should be segregated from machinery spaces, propeller shaft tunnels, if fitted, dry cargo spaces, accommodation and service spaces and from drinking water and stores for human consumption, by means of a cofferdam, void space, cargo pump-room, empty tank, oil fuel tank, or other similar space. On-deck stowage of independent tanks or installing independent tanks in otherwise empty hold spaces should be considered as satisfying this requirement.

3.1.2 Cargoes which react in a hazardous manner with other cargoes or oil fuels should:

(1) be segregated from such other cargoes or oil fuels by means of a cofferdam, void space, cargo pump-room, pump-room, empty tank, or tank containing a mutually compatible cargo;

(2) have separate pumping and piping systems which should not pass through other cargo tanks containing such cargoes, unless encased in a tunnel; and

(3) have separate tank venting systems.

3.1.3 Cargo piping should not pass through any accommodation, service or machinery space other than cargo pump-rooms or pump-rooms.

3.1.4 Pumps, ballast lines, vent lines and other similar equipment serving permanent ballast tanks should be independent of similar equipment serving cargo tanks.

3.1.5 Bilge pumping arrangements for cargo pump-rooms or for hold spaces in which independent cargo tanks are installed should be situated entirely within the cargo area.

3.1.6 Integral tanks should satisfy the following requirements:

(1) Where not bounded by bottom shell plating, fuel oil tanks, a cargo pump-room or a pump-room, the cargo tanks should be surrounded by cofferdams. Tanks for other purposes (except fresh water and lubricating oils) may be accepted as cofferdams for these tanks.

(2) For access to all spaces, the minimum spacing between cargo tank boundaries and adjacent ship's structures should be 600 mm.

(3) Cargo tanks may extend to the deck plating, provided dry cargo is not handled in that area. Where dry cargo is handled on the deck area above a cargo tank, the cargo tank may not extend to the deck plating unless a continuous, permanent deck sheathing of wood or other suitable material of a minimum thickness of 50 mm is fitted.

(4) Cargoes subject to this Chapter should not be carried in either the fore or aft peak tanks.

(5) For pollution hazard only substances having a flashpoint exceeding 60℃ (closed cup test), the arrangements referred to in 3.1.1 and 3.1.3 may be waived provided that the segregation requirements for accommodation spaces, drinking water and stores for human consumption are observed. Additionally, 3.1.6(1) and 3.1.6(2) need not be applied.

3.2 Accommodation, service and machinery spaces and control stations

3.2.1 Accommodation or service spaces, or control stations should not be located within the cargo area.

3.2.2 Unless they are spaced at least 7 m away from the cargo area containing flammable products, entrances, air inlets and openings to accommodation, service and machinery spaces and control stations should not face the cargo area. Doors to spaces not having access to accommodation, service and machinery spaces and control stations, such as cargo control stations and store-rooms, may be permitted within the 7 m zone specified above, provided the boundaries of the spaces are insulated to A-60 standard. When arranged within the 7 m zone specified above, windows and sidescuttles facing the cargo area should be of a fixed type. Such sidescuttles in the first tier on the main deck should be fitted with inside covers of steel or equivalent material.
3.2.3 In order to guard against the danger of hazardous vapours, the location of air intakes and openings into accommodation, service and machinery spaces and control stations in relation to cargo piping and cargo vent systems should be in accordance with the requirements of 3.6 of this Chapter.
3.2.4 For pollution hazard only substances having a flashpoint exceeding 60℃, the arrangements referred to in 3.2.1 to 3.2.3 may be waived.

3.3 Access to spaces in the cargo area
Access to spaces within the cargo area should meet the requirements of 3.4 of the IBC Code.

3.4 Cargo tank construction
3.4.1 Cargo tanks should be at least of the type required for the cargo by the IBC Code or IGC Code, as applicable.
3.4.2 Instead of the use of permanently attached deck-tanks, portable tanks which have been approved may be used for cargoes indicated in paragraph 1.2.2, provided that the tanks are properly located and secured to the vessel.
3.4.3 Except for the tank connections to cargo pump-rooms, all tank openings and connections to the tank should terminate above the weather deck and to be located in the tops of the tanks. Where cofferdams are provided over integral tanks, small trunks may be used to penetrate the cofferdam.
3.4.4 The greater of the following design pressures (gauge) should be used for determining scantlings of independent pressure tanks:
(1) 0.07 MPa;
(2) the vapour pressure of the cargo at 45℃;
(3) the vapour pressure of the cargo at 15℃ above the temperature at which it is normally carried; or
(4) the pressure which occurs in the tank during the loading or unloading.
The structural scantling and arrangement of the tanks should comply with relevant standards in CCS Rules for Construction and Equipment of Ships Carrying Liquefied Gases in Bulk taking into account the density of cargo. The structural scantling of tanks may also be designed in accordance with requirements for pressure vessels in CCS Rules for Classification of Sea-going Steel Ships.
3.4.5 Integral and independent gravity tanks should be constructed and tested according to the relevant requirements of the IBC Code or IGC Code taking into account the carriage temperature and relative density of cargo.
3.4.6 For pollution hazard only substances having a flashpoint exceeding 60℃, the requirements of 3.4.3 need not be applied.

3.5 Materials of construction
3.5.1 Materials of construction for tanks, piping, fittings and pumps should be in accordance with chapter 6 of the IBC Code, or chapter 6 of the IGC Code, as applicable.

3.6 Cargo tank vent systems
3.6.1 Independent pressure tanks should be fitted with pressure relief devices that are so designed as to direct the discharge away from personnel and that have a set pressure and capacity taking into account the design pressure referred to in 3.4.4. For ships of less than 90 m in length, smaller distance may be permitted for the vent exits of pressure relief devices.
3.6.2 Cargo tank vent systems of integral or independent gravity tanks should meet the requirements of the IBC Code, except that the height specified in 8.3.4 of the Code may be reduced to 2 m.
3.6.3 For cargo tanks used to carry pollution hazard only substances with a flashpoint exceeding

60℃ (closed cup test), the requirements for the distance from vent exits to the air intake or opening to accommodation spaces, service spaces, machinery spaces and control stations may be waived.

3.6.4 Cargo tank vent systems of portable tanks allowed under 3.4.2 should take into account the requirement of 3.6.

3.7 Cargo transfer

3.7.1 The cargo transfer system should comply with the requirements of chapter 5 of the IBC Code or chapter 5 of the IGC Code.

3.7.2 The remote shutdown devices for all cargo pumps and similar equipment, required by 5.6.1.3 of the IBC Code, should be capable of being activated from a dedicated cargo control location which is manned at the time of cargo transfer and from at least one other location outside the cargo area and at a safe distance from it.

3.7.3 Where the cargo intended to be carried has a flashpoint exceeding 60℃ and has pollution hazard, and corresponding preventative and operational measures have been taken to ensure that the pollution risk due to leakage of cargo pipes is under control, as few as flanged connections as possible may be allowed to be used for cargo pipes.

(1) Development of preventative and operational measures, and corresponding preventative and operational measures should be incorporated into the onboard operational manual. For example, drip trays and similar devices may be provided in way of where cargo pipes are fitted with flanges, in order to receive small amount of leakage. Appropriate drainage pipes should also be provided.

(2) The arrangement of pipes of cargo tank bilge systems should be such that in case of leakage of cargo transfer pipes, bilge water containing leaked cargo will not be directly discharged into the sea thereby causing pollution of marine environment.

3.8 Electrical installations

3.8.1 Electrical installations should meet the requirements of chapter 10 of the IBC Code.

3.9 Fire-fighting requirements

3.9.1 For the carriage of flammable liquids identified in appendix 1, the requirements for tankers in Section 4, Chapter 2-2, PART FOUR of the Guidelines should apply to vessels covered by this Chapter, irrespective of tonnage, including vessels of less than 500 tons gross tonnage, except that:

(1) 4.12, 4.15.1 and 4.15.2 should not be applied;

(2) 4.2.1 (i.e., positioning of machinery spaces aft of cargo tanks, slop tanks, cargo pump-rooms and cofferdams), 4.2.2 (i.e., the requirements for location of the main cargo control station), 4.2.4 and 4.2.8(1) to 4.2.8(3) need not be applied. Additionally, 4.2.7 need not be applied provided that the exterior boundaries of superstructures and deckhouses enclosing accommodation and including any overhanging decks which support such accommodation are spaced at least 7 m away from the cargo area;

(3) with regard to 4.3.1, taking into account segregation of compartments and arrangement of fire detection and fire-fighting systems, the use of a method other than IC as defined in 3.1.2 may be permitted;

(4) taking into account segregation of compartments and arrangement of fire detection and fire-fighting systems, the requirements of 3.1, 3.2 and 3.4 may be applied in lieu of those in 4.4;

(5) the provisions of 4.11.1, 4.11.2, 4.11.3(1), 4.11.3(3), 4.11.4 and 4.11.5 are only applicable when taking into account the requirement in 3.6.2 of this Chapter that cargo tank vent systems should meet the relevant requirements of the IBC Code;

(6) 1.3, 1.6 and 1.7 should apply to cargo ships of the same tonnage;

(7) the provisions of 3.9.2(3) should be applied in lieu of 4.12; and

(8) the provisions of 3.9.2(5) should be applied in lieu of 4.15.1 and 4.15.2.

3.9.2 The following provisions also apply for the carriage of flammable liquids identified in appendix 1:

(1) During cargo transfer, water pressure should be maintained on the fire main system.

(2) Fire hoses, fitted with approved dual-purpose nozzles (i.e. spray/jet type with a shutoff), should be attached to each fire hydrant in the vicinity of the flammable liquid to be carried.

(3) Either a fixed deck foam system or a fixed fire-extinguishing system of the dry chemical type complying with the following should be provided:

① the system should be located to protect the deck within the cargo area;
② the system should be capable of covering the deck within the cargo area without being moved;
③ when a fixed deck foam system is provided, it should comply with the requirements of 11.3.3 to 11.3.12 of the IBC Code. Only foam suitable for the products carried should be used;
④ the following fire-fighting equipment may be used in lieu of a fixed fire-extinguishing system provided that:
(a) on a deck area of 45 m^2 or less, there are two or more dry chemical extinguishers whose total capacity is not less than 135 kg;
(b) on a deck area of more than 45 m^2, there are three or more dry chemical extinguishers whose total capacity of extinguishing agent is not less than:

$$C = 3A \text{ kg}$$

where: A is the deck area (in square m);
(c) the minimum rate of supply of the extinguishing agent is not less than 3 kg/min per square metre.

(4) An alternative to the systems required in 3.9.2(3) above may be approved in accordance with the procedures contained in regulation II-2/17 of SOLAS Convention.
(5) The cargo pump-room where flammable liquids are handled should be provided with a fixed fire-extinguishing system in accordance with 11.2 of the IBC Code.
3.9.3 Vessels which carry only liquids identified as non-flammable in appendix 1 need not comply with requirements for tankers specified in Chapter 2-2 of PART FOUR, provided that they comply with the requirements for cargo ships of the same gross tonnage of that chapter, except for 3.9.1, and 3.9.2 of this Chapter need not apply.

3.10 Acid spill protection
3.10.1 Floors or decks under acid storage tanks and pumps and piping for acid should have a lining or coating of corrosion-resistant material extending up to a minimum height of 500 mm on the bounding bulkheads or coamings. Hatches or other openings in such floors or decks should be raised to a minimum height of 500 mm; however, where such required height cannot be achieved, the requirement should be satisfied insofar as practicable.
3.10.2 Flanges or other detachable pipe connections should be covered by spray shields.
3.10.3 Portable shield covers for connecting the flanges of the loading manifold should be provided. Drip trays of corrosion-resistant material should be provided under loading manifolds for acids.
3.10.4 Spaces for acid storage tanks and acid pumping and piping should be provided with drainage arrangements of corrosion-resistant materials.
3.10.5 Deck spills should be kept away from accommodation and service areas by means of a permanent coaming of suitable height and extension.

3.11 Ventilation of spaces in the cargo area
3.11.1 The requirements of chapter 12 of the IBC Code apply. The distances required in 12.1.5 of the Code may be waived for pollution hazard substances having a flashpoint exceeding 60℃.

3.12 Vapour detection
3.12.1 Vapour detection for the cargoes carried should be provided in accordance with the requirements contained in the IBC Code.
3.12.2 Enclosed and semi-enclosed spaces containing installations for acid should be fitted with fixed vapour detection and alarm systems which provide visual and audible indication. The vapour detection systems should be capable of detecting hydrogen except that, in the case where only hydrochloric acid is carried, a hydrogen chloride vapour detection system should be provided.
3.12.3 At least two portable instruments for detecting flammable vapour concentrations should be provided when cargoes subject to this Chapter with a flashpoint not exceeding 60℃ (closed cup test) are carried.
3.12.4 At least two portable instruments suitable for measuring the concentration of oxygen in atmospheric air should be provided.

3.13 Special requirements

3.13.1 The special requirements for the cargo as referred to in chapter 15 of the IBC Code or chapter 17 of the IGC Code are applicable; however, the requirement in 15.19.6 of the IBC Code for a visual and audible high-level alarm may be waived provided that tank overflow does not occur during loading of cargo by means of limiting the cargo loading operations (e.g. limiting the quantity of cargo per tank). Such loading operation procedure should be incorporated into the onboard operational manual.

3.14 Special requirements for the carriage of liquefied gases

3.14.1 The construction of cargo tanks, materials, cargo piping systems and transfer systems for the carriage of liquefied nitrogen and liquid carbon dioxide should comply with relevant requirements of the IGC Code.

3.14.2 Each enclosed space used for handling or storage of a liquefied gas should be fitted with a sensor continuously monitoring the oxygen content of the space and an alarm indicating low oxygen concentration. For semi-enclosed spaces portable equipment may also be acceptable.

3.14.3 Drip trays resistant to cryogenic temperatures should be provided at manifolds transferring liquefied gases or at other flanged connections in the liquefied gas system.

3.14.4 Emergency shutoff valves should be provided in liquid outlet lines from each liquefied gas tank. The controls for the emergency shutoff valves should meet the requirements given in 3.7.2 for remote shutdown devices.

3.15 Gauging and level detection

3.15.1 Each cargo tank should have a level gauging system. As a minimum the system should meet relevant requirements of the IBC Code and the IGC Code.

3.16 Emergency remote shutdown

3.16.1 In the case of transfer operations involving pressures in excess of 5 MPa, arrangements for emergency depressurizing and disconnection of the transfer hose should be provided. The controls for activating emergency depressurization and disconnection of the transfer hose should meet the requirements given in 3.7.2 for remote shutdown devices.

4 Pollution requirements

4.1 Each ship certified to carry noxious liquid substances should be provided with a Cargo Record Book, a Procedure and Arrangements Manual and a Shipboard Marine Emergency Plan developed for the ship which has been approved.

4.2 Discharge into the sea of residues of noxious liquid substances permitted for the carriage in Ship Type 3, or products listed in appendix 1 or ballast water, tank washings, or other residues or mixtures containing such substances, is prohibited. Any discharges of residues and mixtures containing noxious liquid substances should be to reception facilities in port. As a consequence of this prohibition, the requirements for efficient stripping and underwater discharge arrangements in MARPOL Annex II may be waived.

5 Personnel protection

5.1 Decontamination showers and eyewashes

5.1.1 Except in the case of pollution hazard only substances, a suitably marked decontamination shower and eyewash should be available on deck in a convenient location. The shower and eyewash should be operable in all ambient conditions.

5.2 Protective and safety equipment

5.2.1 Protective and safety equipment should be kept on board in suitable locations as required by chapter 14 of the IBC Code or the IGC Code for products to be carried.

6 Operational requirements

6.1 Deck cargo and products covered by this Chapter should not be loaded or unloaded

simultaneously.

6.2 Only personnel engaged in the transfer of cargo covered by this Chapter should be permitted to be in the cargo area and the adjacent open main deck during loading or unloading operations.

Appendix 1 Table of Permitted Products

	Flammability
Oil-based mud containing mixtures of products listed in chapters 17 and 18 of the IBC Code and the MEPC.2/Circular and permitted to be carried under paragraph 1.2 of this Chapter	No
Water-based mud containing mixtures of products listed in chapters 17 and 18 of the IBC Code and the MEPC.2/Circular and permitted to be carried under paragraph 1.2 of this Chapter	No
Drilling Brines, including:	No
Sodium Chloride Solution	No
Calcium Bromide Solution	No
Calcium Chloride Solution	No
Calcium nitrate/Magnesium nitrate/Potassium chloride solution	No
Calcium Nitrate Solution (50% or less)	No
Drilling brines (containing zinc salts)	No
Potassium Formate Solution	No
Potassium Chloride Solution	No
Ethyl Alcohol	Yes
Ethylene Glycol	No
Ethylene Glycol monoalkyl ether	Yes
Methyl Alcohol	Yes
Acetic acid	Yes
Formic acid	Yes
Hydrochloric Acid	No
Hydrochloric-hydrofluoric mixtures containing 3% or less Hydrofluoric acid	No
Sodium Silicate Solution	No
Sulphuric Acid	No
Triethylene Glycol	Yes
Toluene	Yes
Xylene	Yes
Liquid carbon dioxide	No
Liquid nitrogen	No
Noxious liquid, NF, (7) n.o.s. (trade name ..., contains ...) ST3, Cat. Y	No
Noxious liquid, F, (8) n.o.s. (trade name .., contains ...) ST3, Cat. Y	Yes
Noxious liquid, NF, (9) n.o.s. (trade name …, contains ...) ST3, Cat. Z	No
Noxious liquid, F, (10) n.o.s. (trade name ..., contains ...) ST3, Cat. Z	Yes
Noxious liquid, (11) n.o.s. (trade name ..., contains ...) Cat. Z	No
Non-noxious liquid, (12) n.o.s. (trade name .., contains ...) Cat. OS	No