A tool developed by RINA to assist owners prepare their ships for port State control inspections

MAINTENANCE CHECKLIST FOR CARGO SHIPS

AND ASSOCIATED GUIDELINES

APRIL 2001
SECOND EDITION

SHIP'S NAME: ……

APPLIED ON: …….

BY: ……

SIGNATURE: …….

The Maintenance Checklist does not in any way replace or cover the scope of class and/or statutory surveys carried out by RINA, the flag state or by RINA on behalf of the flag State. It is not exhaustive and contains those items which according to the information in RINA possession are more frequently inspected, and/or found defective during port State control inspections. It is given for guidance only. Its completion is not a requirement of RINA nor it is required by the Flag State or any port State. Its use does not exempt the owner from the application of routine on-board maintenance procedures and operations. It does not exempt RINA from checking the same items during class and statutory surveys. RINA declines all responsibility for any damage derived from the use of the Maintenance Checklist and the associated Guidelines.

RINA

GUIDELINES FOR THE APPLICATION OF THE MAINTENANCE CHECKLIST FOR CARGO SHIPS

SOME NOTES ON PORT STATE CONTROL

1. Foreword

The following notes are based on:

- Resolution A.787(19) "Procedures for Port State Control", which was adopted in November 1995 by the 19th Assembly of the International Maritime Organisation (IMO), as amended by IMO Resolution A.882(21) adopted on 25.11.1999 ;
- the European Union Council Directive 95/21/EC on Port State Control, as amended by Directives 98/25/CE and 98/42/CE, which applies to any ship and its crew calling at a port of a EU Member State; and
- the Paris Memorandum of Understanding on Port State Control (Paris MoU), agreed by the Maritime Authorities of Belgium, Canada, Croatia, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Russian Federation, Spain, Sweden and United Kingdom.

The purpose of these documents is to provide Port State Control Officers (PSCOs) with a basic guidance in the conduct of port State control inspections. Text in normal type is relevant to the above three documents. The text in *italics* is relevant to the Directive and the Paris MoU only.

2. Provision for Port State Control

Regulation 19 of Chapter I and regulation 4 of Chapter XI of SOLAS 74; article 21 of Load Lines 66; articles 5 and 6, regulation 8A of Annex I, regulation 15 of Annex II, Regulation 8 of Annex III and regulation 8 of Annex V of MARPOL 73/78; article X of STCW 78 and article 12 of Tonnage Measurement 69 provide for control procedures to be followed by the Contracting Governments with regard to foreign ships visiting their ports. The Authorities of port States should make effective use of these provisions for the purposes of identifying deficiencies, if any, in such ships which may render them substandard and ensuring that remedial measures are taken.

3. Applicable instruments

Port State Control apply to ships which come under the provisions of SOLAS 74 (as amended) and associated mandatory Codes and Resolutions, Load Lines 66, MARPOL 73/78 (as amended), STCW 78 (as amended), ITC 69 *and the Merchant Shipping (Minimum Standards) Convention (ILO No.147)*, hereafter referred to as "the Conventions".

4. Definitions

Clear grounds: evidence that the ship, its equipment or its crew do not correspond substantially with the requirements of the relevant Conventions or that the master or crew members are not familiar with essential shipboard procedures relating to the safety of the ship or the prevention of pollution. Examples of clear grounds are:

- absence of principal equipment or arrangements required by the Conventions;
- evidence from a review of the ship's certificates that a certificate or certificates are clearly invalid;
- evidence that the ship's logs, manuals or other required documentation are not on board, are not maintained or are falsely maintained;
- evidence that serious hull or structural deterioration or deficiencies exist that may place at risk the structural, watertight or weathertight integrity of -the ship;
- evidence that serious deficiencies exist in the safety, pollution prevention or navigational equipment;
- information or evidence that the master or crew are not familiar with essential shipboard operations relating to the safety of ships or the prevention of pollution, or that such operations have not been carried out;
- indications that key crew members may not be able to communicate with each other or with other persons on board;
- absence of an up to date muster list or fire control plan;
- the emission of false distress alerts not followed by proper cancellation procedures;
- receipt of a report of complaint containing information that a ship appears to be substandard.

Deficiency: a condition found not to be in compliance with the conditions of the relevant Convention.

Detention: intervention action taken by the port state when the condition of the ship or its crew does not correspond substantially with the applicable Conventions to ensure that the ship will not sail until it can proceed to sea without presenting a danger to the ship or persons on boar, or without presenting an unreasonable threat of harm to the marine environment.

Expanded inspection: a detailed inspection conducted on those categories of ships identified in Annex V to the Directive.

Inspection: a visit on board a ship to check both the validity of the relevant certificates and other documents, and the overall condition of the ship, its equipment and its crew.

More detailed inspection: an inspection conducted when there are clear grounds for believing that the condition of the ship, its equipment or crew does not correspond substantially with the particulars of the certificates.

Stoppage of an operation: formal prohibition against a ship to continue an operation due to identified deficiencies which, singly or together, render the continuation of such operation hazardous.

Substandard ship: a ship whose hull, machinery, equipment or operational safety is substantially below the standards required by the relevant Conventions or whose crew is not in conformance with the safe manning document.

5. Port State inspections

Port State Control inspections may be undertaken on the basis of:

- the initiative of the Port State,
- the request of, or on the basis of, information regarding a ship provided by another State; or
- information regarding a ship provided by a member of crew, a professional body, an association, a trade union or any other individual with an interest in the safety of the ship, its crew and passengers, or the protection of the marine environment.

All possible efforts shall be made to avoid a ship being unduly detained or delayed. If a ship is unduly detained or delayed, it shall be entitled to compensation for any loss or damage suffered.

On boarding, the Port State Control Officer (PSCO) should examine the vessel's relevant certificates and documents. If the certificates are valid and the inspector's general impression confirm a good standard of maintenance, he should generally confine his inspection to reported or observed deficiencies, if any.

If, however, the PSCO has clear grounds for believing that the ship, its equipment or its crew do not substantially meet the requirements, the PSCO should proceed to a more detailed inspection.

6. Selected ships for inspection

Priority shall be given to the following ships:

- *ships visiting a port of a EU Member State for the first time or after an absence of 12 months or more.*
- *ships flying the flag of a targeted flag State;*
- *ships which have been permitted to leave a port with pending deficiencies to be rectified within a specified period;*
- *ships whose statutory certificates have been issued by an organisation not recognised under the terms of Council Directive 94/57/EC;*
- *ships subject to expanded inspection (see Section 8 below);*
- *ships which have been suspended from their class in the course of the preceeding six months.*

7. More detailed inspection

The following consideration should be taken into account when carrying a more detailed inspection:

Structure: the PSCO's impression of hull maintenance and the general state on deck, the condition of ladderways, guard-rails, pipe coverings and areas of corrosion or pitting should influence the PSCO's decision as to whether it is necessary to make the fullest possible examination of the structure with the ship afloat. Significant areas of damage or corrosion, or pitting of plating and associated stiffening in decks and hulls affecting seaworthiness or strength to take local loads, may justify detention. Damage not affecting seaworthiness will not constitute grounds for judging that a ship should be detained, nor will damage that has been temporarily but effectively repaired for a voyage to a port for permanent repairs.
The PSCO should pay particular attention to the structural integrity and seaworthiness of bulk carriers and oil tankers, whose assessment should be based on the Survey Report File carried on board. If according to the content of the Survey Report File the PSCO deems a more detailed inspection necessary, special attention shall be given to hull structure, piping systems in way of cargo tanks or holds, pump-rooms, cofferdams, pipe tunnels, void spaces within the cargo area and ballast tanks.

Machinery spaces: the PSCO should assess the condition of the machinery and electrical installations so as to ensure that they are capable of providing sufficient continuous power for propulsion and for auxiliary services. Frayed or disconnected quick closing valve wires, disconnected or inoperative extended control rods or machinery trip mechanisms, missing valve hand wheels, evidence of chronic steam, water and oil leaks, dirty tank tops and bilges or extensive corrosion of machinery foundations are pointers to an unsatisfactory organisation of the system's maintenance. A large number of temporary repairs including pipe clips or cement boxes will indicate reluctance to make permanent repairs. Deficiencies such as leaking pump glands, dirty water gauge glasses, inoperable pressure gauges, rusted relief valves, inoperative or disconnected safety or control devices, evidence of repeated operation of diesel scavenge belt or crankcase relief valves, malfunctioning or inoperative automatic equipment and alarm systems and leaking boiler casings or uptakes would warrant inspection of the engine room log-book and investigation into the record of machinery failures and accidents and a request for running test of machinery. If one electrical generator is out of commission, it should be investigated whether power is available to maintain essential and emergency services. If evidence of neglect becomes evident, the PSCO should extend the scope of his investigation to include e.g. tests on the main and auxiliary steering gear arrangements, overspeed trips, circuit breakers.

Load line: if the PSCO is dissatisfied with items such as defective hatch closing arrangements, corroded air pipes and vent coamings, he should examine closely the conditions of assignment of load lines, paying particular attention to closing appliances, means of freeing water from the deck and arrangements concerning the protection of the crew.

Life-saving appliances: apart from failure to carry equipment required by a Convention or obvious defects such as holed lifeboats, the PSCO should look for signs of disuse of, or obstruction to, survival craft launching equipment which may include paint accumulation, seizing of pivot points, absence of greasing, condition of blocks and falls and improper lashing or stowing of deck cargo.
Should such signs be evident, the PSCO would be justified in making a detailed inspection of all life-saving appliances. Such an examination might include the lowering of survival craft, a check on the servicing of liferafts, the number and condition of lifejackets and lifebuoys and ensuring that the pyrotechnics are still valid.

Fire safety: the poor condition of fire and wash deck lines and hydrants and the possible absence of fire hoses and extinguishers in accommodation spaces might make a close inspection necessary. Evidence of a higher than normal fire risk

(e.g. due to poor standard of cleanliness in the machinery spaces) should be investigated, which together with significant deficiencies of fixed or portable fire-extinguishing equipment might lead to the detention of the ship.

Operational requirements: in exercising control of operational requirements, the PSCO should not include any operational tests or impose physical demands which, in the judgement of the master, could jeopardise the safety of the ship and its crew and cargo. The PSCO should ensure, as far as possible, no interference with normal shipboard operations, such as loading and unloading of cargo and ballast, nor should he require demonstration of operational aspects which would unnecessarily delay the ship.
When carrying out operational control, the PSCO may check, inter alia, that responsible officers and crew members are:

- familiar with duties indicated in the master list;
- able to communicate with each other;
- familiar with fire and abandon ship drills;
  familiar with the Shipboard Oil Pollution Emergency Plan (SOPEP);
- familiar with the Fire Control Plan
- familiar with bridge control and navigational equipment;
- familiar with machinery and cargo operations;
- able to understand information given in manuals and instructions relevant to the safe operation of the ship.

Minimum manning standards and certification: the PSCO should check that the ship is manned in accordance with a safe manning document or equivalent document issued by the flag State.
The PSCO should check that all seafarers serving on board hold an appropriate certificate or a valid dispensation and verify that such certificates comply with the applicable safe manning requirements.

8 Expanded inspections

Where there are clear ground for a detailed inspection of a ship belonging to one of the following categories:

- *oil tankers five years or less from the date of phasing out in accordance with MARPOL 73/78 Annex I Regulation 13G;*
- *Bulk carriers older than 12 years of age;*
- *passenger ships;*
- *gas and chemical tankers older than 10 years of age.*

To the extent applicable the following items may be considered as part of an expanded inspection:

All ships

- *Black-out and start of emergency generator;*
- *inspection of emergency lighting;*
- *operation of emergency fire pump with two fire hoses connected to the fire main line;*
- *operation of bilge pumps;*
- *closing of watertight doors;*
- *lowering of one lifeboat to the water;*
  test of remote emergency stop for e.g. boilers, ventilation and fuel pumps;
- *testing of main and auxiliary steering gear;*
- *inspection of emergency source of power to radio installations.*

Oil tankers: in addition to items for "all ships" above, the following items may be considered as part of an expanded inspection:

- *fixed deck foam system;*
- *fire fighting equipment;*
- *fire dampers in engine room, pump room and accommodation;*
- *control of pressure of inert gas and oxygen content thereof;*
- *check of the Survey Report File to identify possible areas requiring inspection.*

Bulk carriers: in addition to items for "all ships" above, the following items may be considered as part of an expanded inspection:

- *possible corrosion of deck machinery foundations;*
- *possible deformation and/or corrosion of hatch covers;*
- *possible cracks or local corrosion in transverse bulkheads;*
- *access to cargo holds;*
- *check of the Survey Report File to identify possible areas requiring inspection.*

Gas and chemical tankers: in addition to items for "all ships" above, the following items may be considered as part of an expanded inspection:

- *cargo tank monitoring and safety devices relating to temperature, pressure and ullage;*
- *oxygen analysing and explosimeter devices, including their calibration;*
- *availability of chemical detection equipment with an appropriate number of suitable gas detection tubes for the specific cargo carried;*
- *cabin escape sets giving suitable respiratory and eye protection for every person on board (if required by the ICOF/COF certificate);*
- *product carried listed in the ICOF/COF certificate;*
- *fixed fire fighting installations on deck.*

9. Typical deficiencies which could lead to detention

To assist the PSCO when deciding whether the deficiencies found are sufficiently serious to merit detention, there follows a list of deficiencies, grouped under relevant Conventions, which are considered to be of such a serious nature that they may warrant the detention of the ship involved. This list is not considered exhaustive but is intended to give examples of relevant items.

SOLAS Convention

- Failure of proper operation of propulsion and other essential machinery and electrical installations;
- insufficient cleanliness of engine room, excess amount of oily-water mixture in bilges, insulation of piping including exhaust pipes in engine room contaminated by oil and improper operation of bilge pumping arrangements;
- failure of the proper operation of the main and auxiliary steering gear;
- absence, insufficient capacity or serious deterioration of personal life-saving appliances, survival craft and launching arrangements;
- absence, non compliance or substantial deterioration of fire detection system, fire alarms, fire-fighting equipment, fixed fire extinguishing installation, ventilation valves, fire dampers and quick closing devices;
- absence, substantial deterioration or non proper operation of the cargo deck are fire protection on tankers;
- absence, non compliance or serious deterioration of lights, shapes of sound signals;
- absence or non proper operation of radio equipment for distress and safety communication;
- absence or non proper operation of navigation equipment;
- absence of corrected navigational charts and/or all other relevant nautical publications necessary for the intended voyage;
- absence of explosion proof exhaust ventilation for cargo pump rooms;
- number, composition or certification of crew not in compliance with safe manning requirements;
- serious operational deficiencies.

IBC Code

- Transport of a substance not mentioned in the Certificate of Fitness;
- missing cargo information;
- missing or damaged high pressure safety devices;
- electrical installations not intrinsically safe;
- sources of ignition in hazardous locations;
- exceeding of maximum allowable cargo quantity per tank;;
- insufficient heat protection for sensitive products.

IGC Code

- Transport of a substance not mentioned in the Certificate of Fitness;
- missing cargo information;
- missing closing devices for accommodation or service spaces;
- bulkhead not gastight;
- defective air locks;
- missing or defective quick closing valves;
- missing or defective safety valves;
- electrical installations not intrinsically safe;
- ventilators in cargo area not operable;
- pressure alarms for cargo tanks not operable;
- gas detection plant and/or toxic gas detection plant defective;
- transport of substances to be inhibited without valid inhibitor certificate.

Load Lines Convention

- Significant areas of damage or corrosion or pitting of plateing and associated stiffening in decks and hull affecting seaworthiness or strength to take local loads, unless properly authorised temporary repairs for a voyage to a port for permanent repairs have been carried out;
- a recognised case of insufficient stability;
- the absence of sufficient and reliable information, in an approved form, which by rapid and simple means enables the master to arrange for the loading and ballasting of the ship in such a way that a safe margin of stability is maintained at all stages and at varying conditions of the voyage, and that the creation of any unacceptable stresses in the ship's structure are avoided;
- absence, substantial deterioration or defecting closing devices, hatch closing arrangements and watertight/weathertight doors;
- overloading;
- absence of, or impossibility to read, draught marks and/or load line marks.

Annex I of the MARPOL Convention

- Absence, serious deterioration or non proper operation of the oily-water filtering equipment, the oil discharge monitoring and control system or the 15 ppm alarm arrangement;
- remaining capacity of slop and/or sludge tank insufficient for the intended voyage;
- Oil Record Book not available;
- unauthorised discharge bypass fitted.

Annex II of the MARPOL Convention

- Absence of P&A Manual;
- cargo not categorised;
- Cargo Record Book not available;
- unauthorised discharge bypass fitted.

STCW Convention

- Failure of seafarers to have an appropriate certificate or a valid dispensation;
- failure to comply with the applicable safe manning requirements of the flag Administration;
- failure of navigational or engineering watch arrangements to conform to the flag Administration's requirements;
- absence in a watch of a person qualified to operate equipment essential to safe navigation, safety radiocommunications or the prevention of marine pollution;
- inability to provide for the first watch at the commencement of a voyage and for subsequent relieving watches persons who are sufficiently rested and otherwise fit for duty.

THE RINA PORT STATE CONTROL DATABASE

RINA has developed a Port State Control database which includes all RINA classed ships for which a notice of detention has been received. For each detention, the following data are entered:

- ship's data,
- port state data,
- deficiencies found,
- categorisation of deficiencies for statistical purposes,
- follow-up of deficiencies.

One of the most important features of our database is the possibility of performing a powerful and stringent analysis of the deficiencies found, in order to identify the most common ones. This is particularly important in order to prevent the Port State Control detention, since it permits to identify:

- necessity of improving checklists for surveys,
- necessity of issuing ad-hoc instructions for surveyors,
- necessity of training surveyors where there is need.,
- fields of major interest for drawing the Owners' attention to, when carrying out routine and extraordinary maintenance.

RINA considers this aspect of the problem as one of the most important in order to reduce the possibility of having a ship detained. In fact, the best way to keep the situation under control is to carry out a regular maintenance, specially were the nature of the item emphasises the possibility of non-conformity with normal safety standards.

The most common deficiencies as they result from our statistics are summarised in the following:

Ship's documents

- Certificates expired or missing;
- information missing on IOPP supplement;
- certificates extended beyond permitted time limits.

Manning

- Officers' certificates not properly endorsed for the particular type of ship;
- discrepancies between safe manning certificate and crew on board;
- safe manning certificate missing.

Safety documentation and crew familiarisation

- Fire plans damaged, missing, out of date, written in languages not understood by crew:
- poor performance of fire and abandon ship drills.

Crew safety and health

- Stairways and ladders in bad condition, steps corroded and / or missing;
- gangway damaged or missing;
- platforms corroded, holed;
- poor Hygienic condition of accommodation, galley, provision store.

Safety of navigation

- navigation lights not working, screens broken;
- radio direction finder to be calibrated;
- magnetic compass in bad condition, liquid level insufficient;
- radar and ARPA inoperable;
- gyrocompass inoperable.

Structural integrity

- hatch covers corroded and / or holed, weathertightness impaired for corrosion and / or failure of securing devices;

- hatch coamings corroded, holed and / or cracked, brackets corroded, distorted, cracked;
- closing appliances on freeboard deck seized, not operable, not weathertight;
- upper deck corroded;
- cargo holds structures corroded and / or distorted;
- weathertight doors corroded, not closing;
- air pipes corroded, closing appliances ineffective.

Fire fighting

- fire dampers inoperable;
- emergency fire pump inoperable;
- fireman's outfits incomplete;
- breathing apparatus incomplete, inoperable, air bottles missing or empty;
- fire main holed and / or repaired by doublers and / or soft patches;
- valves of hydrants seized and inoperable;
- missing and / or deteriorated hoses and nozzles;
- paint locker not provided with fire fighting arrangement, paint stored in spaces not certified as paint lockers;
- CO2 alarm not working, bottles rusted, release device inoperable;
- fire extinguishers missing, damaged, not fixed, empty, not serviced;
- hold back hooks fitted for fire doors;
- inert gas system not properly working, alarms not working.

Machinery arrangements

- auxiliary boiler easing gear for safety valves missing or disconnected;
- steering gear room flat and / or engine room bilge / flats unclean (oil leakage);
- quick closing valves for fuel tanks seized and / or inoperable from outside engine room;
- uncovered lights in machinery spaces, bulbs and / or covers damaged;
- electric cables and / or equipment not properly fixed;
- pipes leaking and / or repaired with soft patches;
- protection from electric shock and or moving parts impaired;
- steering gear flat not provided with anti-slip arrangements;
- emergency generator inoperable, not starting easily;
- flame screens missing or damaged;
- failure of steering gear, alarms not working, incapability of providing full movement from side to side, rudder indicators on bridge not corresponding to that in steering gear room;
- main generators inoperable;
- ship's pipelines by-passed with plastic hoses;
- electric equipment in paint locker not adequate.

Lifesaving appliances

- lifejackets in bad condition and / or missing, lights missing, inoperable, batteries expired;
- liferaft not properly rigged on cradle, weak link missing, hydrostatic release unit not properly connected, not serviced, not marked with expiry date;
- lifeboats hull damaged, rudder damaged, engine inoperable, equipment missing, incomplete, out of date, not properly fixed, bilge pumps inoperable, suction hoses damaged, lifting hooks and side plates corroded;
- lifebuoys in bad condition and / or missing, lights missing, inoperable;
- retro-reflective material missing on lifesaving appliances;
- lifeboat davits moving parts seized, corroded, falls to be renewed, not end for ended, limit switches not working;
- embarkation ladders in bad condition;
- emergency light for abandon not working, not properly fitted, lamps seized;
- portable VHF not working, batteries flat.

Pollution prevention

- oily-water separator and / or alarm not working;
- ballast water polluted by fuel, cargo;

Radio equipment

- 2182 kHz watch receiver not working;
- radar transponders missing, not working, batteries expired;
- EPIRB missing, not working, batteries expired, float-free arrangement unsatisfactory;
- main and emergency transmitter not working, low power.

Chemical tankers and gas carriers

- portable O2 and gas detectors missing, inoperable, not calibrated;
- water spray system inoperable, nozzles seized.

GUIDELINES ON THE APPLICATION OF THE MAINTENANCE CHECKLIST FOR CARGO SHIPS

In order to give a suitable support for maintenance and periodical checks, a maintenance check list and the present guidelines have been prepared by RINA, taking into account the main issues of PSC carried out on RINA classed vessels. While the checklist stresses the attention of the surveyor to the items related to SOLAS, LOAD LINE, MARPOL, STCW and ILO subject to periodical check, the guidelines provide a compact set of related Rules hereunder available to the surveyor for cross references with the regulatory instruments (Conventions). In order to give prompt reference to the items included in the check list, the same sequence and letters for sections are used, items are identified with the same number used in the check list (not all items are provided with guidelines).

TABLE OF REFERENCES TO REGULATORY INSTRUMENTS (CONVENTIONS)

(RULES APPLICABILITY AND RULES REFERENCES)

SOLAS (all cargo ships having GT>500 - Some requirements refers to smaller ships as indicated hereinafter)				
If the vessel's keel laid or similar stage of construction on or after	01.01.1951 but before 26.05.1965	then use	SOLAS 48	**S 48**
If the vessel's keel laid or similar stage of construction on or after	26.05.1965 but before 25.05.1980	"	SOLAS 60	**S 60**
If the vessel's keel laid or similar stage of construction on or after	25.05.1980 but before 01.09.1984	"	SOLAS 74 unamended	**S 74**
If the vessel's keel laid or similar stage of construction on or after	01.09.1984 but before 01.07.1986	"	SOLAS 74/81	**S 81**
If the vessel's keel laid or similar stage of construction on or after	01.07.1986	"	SOLAS 74 amended [1]	**S 92**
Any vessel's keel laid date or similar stage of construction (all ships)	-	"	SOLAS 74 amended (all ships) [2]	**all ships**

IMO CHEMICAL CODES (all chemical tankers and ships carrying products listed in the Codes)				
If the vessel's keel laid or similar stage of construction on or after	01.07.86	then use	IBC Code	**IBC**
If the vessel's keel laid or similar stage of construction before	01.07.86	"	BCH Code	**BCH**

IMO GAS CODES (all gas carriers and ships carrying products listed in the Codes)				
If the vessel's keel laid or similar stage of construction on or after	01.07.86	then use	IGC Code	**IGC**
If the vessel's keel laid or similar stage of construction on or after	31.12.76 but before 01.07.86	"	GC Code (compulsory only for ships provide with a COF gas)	**GC**
If the vessel's keel laid or similar stage of construction before	31.12.76	"	GC Code for existing ships (compulsory only for ships provide with a COF gas)	**GC ex**

Tankers having GT>150 and other ships having GT>400	**MARPOL** 73/78 Annex I	**M I**
All ships carrying chemical products listed in Annex II to MARPOL 73/78	**MARPOL** 73/78 Annex II	**M II**
Ships having length>24 m	**Int. Load Line** Convention 1966	**ILLC**
All ships	**STCW** Convention 1978/91	**STCW**
All ships having GT ≥ 1000 (200 ≤ GT < 1000: as far as practicable)	**ILO 92 / 133** (crew accommodation)	**ILO**
All ships	**COLREG** 1972 amended	**COL**

[1] Incorporates 1983 through 2000 amendments. Some regulations apply depending on the vessel's keel laid or similar stage of construction or on the vessel's tonnage (such cases are clearly identified).

[2] Incorporates 1983 through 2000 amendments. Some regulations apply depending on the vessel's tonnage (such cases are clearly identified).

SECTION B - SHIP'S DOCUMENTS

DOCUMENT	Ref.
Certificate of Class	RINA Rules, Part A
Safety construction certificate	SOLAS 92 I/12(a)(ii)
Safety equipment certificate	SOLAS 92 I/12(a)(iii)
Safety radio certificate	SOLAS 92 I/12(a)(iv)
SOLAS exemption certificate	SOLAS 92 I/12(a)(vi)
International Load Line certificate	LOAD LINE 66 art. 16
Load Line exemption certificate	LOAD LINE 66 art. 6
IOPP certificate	MARPOL 73/78 Annex I reg.5
NLS/IPPC certificate	MARPOL 73/78 Annex II reg.12, 12A
ISPP certificate	MARPOL 73/78 Annex IV reg.4
ICOF / COF chem	IBC Code section 1.5 / BCH Code section 1.6
ICOF / COF gas	IGC Code section 1.5 / GC Code and GC ex Code section 1.6
Safety Management certificate	SOLAS 92 IX/4.3
Document of Compliance	SOLAS 92 IX/4.1
Document of compliance (dangerous goods)	SOLAS 92 II-2/54.3
Carriage of grain	SOLAS 92 VI/9 and IMO Res. MSC.23(59) (Grain Code) section 3
BC Code	IMO Code of Safe Practice for Solid Bulk Cargoes
Cargo gear booklet	ILO Convention 152 art. 25
ILO crew accommodation	ILO Conventions 92 and 133
Tonnage	International Tonnage Convention, 1969 art. 7

SECTION C - MANNING

	Item	Ref.	Guidelines
1	Ship manned in accordance with the Safe Manning Document	**all ships** V/13	**All ships:** ≥ 500 GT shall be provided with an appropriate safe manning document or equivalent issued by the Administration as evidence of the minimum safe manning considered necessary to ensure safety of life at sea.
2	Certificates of the officers	**STCW** II/2, III/2	**All ships:** ≥ 200 GT shall be crewed with master, chief mate, chief engineer and second engineer holding an appropriate certificate for their rank. The certificates shall be issued under the provisions of the STCW Convention 1978 by the Flag Administration and shall specify any limitation imposed.
3	Certificates of the officers in charge of a navigational / engine watch	**STCW** II/4, III/4	**All ships:** ≥ 200 GT shall have navigational / engine watches performed by officers holding an appropriate certificate for their rank. The certificates shall be issued under the provisions of the STCW Convention 1978 by the Flag Administration and shall specify any limitation imposed.
4	Certificated lifeboatmen	**all ships** III/10	**All ships:** deck officers or certificated persons as per Safe Manning Document for operating the survival craft and launching arrangement. One shall be in charge for each survival craft and have a list of its crew. A person capable of operating the engine to be assigned to each motorised survival craft.

SECTION D - SAFETY DOCUMENTATION AND CREW FAMILIARISATION

	Item	Ref.	Guidelines
1	Stability booklet, associated stability plans and information	**all ships** II-1/22 **S 92** II-1/25-8 **ILLC**/10 **M I**/25(5) **IBC**/2 **IGC**/2	**All ships:** to be supplied with stability information approved by the Flag Administration.
2	Grain loading manual	**all ships** VI/9	**All ships:** carrying grain in bulk shall be provided with information regarding ship's stability and grain loading in printed booklet, approved by the Flag Administration (see also IMO Grain Code section 6)
3	Loading manual / electronic loading instrument operation manual	**ILLC**/10 **S92** XII/11 **RINA** B/11.2	**All ships:** to be supplied with approved information for the loading and ballasting of the ship avoiding creation of unacceptable stresses **All ships** : have to be provided with an approved loading manual, except those of Category II less than 90 m in length in which the deadweight does not exceed 30% of the displacement at the summer loadline draught **All ships of Category I** : have to be provided with an approved loading instruments **All bulk carriers, ore carriers and combination carriers**: having L ≥150 m are to be provided with an approved loading manual and an approved computer-based loading instrument
4	Damage control plans	**S 92** II-1/23-1	**S 92 (01.02.92):** (applicable only to dry cargo ships): plans permanently exhibited or available on the bridge showing boundaries and openings of watertight compartments, means of closure and position of controls, arrangements for correction of list due to flooding.
5	Manoeuvring information	**S 81** II-1/28	**S 81:** stopping times, ship headings and distances recorded on trials, performances with inoperative propellers (multiple propeller ships) available to the master.
6	Instructions for maintenance and operation of all installations/equipment for fighting and containment of fire: readily available, language understood by crew	**all ships** II-2/20	**All ships:** to be kept under one cover, readily available in an accessible position.
7	Training manual for lifesaving appliances: provided in each crew messroom and recreation room or in each crew cabin	**all ships** III/18.2, 51	**All ships:** to be provided with the manual / video concerning: donning of lifejackets and immersion suits, muster, boarding and launching the survival craft, illumination in launching areas, use of survival and detection equipment, use of radio equipment, emergency repairs of lifesaving appliances.
8	Instructions for on-board maintenance of lifesaving appliances	**all ships** III/19.3, 52	**All ships:** to include: checklist for lifesaving appliances inspection, maintenance and repair instructions, schedule of maintenance, lubricating points, replaceable parts, spare parts, log for records of inspections and maintenance.
9	Operating instructions for steering gear posted: navigating bridge and steering gear compartment	**all ships** V/19-2©(i)	**All ships:** block diagram showing the change-over procedures for remote steering gear control systems and steering gear power units.
10	Oil Record Book	**M I**/20	**All ships:** to be provided with an Oil Record Book Part I (Machinery space operations) and all oil tankers to be provided also with Part II (Cargo/ballast operations). Entries in Part I: ballasting or cleaning oil fuel tanks, discharge of dirty ballast / cleaning water from oil fuel tanks, disposal of sludge, discharge overboard / disposal of bilge water accumulated in machinery spaces. Entries in Part II: loading/unloading of oil cargo, internal transfer of oil cargo during voyage, ballasting of cargo tanks / CBT, cleaning of cargo tanks including COW, discharge of ballast (except SBT), discharge from slop tanks, closing of slop tanks valves and CBT/cargo tanks separation valves after slop tanks discharge operations, disposal of residues. Entries to be at least in English or French, signed by the responsible officer. Oil Record Book to be available at all times and kept for three years after the last entry.
11	S.O.P.E. plan	**M I**/26	**All ships:** shall have this plan approved by the Flag Administration.
12	Charts and publications for intended voyage (charts, coast pilot, sailing directions, light list, tide tables, tidal current tables): available and updated	**all ships** V/20	**All ships:** shall carry adequate and up-to-date charts, sailing directions, lists of lights, notices to mariners, tide tables and all other nautical publications necessary for the intended voyage.

	Item	Ref.	Guidelines
13	Fire plans: permanently exhibited, permanently stored in weathertight containers outside deckhouse, updated, language understood by crew	**all ships** II-2/20	**All ships:** permanently exhibited, showing clearly, for each deck: control stations, A and B divisions, fire detection and alarm system, sprinkler, fire-extinguishing appliances, means of access to compartments, ventilating system including fans control positions, dampers, relationship between fans and ventilated spaces. Alternatively, booklets shall be supplied to each officer and one copy shall be available in an accessible position. They shall be written using the Flag State language and English or French if different. A duplicate set of fire plans or booklets shall be permanently stored in a prominently marked weathertight enclosure outside the deckhouse.
14	Posters or signs provided on or in the vicinity of survival craft and their launching control	**all ships** III/9	**All ships:** posters or signs shall be provided on or in the vicinity of survival craft and their launching control and shall: - illustrate the purpose of controls and the procedures for operating the appliance and give relevant instructions or warnings - be easily seen under emergency lighting conditions - use symbols in accordance with IMO recommendations (refer to IMO Res. A.603(15))
15	International code of signals	**all ships** V/21	**All ships:** required to carry radio installations, shall have a copy of the international code of signals.
16	Muster list: crew members duties shown, posted in conspicuous places, language understood by crew	**all ships** III/8, 53	**All ships:** to be exhibited in conspicuous places including bridge, engine room and crew accommodation spaces. It shall specify details on the emergency alarm signal and consequent actions to be taken. It shall include crew duties: operation of watertight and fire closing appliances; equipping, preparation and launching of survival craft; use of communication equipment; manning of fire parties; special duties for fire fighting; officers responsible for keeping lifesaving appliances ready and in good condition; substitutes of key persons.
22	Cargo securing Manual	**S92** VI/5.6 **S92** VII/5.6	**All ships**: cargo units, including containers, shall be loaded, stowed and secured in accordance with the Cargo Securing Manual
23	Procedures and arrangements manual	**M II**/5	**All chemical tankers:** shall have this manual approved by the Flag Administration.
24	Cargo Record Book	**M II**/9	**All chemical tankers:** to be provided with a Cargo Record Book as part of the official ship's log-book or in a form according to MARPOL standard. Entries in the book: loading/unloading of cargo, internal transfer of cargo during voyage, ballasting of cargo tanks, cleaning of cargo tanks, discharge of ballast from cargo tanks, disposal of residues to reception facilities, discharge into the sea or removal by ventilation of residues in accordance with M II/5. Entries in the book shall be at least in English or French, signed by the responsible officer. Oil Record Book to be available at all times and kept for three years after the last entry.
25	Information for the safe carriage of the products	**IBC**/16.2.3 **BCH**/5.2.2 **IGC**/18	**All chemical tankers and gas carriers:** to be provided with information for the products being carried. including a stowage plan, physical and chemical properties, actions against spills, actions against personal contact, fire-fighting, cargo transfer, cleaning, gas-freeing, ballasting.
26	Enhanced survey programme report file	**all ships** XI/2	**All ships:** (bulk carriers and oil tankers) subject to an enhanced survey programme shall have on board, for their lifetime, a survey report file consisting of: reports of structural surveys, condition evaluation reports and thickness measurements reports.
27	Instructions for stowage of bulk cargoes	**All ships** VI/7.2	**All cargo ships carrying bulk cargoes**: to be provided with a booklet including following information: stability data, ballasting and deballasting rates and capacities, maximum allowable load per unit surface area of tank top plating, maximum allowable load per hold, general loading and unloading instructions, any special restriction imposed, maximum permissible forces and moments during loading, unloading and voyage.
28	Loading and unloading sequences	**S 92** VI/7.2 **RINA** B/11.2	**All ships(single skin bulk carriers of 150 m length and above)** contracted for construction before 01/07/1998: to be provided with an approved manual with typical loading sequences
29	Inert gas system instruction manual	**all ships** II-2/62.21	**All ships:** to be provided with manual concerning operations, safety, maintenance requirements, occupational health hazards and procedures for faults or failures connected to the use of the IGS.
30	Dedicated CBT operation manual	**M I**/13A(4)	**All oil tankers:** provided with a dedicated CBT system, shall have this manual approved by the Flag Administration.
31	COW operations and equipment manual	**M I**/13B(5)	**All oil tankers:** provided with a COW system, shall have this manual approved by the Flag Administration.
32	Operational procedures for special ballast arrangements	**M I**/13D(1)(a)	**All existing oil tankers:** having special ballast arrangements, shall have these procedures approved by the Flag Administration.

	Item	Ref.	Guidelines
33	Operations manual for the oil discharge monitoring and control system	**M I**/15(3)(c)	**All oil tankers:** provided with an ODMCS, shall have this manual approved by the Flag Administration.
35	Witness an abandon ship drill. Verify that no language problems exist and the crew is properly mustered and familiar with their duties.	**all ships** III/18.3	**All ships:** each member of the crew shall participate in at least one abandon ship drill every month. This drill shall take place within 24 h of the ship leaving a port if more than 25% of the crew have not participated in abandon ship on board that particular ship in the previous month. An abandon ship drill shall include: - summoning of crew to muster stations with emergency alarm - verifying that lifejackets are correctly donned - lowering of at least one lifeboat (each lifeboat to be launched and manoeuvred in the water every 3 months). - starting and operating the lifeboat engine - operation of davits used for launching liferafts.
36	Witness a fire drill. Verify that no language problems exist, the crew is familiar with the information given in the fire control plan/booklet and with their duties, fire teams are properly dressed and equipped, communication and co-ordination exist between bridge and fire team.	**all ships** III/18.3	

SECTION E - LOGBOOK ENTRIES

	Item	Ref.	Guidelines
1	Steering gear test/drills (12 hours before departure)	**all ships** V/19-2	**All ships:** within 12 hours before departure steering gear to be checked and tested. Items concerned: main and auxiliary steering gears, remote control system, bridge steering position, emergency power supply, rudder angle indicators, remote control power failure alarms, steering gear power failure alarms, automatic equipment. Checks required: full movement of the rudder, visual inspection of the steering gear, operation of means of communication.
2	Three-monthly emergency steering drills	**all ships** V/19-2	**All ships:** every three months. Practice of emergency steering procedures: direct control from steering gear compartment, communication, alternative power supplies.
3	Monthly abandon ship drills	**all ships** III/18.3, 18.5	**All ships:** one drill each month. Each lifeboat and rescue boat launched every three months.
4	Monthly fire drills	**all ships** III/18.3, 18.5	**All ships:** one drill each month.
5	On-board training in use of lifesaving equipment	**all ships** III/18.4, 18.5	**All ships:** each crew member to be trained in the use of lifesaving appliances not later than 2 weeks after he joins the ship. Training in use of liferaft davits each 4 months.
6	Weekly visual inspection of survival craft / rescue boat and launching appliances	**all ships** III/19.6.1	**All ships:** weekly inspections compulsory, logbook entry recommended
7	Weekly operation of lifeboat / rescue boat engines	**all ships** III/19.6.2	**All ships:** weekly inspections compulsory, logbook entry recommended
8	Weekly testing of the general emergency alarm	**all ships** III/19.6.3	**All ships:** weekly inspections compulsory, logbook entry recommended
9	Monthly inspection of lifesaving appliances and lifeboat equipment using the relevant checklist	**all ships** III/19.7	**All ships:** every month, using the checklist provided in the instructions for on-board maintenance.
10	Monthly checking of breathing apparatus	**all chem.** **IBC**/14.2.6 **BCH**/3.16.8	**All chemical tankers:** a responsible officer should inspect each breathing apparatus once a month.

SECTION F - CREW SAFETY AND HEALTH

	Item	Ref.	Guidelines
1	Rails, guards, protective clothing and equipment, warning signs posted in crew work areas	**ILO** **S 81** II-1/36 **S92** II-1/36	**S 81, S 92:** ear protectors provided for personnel working in excessively noisy spaces.

SECTION G - SAFETY OF NAVIGATION

	Item	Ref.	Guidelines
1	Check daylight signalling lamp with emergency and batteries	**all ships** V/11	**All ships:** ≥ 150 GT to be provided with an efficient daylight signalling lamp connected also to the emergency system.
2-3	Check magnetic compasses: liquid level satisfactory, deviation table provided Check speaking tube between magnetic compass and bridge	**all ships** V/12(b)(i), (iii)	**All ships:** ≥ 150 GT to be provided with a standard magnetic compass + a steering magnetic compass unless information from standard m.c. are readable by the helmsman at the steering position. Adequate means of communication between standard and navigation control positions to be provided. A spare magnetic compass interchangeable with the standard m.c. to be provided unless a steering m.c. or a gyrocompass is provided. **All ships:** each a.m. magnetic compass to be adjusted and its table of residual deviations to be available at all times.
4	Check gyrocompass	**all ships** V/12(d), (e)	**All ships:** built on or after 1.9.84, and ≥ 500 GT to be fitted with a master gyrocompass readable by the helmsman; built on or after 1.9.84, and ≥ 1600 GT to be fitted with gyrocompass repeater(s) for taking bearings over an arc of 360°; built before 1.9.84, and ≥ 1600 GT to be fitted with a master gyrocompass readable by the helmsman and with gyrocompass repeater(s) for taking bearings over an arc of 360°.
5	Check emergency steering information	**all ships** V/12(f)	**All ships:** provided with a telephone or other means of communication for relaying heading information. **Ships built on or after 1.2.92 and ≥ 500 GT:** to be provided for arrangements for supplying visual compass readings to the emergency steering position.
6	Check radar(s)	**all ships** V/12(g), (h)	**All ships:** ≥ 300 GT shall be fitted with a radar installation capable of operating in the 9 Ghz frequency band. Ships ≥ 10000 GT shall be fitted with two radar installations, at least one being capable of operating in the 9 Ghz frequency band.
7	Check radar(s) plotting facilities	**all ships** V/12(i)	**All ships:** required to have a radar installation shall have facilities for plotting radar readings (at least as effective as a reflection plotter for ships built on or after 1.9.84 and ≥ 1600 GT).
8	Check Automatic Radar Plotting Aid (ARPA)	**all ships** V/12(j)	**All ships:** ≥ 10000 GT built on or after 1.9.84 shall be fitted with an ARPA **Tankers:** ≥10000 GT built before 1.9.84 shall be fitted with an ARPA **All ships (not tankers):** ≥15000 GT built before 1.9.84 shall be fitted with an ARPA
9	Check echo-sounding device: paper and ink provided	**all ships** V/12(k)	**All ships:** ≥ 500 GT (built on or after 25.5.80) and ≥ 1600 GT (built before 25.5.80) shall be fitted with an echo-sounding device.
10	Check speed and distance indicator	**all ships** V/12(l)	**All ships:** built on or after 1.9.84 and ≥ 500 GT shall be fitted with a device to indicate speed and distance. Ships required to be fitted with an ARPA shall be fitted with a device to indicate speed and distance through the water.
11	Check rudder angle indicator	**all ships** V/12(m)	**All ships:** ≥ 500 GT (built on or after 1.9.84) and ≥ 1600 GT (built before 1.9.84) shall be fitted with an indicator showing the rudder angle readable from the conning position.
12	Check propellers rate of revolution indicator	**all ships** V/12(m)	**All ships:** ≥ 500 GT (built on or after 1.9.84) and ≥ 1600 GT (built before 1.9.84) shall be fitted with indicators showing the rate of revolution of each propeller readable from the conning position.
13	Check variable pitch propeller/lateral thrust propellers pitch and operational mode indicator	**all ships** V/12(m)	**All ships:** ≥ 500 GT (built on or after 1.9.84) and ≥ 1600 GT (built before 1.9.84) shall be fitted with indicators showing the pitch and operational mode of variable pitch propellers and / or lateral thrust propellers readable from the conning position.
14	Check rate of turn indicator	**all ships** V/12(n)	**All ships:** built on or after 1.9.84 and ≥ 100000 GT shall be fitted with a rate of turn indicator.
15	Check radio direction finding apparatus	**S92** V/12(p)	**All ships:** ≥ 1600 GT shall be fitted with a radio direction finding apparatus.
16	Check radio homing device	**all ships** V/12(q)	**All ships:** ≥ 1600 GT built on or after 25.5.80 but before 1.2.95 shall be fitted with a radio equipment for homing on the radiotelephone distress frequency (2182 kHz) until 1.2.99.
17	Check records of periodical tests performed on board for items not tested	**all ships** V/12	**All ships:** when an equipment cannot be tested due to the condition in which the survey is carried out (e.g. speed indicator, ship alongside), the relevant records of periodical inspections must be checked.
18	Check pilot ladders and hoists/pilot transfer arrangements, lighting, heaving line and lifebuoy with self-igniting light	**all ships** V/17	**All ships:** efficient, kept clean and in good order. Gateway, handholds, stanchions for safe passage on to /into / off the ship. Proper lighting, lifebuoy equipped with self-igniting light and heaving light ready for use. Mechanical pilot hoist (where provided) of type approved and efficient.

	Item	Ref.	Guidelines
19,20	Lights and shapes	**COL** 20-24, 27-30	**All ships:** (when power driven) shall show a fwd masthead white light, an aft masthead white light (L ≥ 50 m), sidelights (green stbd, red port) and a white sternlight. When under towing shall show a towing yellow light, two masthead white lights in a vertical line (three and a diamond shape when the length of the tow exceeds 200 m), sidelights (green stbd, red port) and a white sternlight. When not under command shall show two all-round red lights, two balls, sidelights (green stbd, red port) and a white sternlight. When anchored shall show a fwd all-round white light or a ball and an aft all-round white light at a lower level. Vertical positioning of lights: fwd masthead light at least 6 m (or ship's breadth if greater) above the hull (need not to exceed 12 m). When two mastheads are carried, aft one higher at least 4,5 m than fwd one. Aft one above the fwd one when seen 1000 m from the stem at sea-level in all normal conditions of trim. Sidelights not above 3/4 height above hull of fwd masthead light. Horizontal positioning: of lights: two masthead lights spaced more than 0,5 L (need not to exceed 100 m). Fwd masthead light not more than 0,25 L from the stem. Sidelights not forward the fwd masthead light.
21	Test ship whistle, bell and gong	**COL** 33	**All ships:** shall be provided with a whistle and a bell. If L≥100m shall be in addition provided with a gong

SECTION H - HULL: STRUCTURAL INTEGRITY AND ARRANGEMENTS

H-1 - STRUCTURAL INTEGRITY

	Item	Ref.	Guidelines
1 2 3	General examination of the hull: fractures, wastage, pitting or damage to the extent that may impair ship's seaworthiness, doublers fitted without being recorded	**ILLC**/1	General strength of the hull to be sufficient for the draught corresponding to the freeboard assigned. Ships built and maintained in conformity with the requirements of RINA Rules may be considered to possess adequate strength.
4	Freeboard marks properly marked and painted. Check positions of deck line and load line.	**ILLC**/8 IACS LL4 int.	The ring, lines and letters shall be painted in white or yellow on a dark ground or in black on a light ground. They shall also permanently marked on the sides of the ship. Permanently marked is considered to include welding of the marks.
7	Check weathertight doors: - permanently and strongly attached to the bulkhead - gaskets and clamping devices provided and efficient - operated from both sides of the bulkhead.	**ILLC**/12	All access openings in bulkheads at ends of enclosed superstructures shall be fitted with doors of steel or other equivalent material and framed, stiffened and fitted so that the whole structure is of equivalent strength to the unpierced bulkhead and weathertight when closed.
8	Check cargo and other hatchways and coamings	**ILLC**/14,15,16	General strength of coamings and covers satisfactory. Condition of means for securing and maintaining weathertightness satisfactory. Test for tightness may be required at surveyor's satisfaction.
9	Check machinery space openings: weathertightness, covers, casings and coamings	**ILLC**/17	Machinery space openings shall be properly framed and efficiently enclosed by steel casings. Access openings in such casings shall be fitted with doors complying with the requirements of Reg. ILLC/12(1). Sills: h>600mm (pos.1), h>380mm (pos.2).
10	Check manholes and flush scuttles: watertightness, covers and bolts	**ILLC**/18(1)	Manholes and flush scuttles shall be closed by substantial covers capable of being made watertight. Unless secured by closely spaced bolts, the covers shall be permanently attached.
11	Check other openings in freeboard decks and associated deckhouse or companionway: weathertightness, bulkhead plating, doorways, gaskets and clamping devices	**ILLC**/18(2)	Openings in freeboard decks other than hatchways, machinery space openings manholes and flush scuttles shall be protected by an enclosed superstructure or by a deckhouse or companionway. Doorways in such deckhouses or companionways shall be fitted with doors complying with Reg. ILLC/12(1). Sills: h>600mm (pos.1), h>380mm (pos.2).
12	Check ventilators: coamings, closing covers, gaskets, clamping devices	**ILLC**/19	Satisfactory strength of coamings. Efficient weathertight closing appliances provided and, in ships with length < 100 m, permanently attached (closing appliances not required where coamings extend more than 4,5 m above the deck (position 1) or 2,3 m (position 2). Coamings: h>900mm (pos.1), h>760mm (pos.2).
13	Check air pipes: heads, means for closing the openings	**ILLC**/20	Satisfactory strength of pipes above deck. Efficient and permanently attached closing appliances provided. Height from the deck: h>760mm (freeboard deck), h>450mm (superstructure deck).

14	Check watertight and structural integrity of openings below the freeboard deck	**ILLC**/21	Cargo ports and other similar openings in the sides of ships below the freeboard deck shall be fitted with doors so designed as to ensure watertightness and structural integrity commensurate with the surrounding shell plating.

	Item	Ref.	Guidelines
15	Check scuppers, inlets and discharges: non-return valves, positive means of closing (when fitted)	**ILLC**/22	Efficient and accessible means for preventing water from passing inboard provided for discharges from spaces below the freeboard deck and from superstructures fitted with weathertight doors. Where means for operating the positive action valve are provided, they shall be readily accessible and provided with an indicator showing whether the valve is open or closed. Scuppers and discharge pipes penetrating the shell either more than 450mm below the freeboard deck or less than 600mm above the summer load waterline shall be provided with a non-return valve at the shell. This valve may be omitted if the piping is of substantial thickness.
16	Check sidescuttles	**ILLC**/23	Side scuttles to spaces below the freeboard deck or to spaces within enclosed superstructures shall be fitted with efficient hinged inside deadlights arranged so that they can be effectively closed and secured watertight.
17	Check compliance of vertically corrugated bulkhead between cargo holds no1 and no 2	**S 92** XII/4-6-9 **RINA** A/6 app 1	**All single side skin bulk carriers**: built before 01/07/98 and having L ≥150 m carrying solid bulk cargoes having bulk density of 1,78 t/m3 or above fitted with vertically corrugated bulkheads between cargo holds no 1 and 2, have to comply with minimum scantlings requirements.Compliance to be re-assessed at each Special Survey
18	Check efficiency of means of detection of water ingress into cargo holds	**S 92** XII/10 **RINA** A/6 app 1	**All single side skin bulk carriers**: built before 01/07/98 and having L ≥150 m carrying solid bulk cargoes having bulk density of 1,78 t/m3 constructed with an insufficient number of transverse watertight bulkheads to withstand flooding of foremost cargo hold, have to be provided with high water level alarms in all cargo holds, or in cargo conveyor tunnels, giving an audible and visual alarm on the navigation bridge, and with detailed information on flooding scenarios and evacuation preparedness

H-2 - HULL ARRANGEMENTS			
	Item	**Ref.**	**Guidelines**
1, 2	Guard-rails, bulwarks, walkways	**ILLC**/25	Efficient guard-rails or bulwarks are fitted on all exposed parts of the freeboard and superstructure decks. Satisfactory means (i.e.: guard-rails, lifelines, gangways or underdeck passages) are provided for the protection of the crew in getting to and from their quarters, the machinery space and all the other parts used in the necessary work of the ship.
3	Check arrangements for safe access to bow	**S92** II-1/3-3	**All oil tanker, chemical tanker, gas carrier**: not later than 01/07/01 to be provided with suitable means to gain safe access to the bow even in severe weather conditions, which can be an under-deck passageway , a permanent gangway fitted at or above the level of the superstructure deck or a permanent walkway fitted at freeboard deck level
4	Fitting for timber deck cargoes	**ILLC**/43, 44	**All ships:** fitted for carriage of timber deck cargoes shall be provided with bulwarks with freeing ports or specially strong construction rails. Ventilators shall be efficiently protected. Uprights to be provided when required by the nature of the timber. Spacing not to exceed 3 m. Strong angles or metal socks or similar to be provided for securing the uprights. Over-all lashings to be provided (spacing not to exceed 3 m). Eye-plates for lashings to be fitted to the sheer strake or deck stringer plate (3 m spacing). First eye-plate from a superstructure bulkhead within 2 m. Minimum lashing diameter 19 mm (if close-link chain) or equivalent if wire rope, fitted with sliphooks and turnbuckles, accessible at all times. Wire rope lashings to have a short length of long link chain to permit regulation. Additionally, guard-rails or lifelines for protection of crew shall be provided each side of the deck cargo. Vertical separation of lines/rails ≤ 330 mm, total height ≥ 1 m.
6	Check local and remote control of watertight doors and relevant indicators	**S 92** II-1/23-1,25-9	**S 92 (01.02.92):** dry cargo ships: sliding and hinged doors in watertight bulkheads and shell doors which could lead to major flooding to be provided with indicators on the bridge. Local and remote (from bridge) control to be provided. Control to be operable in case of main power failure. Doors normally closed at sea to be provided only with indicator system and permanently marked “to be kept close at sea”.
8	Test electronic loading instrument	**ILLC**/10 **RINA** Part B/11.2	The instrument is to be tested for accuracy, using the load cases in the operation manual approved by RINA.
12	Emergency towing arrangements	**all ships** II-1/3-4	**All oil tankers, chemical tankers and gas carriers** ≥ 20,000 dwt**:** an emergency towing arrangement approved by the Administration is to be fitted at both ends of. Such equipment is to be fitted at the first scheduled dry-docking survey and in any case within 1.1.99.
13	Check no alteration to navigation bridge visibility	**all ships** V/22	**All ships**: having L ≥ 45 m to comply with minimum requirements relevant to the view of the sea surface from the conning position and to blind sectors. For existing ships, these requirements will be met where practicable; structural alterations need not to be require**d**

SECTION I - MACHINERY AND ELECTRICAL ARRANGEMENTS

Guidelines: Underlined items compulsory also for existing tankers, chemical tankers and gas carriers ≥ 10000 GT.

	Item	Ref.	Guidelines
5	Check condition of non-metallic expansion joints below deepest load waterline	**All ships** II-1/26.9	**All ships**: non-metallic expansion joints in piping systems which penetrate the ship's side and both the penetration and the expansion joints are located below the deepest waterline to be inspected and replaced at intervals recommended by manufacturer
7	Test bilge pump satisfactory pumping and check bilge lines	**S 81** II-1/21 **S 92** II-1/21	**S 81, S 92:** draining provided for any watertight compartment. Two pumps to be provided (one may be driven by main engine), sanitary, ballast and general service pumps accepted as bilge pumps. Distribution boxes and manually operated to be accessible at any time. Passage of water from the sea or from a compartment to another to be prevented.
8	Machinery, boilers, pressure vessels arranged in way to minimise danger to crew for hot surfaces, moving parts, etc.	**S 81** II-1/26 **S 92** II-1/26	**S 81, S 92:** machinery protected as to reduce to a minimum any danger to persons on board, due regard being paid to moving parts, hot surfaces and other hazards.
10	Check absence of fire risks in machinery spaces (no leakage, bilge/floors free of oil)	**S 81** II-1/15 **S 92** II-1/15	**S 81, S 92** free standing oil fuel tanks in machinery spaces to be provided with an oil-tight spill tray with drain pipe to a spill oil tank. Precaution to be taken preventing oil escape from pumps, filters or heaters towards heated surfaces. Non-metallic pipes accepted only if approved type. UMS shall have screened pipes to avoid oil spray to heated surfaces. **S 81:** sounding pipes not to terminate where risks of ignition may occur. Flat glass level gauges with self-closing devices accepted. **S 92 (01.02.92):** sounding pipes not to terminate in machinery spaces unless an oil-level gauge is provided, distant from sources of ignition or screened, provided with self-closing device and self-closing small diameter check-cock. Flat glass level gauges with self-closing devices accepted.
11	Check boilers	**S 81** II-1/32 **S 92** II-1/32	**S 81, S 92:** not less than two safety valves and two means of indicating water level (one to be a direct reading gauge). Automatic boilers: alarm and shut off for: low water level air supply failure, flame failure. Propulsion boilers: high water level alarm.
13	Test main and emergency steering gear system	**S 60** II/29, 30 **S 74** II-1/29, 30 **S 81** II-1/29, 30 **S 92** II-1/29, 30	**S 60, S 74:** auxiliary system capable of steering at navigable speed and of being brought speedily into action. To be power operated where rudder stock diameter > 355,6 mm. Not required where main system is duplicated. Ships ≥ 5000 GT: powered also by emergency source, two circuits widely separated. Ships < 5000 GT: auxiliary powered by motor intended for other services accepted. **S 81, S 92:** capable of steering up to 35° each side. Auxiliary system to be provided (duplication of main accepted provided that a single failure on one unit does not impair the other). Control of main and auxiliary from bridge (independent) and steering room. Where rudder stock diameter > 230 mm, emergency supply is required. Steering to be powered also by emergency source, two circuits widely separated. Ships < 1600 GT: auxiliary powered by motor intended for other services accepted. Tankers ≥ 10000 GT and other ships ≥ 70000 GT: duplication compulsory.
15	Steering gear room provided with handrails and gratings or other non-slip surfaces	**S 81** II-1/29	**S 81, S 92:** readily accessible, separated from machinery spaces, provided with railings and non-slip surfaces.
16	Check correspondence of bridge and local rudder angle indicators	**S 60** II/29, 30 **S 74** II-1/29, 30 **S 81** II-1/29, 30 **S 92** II-1/29, 30	**S 60, S 74:** position indicated at the principal steering station. **S 81, S 92:** communication system to be tested. Indication provided both in bridge and steering room.
18	Check steering gear alarms and indicators: - power failure (*) - low level for hydraulic fluid reservoir (*) - electric overload (*) also existing tankers/gas carriers	**S 60** II/30 **S 74** II/30 **S 81** II-1/29, 30 **S 92** II-1/29, 30	**S 60, S 74:** running indication of the electric motors in a suitable location. **S 81, S 92:** power failure to control system (bridge), low level of hydraulic fluid (bridge and E.R.). Running indication of the electric motors (bridge and suitable machinery control position). Electric overload in engine control room.
19	Verify that operating instructions (block diagram) are permanently displayed on the navigation bridge and steering gear compartment	**all ships** V/19.2	**all ships**: simple operating instructions with a block diagram showing the change-over procedures for remote steering gear control system and steering gear power units shall be permanently displayed on the navigating bridge and in the steering gear compartment.
21	Test ventilation for machinery spaces	**S 60** II/54, 69 **S 74** II-2/54 **S 81** II-2/48 **S 92** II-2/48	**S 60, S 74:** engine room ventilation capable of being stopped from the outside. Annular spaces around funnels closing appliances. **S 81, S 92:** additionally, ventilation of Cat. A machinery spaces not to pass through accommodation, service spaces, control stations unless provided with fire damper or A-60 insulated through the said spaces.
23	Test engine room telegraph, secondary means of communication, communication with any other control position	**S 60** II/33 **S 74** II-1/32 **S 81** II-1/37 **S 92** II-1/37	**S 60, S 74:** two means to be provided, one being an engine room telegraph. **S 81, S 92:** two means to be provided, one being an engine room telegraph. Appropriate means to be provided to any other control position of the engines.

	Item	Ref.	Guidelines
24	Test engineers' alarm clearly audible in accommodation	**S 81** II-1/38 **S 92** II-1/38	**S 81, S 92:** to be operated from engine control room or platform and clearly audible throughout the accommodations.
25	Test under load of main source of electrical power and main lighting	**S 81** II-1/41 **S 92** II-1/41	**S 81, S 92:** one set sufficient for all main services.
26	Location and test under load of emergency source of electrical power (main supplies to be checked)	**S 60** II/26 **S 74** II-1/26 **S 81** II-1/43, 44 **S 92** II-1/43,44	**S 81, S 92:** capable of being readily started. If automatic start is provided, three consecutive starts to be performed and secondary means to be available in 30 min (manual start accepted). For supplies see annex 1.
30	Check explosion proof lights in accumulator batteries stores, paint lockers, acetylene stores or similar spaces	**S81** II-1/45.10 **S92** II-1/45.10	See item 30 below.
31	Precautions against shock and fire hazards are effective	**S 60** II/27 **S 74** II-1/27 **S 81** II-1/45 **S 92** II-1/45	**S 60, S 74:** check earth connection. Switchboards easily accessible (front and rear parts), non-conducting mats fitted. Hull return not allowed for tankers. Lights and wiring properly supported. Circuits protected against short circuit and overload. Batteries suitably housed in properly ventilated compartments. **S 81, S 92:** additionally, hull return not accepted for ships ≥ 1600 GT. No electrical equipment admitted in dangerous areas unless certified as explosion proof.
32	Insulation mats around main and emergency switchboards	**S 60** II/27 **S 74** II-1/27(a)(ii) **S 81** II-1/45.2 **S 92** II-1/45.2	**S 60, S 74, S 81, S 92:** where necessary, non-conducting mats or gratings shall be provided at the front and rear of the switchboard.
33	Paint locker: all electrical equipment fitted inside is not-igniting and certified for safe usage in flammable gas mixtures	**S 81** II-1/45.10 **S 92** II-1/45.10	**S 81, S 92:** no electrical equipment shall be installed in paint lockers unless the Administration is satisfied that such equipment is: i. essential for operational purposes ii. of a type which will not ignite the mixture concerned iii. appropriate to the space concerned iv. appropriately certified for safe usage in the dusts, vapours or gases likely to be encountered. The following equipment may be installed in paint lockers provided that it is of an explosion-proof safe type (Sect.D, Part II, Chapt.2, para 2.9.2.6 of RINA Rules): a. lighting fittings b. heating appliances c. ventilator motors. Switches, protective devices and motor control gear of the above services are preferably to be located outside the paint locker. **Ships built after 1.1.96:** the enclosed spaces giving access to the paint locker may be considered as non-hazardous provided that: 1. the door of the paint store is a gastight door with self closing devices without holding back arrangements (a watertight door may be considered as a gastight door) 2. the paint store is provided with independent natural ventilation system ventilated from a safe area; and 3. warning notices are fitted adjacent to the paint locker entrance stating that the locker contains flammable liquids.
35	Random test of systems and alarms for unattended machinery spaces	**S 81** II-1/46-53 **S 92** II-1/46-53	**S 81, S 92:** alarms required for: fire in boiler air supply casings, scavenging air belts of main engines, engine bearings temperature (power ≥ 2250 kW or bore > 300 mm), high level in bilge wells, automatic shutdown of engines, automatic changeover of generators, power failure of alarm system. Alarms transferred to: machinery control position, engineers' public rooms and cabins, bridge.

SECTION J - FIRE FIGHTING

	General requirement for all fire-fighting appliances	**all ships** II-2/21	**All ships:** to be kept in good order and availability for immediate use at all times during the voyage.

J-1 - FIRE FIGHTING (MISCELLANEOUS)

	Item	Ref.	Guidelines
2	Verify (as far as practicable) that bulkheads and decks are in accordance with fire integrity requirements in the fire plan	**S 60** II/54 **S 74** II-2/51 **S 81** II-2/42-44, 46, 49, 50 **S 92** II-2/42-44, 46, 49, 50	**S 60, S 74:** ships ≥ 4000 GT: B-class bulkheads of corridors in accommodation. Steel stairtrunks. Kitchens, paint lockers, lockers, bosun stores adjacent to accommodations: steel bulkheads. **S 81, S 92:** one of three methods to be chosen: IC (B and C class divisions + smoke detection system in corridors, stairways, escape routes), IIC (sprinkler system with no restrictions on the type of bulkheads),IIIC (fire detection system with no restrictions on the type of bulkheads).
3	General examination of means of escape: no obstructions, acceptable dead-end corridors, lighting, steps, handrails in good conditions	**S 60** II/68(b) **S 74** II-2/53 **S 81** II-2/45 **S 92** II-2/45	**S 60, S 74:** one means from accommodation and from spaces where crew normally work. Two from machinery spaces. **S 81, S 92** two from accommodations, widely separated. Machinery spaces: two, widely separated, one being a continuous fire sheltered trunk from the lower level to an open deck. **S 81, S92:** dead end corridors (i.e. corridors provided with one escape route only): lengths of more than 7 m not acceptable
4	Test fire detection and alarm system	**S 81** II-2/11, 52 **S 92** II-2/52	**S 81, S 92:** an automatic fire detection system is required in any machinery space where an automatic and remote control system in lieu of continuous manning is fitted.
5 6	Ventilation	**S 74** II-2/54(a) **S 81** II-2/48 **S 92** II-2/48	**S 74, S81, S 92:** main inlets and outlets can be closed from outside ventilated spaces. Power for ventilation can be shutdown from outside the ventilated spaces.
7	Check as far as practicable, that openings (doors, ductwork, electrical wires, piping, etc.) do not impair the fire resistance of the bulkhead	**S 60** II/54 **S 74** II-2/51 **S 81** II-2/42-44, 46, 47, 49, 50 **S 92** II-2/42-44, 46, 49, 50	**S 60, S 74, S 81, S 92:** not impairing the fire resistance of the bulkheads.
8	Test automatic and manual fire doors	**S 81** II-2/47 **S 92** II-2/42-44, 46, 49, 50	**S 81, S 92:** doors in boundary bulkheads of cat. A machinery spaces reasonably gas-tight and self closing; not fitted with hold-back hooks unless fail safe type.
13	Check remote means of closing fuel oil valves. In case shut-off valves are operated by air, check air cylinder pressure and pressure gauge	**S 60** II/69 **S 74** II-2/54 **S 81** II-2/15 **S 92** II-2/15	**S 60, S 74, S 81, S 92:** oil fuel transfer and similar pumps provided with remote controls for stopping outside machinery spaces. Oil fuel suction of storage, settling and service tanks above double bottom provided with valve capable of being closed outside the machinery spaces (S81: also lubricating oil).
14	Check fire extinguishers (foam, CO_2, dry powder): ■ for each type, number indicated in the fire control plan available (see also item J-1.1) ■ condition of cylinders ■ validity of the extinguishing medium (*) (*) see Annex 2 to the Guidelines	**S 48** II/51 **S 60** II/65 **S 74** II-2/52 **S 81** II-2/6 **S 92** II-2/6	**S 48:** ships ≥ 1000 GT: 5 in accommodation, 2+1 for each burner in boiler spaces, at least 2 in machinery spaces + 1 foam (45 kg). **S 60, S 74:** ships ≥ 1000 GT: 5 in accommodation, 2+1 for each burner in boiler spaces, at least 1 each 1000 hp in machinery spaces (not less than 2, need not to exceed 6) + 1 foam (45 kg). **S 81, S 92:** to the satisfaction of the Administration. Ships < 1000 GT: not less than 5.
15	Portable foam applicator unit in boiler room and spaces containing internal combustion machinery: ■ check air-foam nozzle, portable tank of foam making liquid, spare tank, stowage container - test connection to fire main	**S 81** II-2/6.4, 7 **S 92** II-2/6.4, 7	**S 81, S 92:** there shall be in each boiler room at least one set of portable applicator units. A portable foam applicator unit shall consist of an air-foam nozzle of an inductor type capable of being connected to the fire main by a fire hose, together with a portable tank containing at least 20 l of foam-making liquid and one spare tank.
16	Check foam type fire extinguisher of at least 135 l capacity in boiler room	**S 81** II-2/7.1.3 **S 92** II-2/7.1.3	**S 81, S 92:** there shall be not less than one approved foam-type extinguisher of at least 135 l capacity or equivalent in each boiler room.
17	Check foam type fire extinguishers of at least 45 l capacity in spaces containing internal combustion machinery	**S 81** II-2/7.2 **S 92** II-2/7.2	**S 81, S 92:** each space containing internal combustion machinery shall be provided with a sufficient number of foam type extinguishers (*) each of at least 45 l capacity or equivalent. (*) froth type according to S 74 and S 60
20	Fireman's outfits: ■ easily accessible ■ ready for use - stored in widely separated positions	**S 74** II-2/52(j) **S 81** II-2/17.4 **S 92** II-2/17.4	**S 74, S 81, S 92:** the fireman's outfits shall be so stored as to be easily accessible and ready for use and they shall be stored in widely separated positions.

	Item	Ref.	Guidelines
21	Fireman's outfit: check availability of personal equipment	**all ships** II-2/17	**All ships:** fireman's outfit personal equipment shall consist of: ■ protective clothing of material to protect the skin from heat and burns and with water-resistant outer surface ■ boots and gloves ■ a rigid helmet ■ an electric safety lamp (hand lantern) - an axe
22	Fireman's outfit: check breathing apparatus	**all ships** II-2/17	**All ships:** a breathing apparatus may be either: 1. a smoke helmet or smoke mask which shall be provided with a suitable air pump and a length of air hose sufficient to reach from the open deck to any part of the holds or machinery spaces; or 2. a self contained compressed air-operated breathing apparatus, the volume of air contained in the cylinders of which shall be at least 1200 l, or other self-contained breathing apparatus which shall be capable of functioning for at least 30 minutes. A number of spare charges shall be provided. - a rigid helmet
23	Fireman's outfit: fireproof lifeline available	**all ships** II-2/17.2	**All ships:** for each breathing apparatus a fireproof lifeline of sufficient length and strength shall be provided
24	Paint locker: fire extinguishing arrangement	**all ships** II-2/18.7	Paint lockers shall be protected by an appropriate fire-extinguishing arrangement approved by the Administration. 1. paint locker **deck area < 4 m^2** : portable fire extinguishers of CO_2 or dry chemical powder type to be provided as a minimum near the accesses of the paint locker. 2. paint locker **deck area ≥ 4 m^2** : fixed fire extinguishing system to be provided to be operated from outside the paint locker. In case 2 above, the fixed system may use CO_2 , dry chemical powder or pressure spray water. If a CO_2 system is provided, the quantity of CO_2 shall be sufficient to give a minimum volume of free gas equal to 40% of the gross volume of the paint locker. If a pressure spraying system is provided, the system may be fed by a connection from the ship's fire main. The number and arrangement of the nozzles shall be such as to ensure an effective distribution of water of at least 5 litres/m^2 per minute over the whole deck surface of the paint locker. If a dry chemical powder system is provided, the number and arrangement of the nozzles shall be such as to ensure an effective distribution of powder inside the paint locker with a ratio of at least 0.5 Kg/ m^2.
25	Paint locker: structural fire protection	**S 60** II/54(e) **S 74** II-2/51(e) **S 81** II-2/44,47,58 **S 92** II-2/44,47,58	**S 60, S 74:** cargo ships ≥ 4,000 grt: paint stores when adjacent to accommodation spaces and emergency generator rooms, if any, shall be of steel or equivalent material. **S 81, S 92:** cargo ships other than oil tankers: paint stores are identified as high risk service spaces. The minimum fire integrity of bulkheads and decks shall be as prescribed in Tables 44.1 and 44.2. The fire resistance of doors shall, as far as practicable, be equivalent to that of the division in which they are fitted. **S 81, S 92:** oil tankers: paint stores are identified as high risk service spaces. The minimum fire integrity of bulkheads and decks shall be as prescribed in Tables 58.1 and 58.2. The fire resistance of doors shall, as far as practicable, be equivalent to that of the division in which they are fitted.
27	Arrangements for ro-ro cargo spaces	**S 81** II-2/53.2 **S 92** II-2/53.2	An approved automatic fire detection and fire alarm system to be provided. Spaces capable of being sealed to be protected by CO2 or Halon. Other spaces: high expansion foam or water spray system. At least one portable fire extinguisher at each access to the cargo space. Three water fog applicators and one portable foam applicator unit for each cargo space, provided that the ship has at least two portable foam applicator units. Closed cargo spaces provided with ventilation system granting at least six air changes per hour. System to be entirely separated from the others: Capable of being controlled from the outside. Indicators of any loss of the required ventilating capacity to be provided on the navigating bridge. Arrangements for rapid shut-down and effective closure to be provided. Electrical equipment and wiring suitable for use in explosive mixtures except that above a height of 450 mm from the deck spark-preventing enclosed equipment shall be accepted provided that the ventilating system grants a continuous rate of at least ten air changes per hour.

	Item	Ref.	Guidelines
29	Galleys exhaust ducts	**S 81** II-2/16.7 **S 92** II-2/48	**S 81, S 92:** exhaust ducts from galleys to be A class where they pass through accommodations or spaces containing combustible materials. Each exhaust duct to be fitted with grease trap, fire damper, fans shut-off within galley, fixed fire extinguishing system.
30 to 45	Requirements for tankers	**S 74** II-2/56, 57 **S 81** II-2/56-58 **S 92** II-2/56-58	**S 74:** A-60 separation between cargo pump room/cat. A machinery spaces and accommodation, service spaces, control stations. A-60 boundaries of superstructures where facing the cargo area (extended 3 m aft). No doors in front part of superstructures unless the boundaries of the space are A-60. fixed portlights (fitted with covers in the first tier). Self-closing doors in engine room casing without hold-back hooks. Ventilation ducts provided with fire dampers where Cat. A machinery spaces and accommodation could be interconnected. **S 81, S 92:** as per S 74, except accommodation to be built according to IC method.
30 to 45	Requirements for tankers: ventilation in cargo areas	**S 74** II-2/58 **S 81** II-2/59 **S 92** II-2/59	**S 74:** openings of tanks far from sources of ignition. Inlets/outlets of superstructures not to permit gas penetration. Suction type ventilation for cargo pump room (20 changes per hour), outlets far from ignition sources. **S 81, S 92:** venting of cargo tanks to be distinct from air pipes of other compartments (could be incorporated with IGS). Outlets/inlets arranged to avoid risk of ignition and passage of flame. Venting provided with drainage to cargo tanks. Press-vac valves to be provided (at least 2 m from deck and 5 m from air intakes or sources of ignition). Provided with free flow system for vapours (at least 6 m from deck and 10 m from air intakes or sources of ignition) or high velocity valves (at least 2 m from deck and 10 m from air intakes or sources of ignition). Suction type ventilation for cargo pump room (20 changes per hour), outlets far from ignition sources; non-sparking type fans. **All oil tankers**: within 01/07/01 venting arrangements to be provided with a secondary means of allowing full relief of vapour, air or inert gas mixtures to prevent over pressure or under pressure in the system in case of failure of the primary means, such a second set of p/v valves, rupture disks, aliquid-filled p/v breaker or pressure sensors in each tank with a monitoring system and an alarm, activated by detection of over-pressure or under-pressure conditions within a tank

J-2 - FIRE MAIN SYSTEM

	Item	Ref.	Guidelines
1	Inspect main fire pumps and pressure gauges	**S 48** II/45, 51(b) **S 60** II/56, 65(b) **S 74** II-2/5, 52 **S 81** II-2/4 **S 92** II-2/4	**S 48:** pumps provided to satisfy 2/3 delivery of bilge pumps. Ships ≥ 1000 GT: at least two pumps (not in the same compartment). **S 60, S 74:** total capacity of pumps in order to have water running at a speed of 2,7 m/s in a pipe having a diameter = 1,68 $(L(B+D))^{0,5}$+25 (mm) (Total capacity needs not to exceed 180 t/h). Ships ≥ 1000 GT: at least two independent pumps (not in the same compartment, ships ≥ 2000 GT: a separated emergency pump to be provided). Bilge, ballast or sanitary pumps may be used as fire pumps. Each of the required fire pumps (apart from the emergency) shall have at least 80% of total capacity divided by the number of required pumps. **S 81, S 92:** additionally minimum delivery of pumps = 25 t/h. Emergency fire pump: minimum delivery 40% or 25 t/h. Diesel prime movers capable of being readily started. No direct access between EFP room and machinery spaces. In cargo ships with UMS, a remote starting of the fire pumps or permanent pressurisation is required. Isolating valves to be provided outside fire pumps spaces. All nozzles to be dual purpose type.
2 4	Simultaneous jets of water	**S 48** II/45(a) **S 60** II/56© **S 74** II-2/5© **S 81** II-2/4.4 **S 92** II-2/4	**S 48:** each pump capable of delivering water to two nozzles (12 m jet). **S 60, S 74:** two pumps capable of delivering water to two nozzles (ships ≥ 6000 GT: 2,8 kg/sqcm, ships ≥ 1000 GT: 2,6 kg/sqcm).
9	Check hydrants under pressure: ■ no leakage ■ fire hoses easily coupled - condition of valves	**S 48** II/45, 51(b) **S 60** II/56, 65(b) **S 74** II-2/5, 52 **S 81** II-2/4 **S 92** II-2/4	**S 48:** ships ≥ 1000 GT: at least two in machinery spaces, capable of spraying water. **S 60:** ships ≥ 1000 GT: two jets in each part of the ship. One hose+nozzle each 30 m of ship's length (at least 5), excluding machinery spaces. Unless one hose+nozzle is provided for each hydrant they must be interchangeable.
11	Check nozzles: ■ no leakage (for nozzles under pressure) - dual type where required	**S 74** II-2/5(g) **S 81** II-2/4.8 **S 92** II-2/4.8	**S 74:** dual purpose type in machinery spaces or in similar spaces where the risk of spillage of oil exists **S 81, S 92:** all nozzles shall be dual purpose type (i.e. spray/jet type) incorporating a shut off

	Item	Ref.	Guidelines
13	International shore connection	**S 60** II/56(h) **S 74** II-2/52(d) **S 81** II-2/19 **S 92** II-2/19	**S 60, S 74:** ships ≥ 1000 GT: one ISC to be provided, available for being used on either side of the ship. Outside/inner diameters = 178/64 mm. Bolt circle diameter = 132 mm. Four slotted holes, 19 mm in diameter. Thickness = 14,5 mm. Four bolts, 16 mm in diameter, 50 mm in length. **S 81, S 92:** ships ≥ 500 GT: as above.

J-3 - CO_2 SYSTEM(S)			
S 48 II/47	**S 60 II/58**	**S 74 II-2/7**	**S 81 II-2/5**
BOILERS (GT ≥ 1000) OIL FUEL UNITS (GT ≥ 1000) DRY CARGO (GT ≥ 2000) **(1)** (*) CARGO TANKS (GT ≥ 2000) **(3)** RO-RO SPACES	BOILERS (GT ≥ 1000) OIL FUEL UNITS (GT ≥ 1000) ENGINES (GT ≥ 1000, P ≥ 750 kW) DRY CARGO (GT ≥ 2000) **(1)** CARGO TANKS (GT ≥ 2000) **(2,3)** (*) RO-RO SPACES	BOILERS (GT ≥ 1000) OIL FUEL UNITS (GT ≥ 1000) ENGINES (GT ≥ 1000, P ≥ 750 KW) DRY CARGO (GT ≥ 2000) **(1)** RO-RO SPACES	BOILERS (GT ≥ 1000) OIL FUEL UNITS (GT ≥ 1000) ENGINES (GT ≥ 1000, P ≥ 375 KW) DRY CARGO (GT ≥ 2000) **(1)** RO-RO SPACES DANGEROUS GOODS CARGO PUMP ROOMS
(*) see the note after item J-10 of these Guidelines			
CO2 (0,56 m3/kg) available for 30% of the gross volume of the biggest compartment served. Each pipe provided with a valve operable from the deck clearly marked with the name of the compartment served. Big holds provided with fwd and aft pipes. Shutdown for ventilators and closing appliances operable from outside the compartment served. Sound alarm provided before discharge.	CO2 (0,56 m3/kg) available for 30% of the gross volume of the biggest cargo compartment served or 40% machinery spaces plus casing (partial) / 35% machinery spaces plus casing (the greatest). Each pipe provided with a valve operable from the deck clearly marked with the name of the compartment served. Big holds provided with fwd and aft pipes. Shutdown for ventilators and closing appliances operable from outside the compartment served. Sound alarm provided before discharge.	CO2 (0,56 m3/kg) available for 30% of the gross volume of the biggest cargo compartment served or 40% machinery spaces plus casing (partial) / 35% machinery spaces plus casing (the greatest), free air in air containers to be taken into account. Each pipe provided with a valve operable from the deck clearly marked with the name of the compartment served. Big holds provided with fwd and aft pipes. Shutdown for ventilators and closing appliances operable from outside the compartment served. Sound alarm provided before discharge. Bottle storage room to be in safe and accessible position and effectively ventilated, separated from compartment served and with gastight boundaries.	CO2 (0,56 m3/kg) available for 30% of the gross volume of the biggest cargo compartment served or 40% machinery spaces plus casing (partial) / 35% machinery spaces plus casing (the greatest), free air in air containers to be taken into account. Each pipe provided with a valve operable from the deck clearly marked with the name of the compartment served (clear instructions to be posted). Big holds provided with fwd and aft pipes. Shutdown for ventilators and closing appliances operable from outside the compartment served. Automatic sound alarm provided before discharge (suitably delayed). Bottle storage room to be in safe and accessible position and effectively ventilated, separated from compartment served and with gastight boundaries and outwards opening door. Means provided to crew for checking the content of bottles.

J-4 - HALON SYSTEM(S)
S 81 II-2/5
BOILERS (GT ≥ 1000) OIL FUEL UNITS (GT ≥ 1000) ENGINES (GT ≥ 1000, P ≥ 375 KW) DRY CARGO (GT ≥ 2000) **(1)** RO-RO SPACES DANGEROUS GOODS CARGO PUMP ROOMS
Halon 1301 available for 5%-7% (4,25%-7%) of the gross volume of the biggest cargo vehicles (machinery) compartment served. Each pipe provided with a valve operable from the deck clearly marked with the name of the compartment served (clear instructions to be posted). Big holds provided with fwd and aft pipes. Automatic shutdown for ventilators and manually operated closing appliances operable from outside the compartment served. Automatic sound alarm provided before discharge (suitably delayed). Bottle storage room to be in safe and accessible position and effectively ventilated, separated from compartment served and with gastight boundaries and outwards opening door. Means provided to crew for checking the content of bottles.

J-5 - FOAM SYSTEM(S)			
S 48 II/51	**S 60 II/60**	**S 74 II-2/10, 9**	**S 81 II-2/9, 8**
BOILERS (GT ≥ 1000) OIL FUEL UNITS (GT ≥ 1000) CARGO TANKS (GT ≥ 2000) **(3)**	BOILERS (GT ≥ 1000) OIL FUEL UNITS (GT ≥ 1000) ENGINES (GT ≥ 1000, P ≥ 750 KW) CARGO TANKS (GT ≥ 2000) **(2,3)** CARGO DECK (GT ≥ 2000) **(2,3)**	BOILERS (GT ≥ 1000) OIL FUEL UNITS (GT ≥ 1000) ENGINES (GT ≥ 1000, P ≥ 750 KW) CARGO TANKS (GT ≥ 2000) **(2,3)**	BOILERS (GT ≥ 1000) OIL FUEL UNITS (GT ≥ 1000) ENGINES (GT ≥ 1000, P ≥ 375 KW) RO-RO SPACES CARGO PUMP ROOMS
Foam available for 15 cm height on the largest compartment floor. System operable from outside the compartment served.	Foam available for 15 cm height on the largest compartment floor. System operable from outside the compartment served.	High expansion: foam available for protecting the largest compartment at a rate of at least 1 m in depth per minute. Foam available for five times the biggest volume served. Expansion ratio not to exceed 1000:1. Froth generators, sources of power supply, froth forming liquid and means of control grouped and readily accessible from outside the compartment served. Low expansion: foam available for 15 cm height on the largest compartment floor. System operable from outside the compartment served. Expansion ratio not to exceed 12:1.	High expansion: foam available for protecting the largest compartment at a rate of at least 1 m in depth per minute. Foam available for five times the biggest volume served. Expansion ratio not to exceed 1000:1. Froth generators, sources of power supply, froth forming liquid and means of control grouped and readily accessible from outside the compartment served. Low expansion: foam available for 15 cm height on the largest compartment floor. System operable from outside the compartment served. Expansion ratio not to exceed 12:1.

J-6 - SPRINKLER SYSTEM
S 81 II-2/12
ACCOMMODATION **(IIC)**
Each section of sprinklers shall include fail-safe means for giving a visual and audible alarms signal automatically at one indicating unit on the navigating bridge whenever any sprinkler comes into operation. The unit shall indicate the section where fire has occurred and audible and visible alarms shall be repeated in another position to ensure immediate reception by crew. A plan of the system and areas covered to be provided near the unit. Unit provided with test arrangement. Each section capable of being isolated by one stop valve only, provided with pressure gauge, readily accessible by authorised persons and clearly indicated, test valve to be provided. Approved sprinkler heads o provide at least 5 l/m2 per minute. A pressure tank connected to air system and fresh water for replenishing to keep system under pressure and an independent pump, automatically starting for pressure decrease and fitted with test valve to be provided remote from any category A machinery space. Pump, alarms and detection powered by two supplies. System connected via a non-return valve to the fire main.

J-7 - WATER SPRAY SYSTEM(S)			
S 48 II/51	**S 60 II/51**	**S 74 II-2/11**	**S 81 II-2/10**
BOILERS (GT ≥ 1000) OIL FUEL UNITS (GT ≥ 1000)	BOILERS (GT ≥ 1000) OIL FUEL UNITS (GT ≥ 1000) ENGINES (GT ≥ 1000, P ≥ 750 KW)	BOILERS (GT ≥ 1000) OIL FUEL UNITS (GT ≥ 1000) ENGINES (GT ≥ 1000, P ≥ 750 KW) CARGO PUMP ROOMS **(7)**	BOILERS (GT ≥ 1000) OIL FUEL UNITS (GT ≥ 1000) ENGINES (GT ≥ 1000, P ≥ 375 KW) CARGO PUMP ROOMS RO-RO SPACES
No particular requirements.	Type approved nozzles. The system can be divided in some sections. Pump to start automatically for pressure decrease, to deliver sufficient water to all sections, to be outside the compartment served.	Type approved nozzles providing at least 5 litres per square metre per minute. The system can be divided in some sections. Pump to start automatically for pressure decrease, to deliver sufficient water to all sections, to be outside the compartment served. Pump to be driven by independent engine or supplied by emergency generator.	Type approved nozzles providing at least 5 litres per square metre per minute. The system can be divided in some sections. Pump to start automatically for pressure decrease, to deliver sufficient water to all sections, to be outside the compartment served. Pump to be driven by independent engine or supplied by emergency generator.

J-8 - STEAM SYSTEM(S)		
S 48 II/47	**S 60 II/58**	**S 74**
BOILERS (GT ≥ 1000) OIL FUEL UNITS (GT ≥ 1000) DRY CARGO (GT ≥ 2000) **(1)** CARGO TANKS (GT ≥ 2000) **(3)** RO-RO SPACES	DRY CARGO (GT ≥ 2000) **(1)** CARGO TANKS (GT ≥ 2000) **(2,3)** RO-RO SPACES	RO-RO SPACES
Boilers for production of fire-fighting steam to have at least 1 kg/h per 0,75 m3 gross volume of the biggest compartment served. Each pipe provided with a valve operable from the deck clearly marked with the name of the compartment served. Big holds provided with fwd and aft pipes going to the lowest part of the hold. Shutdown for ventilators and closing appliances operable from outside the compartment served.	Boilers for production of fire-fighting steam to have at least 1 kg/h per 0,75 m3 gross volume of the biggest compartment served. Each pipe provided with a valve operable from the deck clearly marked with the name of the compartment served. Big holds provided with fwd and aft pipes going to the lowest part of the hold. Shutdown for ventilators and closing appliances operable from outside the compartment served.	Boilers for production of fire-fighting steam to have at least 1 kg/h per 0,75 m3 gross volume of the biggest compartment served. Each pipe provided with a valve operable from the deck clearly marked with the name of the compartment served. Big holds provided with fwd and aft pipes going to the lowest part of the hold. Shutdown for ventilators and closing appliances operable from outside the compartment served.

J-9 - DECK FROTH SYSTEM		
S 60	**S 74 II-2/61**	**S 81 II-2/61**
CARGO DECK (GT ≥ 2000) **(2,3)**	CARGO DECK (GT ≥ 2000) **(2,3)**	CARGO DECK
	Main control station outside of cargo tank area, adjacent to accommodation, readily accessible and operable. Rate of supply not less than 0,6 litres per minute per square metre (ship's breadth x cargo tanks total length) or 6 litres per minute per square metre (horizontal area of the greatest cargo tank) (the greater) for at least 20 minutes. Expansion ratio not to exceed 150:1. Each monitor to provide at least 50% required froth rate. A monitor and a hose connection for a froth applicator provided each side accommodation front facing cargo area. Valves provided in both the froth main and the fire main, fwd each monitor. Operation of froth system at nominal output to allow contemporary use of fire main with two jets of water.	Main control station outside of cargo tank area, adjacent to accommodation, readily accessible and operable. Rate of supply not less than 0,6 litres per minute per square metre (ship's breadth x cargo tanks total length) or 6 litres per minute per square metre (horizontal area of the greatest cargo tank) or 6 litres per minute per square metre (area protected by largest monitor, not less than 1250 l/minute) (the greater) for at least 20 minutes (30 if no IGS provided). Expansion ratio not to exceed 150:1. Each monitor to provide at least 50% required froth rate. A monitor and a hose connection for a froth applicator provided each side accommodation front facing cargo area. At least 4 applicators to be provided, capacity 400 l and throw 15 m. Valves provided in both the froth main and the fire main, fwd each monitor. Operation of froth system at nominal output to allow contemporary use of fire main with two jets of water.

J-10 - INERT GAS SYSTEM	
S 74 (S 81 II-2/62.20)	**S 81 II-2/62**
CARGO TANKS **(3)**	CARGO TANKS **(3)**
Two fans to be provided, together capable of delivering at least 125% the maximum rated capacity of the cargo pumps. Scrubber provided to cool gas and remove solid and sulphur products. Valves with position indicators to be provided between boiler and scrubber. A gas regulating valve to be provided in the supply main. Following to be provided: non-return valve with positive means of closing and deck water seal supplied by two pumps for protecting machinery spaces, P/V valves for protecting cargo tanks, P/V breaker on the supply main, stop valve on inert gas supply for each tank, continuous recording of oxygen content and inert gas pressure (in cargo control room), portable oxygen analyser, inert gas temperature and pressure indicators (in cargo control room), means for the zero and span calibration of fixed and portable oxygen analysers, alarms for: high oxygen content (exceeding 8%), low gas pressure (less than 100 mm water gauge) , low water level in deck water seal, high gas temperature (*), high gas pressure, low pressure or flow of water to the scrubber (*), high water level in the scrubber (*), failure of inert gas blowers, failure of power supply to control system of gas regulating valve. Automatic shut-down of blowers and gas regulating valve provided for (*) alarms. Gas regulating valve to shutdown automatically for blowers failure.	Two fans to be provided, together capable of delivering at least 125% the maximum rated capacity of the cargo pumps. Scrubber provided to cool gas and remove solid and sulphur products. Oxygen content in inert gas not to exceed 5%. Valves with position indicators to be provided between boiler and scrubber. A gas regulating valve to be provided in the supply main. Following to be provided: non-return valve with positive means of closing and deck water seal supplied by two pumps for protecting machinery spaces, P/V valves for protecting cargo tanks, P/V breaker on the supply main, stop valve on inert gas supply for each tank, continuous recording of oxygen content and inert gas pressure (in cargo control room), portable oxygen analyser, inert gas temperature and pressure indicators (in cargo control room), means for the zero and span calibration of fixed and portable oxygen analysers, alarms for: high oxygen content (exceeding 8%), low gas pressure (less than 100 mm water gauge) , low water level in deck water seal, high gas temperature (*), high gas pressure, low pressure or flow of water to the scrubber (*), high water level in the scrubber (*), failure of inert gas blowers, failure of power supply to control system of gas regulating valve. Automatic shut-down of blowers and gas regulating valve provided for (*) alarms. Gas regulating valve to shutdown automatically for blowers failure.

(1) The Flag Administration may grant exemption under the following conditions (S 48, S 60: A or B or C, S 74/78: A+B or C, S 81: A+B):

A. cargo spaces provided with steel hatch covers and effective means of closing all ventilators and other openings leading to the holds,

B. ship constructed and intended solely for carrying such cargoes as ore, coal, grain, unseasoned timber, and non-combustible cargoes or cargoes which, in the opinion of the Administration, constitute a low fire risk,

C. ship engaged on voyages of short duration (in the opinion of the Administration).

(2) Foam system to be provided for protecting either cargo tanks or cargo deck area.

(3) The following ships are to be provided with an Inert Gas System:

i. all tankers, built on or after 1.6.80, DWT ≥ 20000

ii. crude oil tankers, built before 1.6.80, 20000 ≤ DWT < 40000, delivery of each washing machine ≥ 60 m^3/h (*)

iii. crude oil tankers, built before 1.6.80, DWT ≥ 40000

iv. product carriers, built before 1.6.80, 20000 ≤ DWT < 40000, delivery of each washing machine ≥ 60 m^3/h (**)

v. product carriers, built before 1.6.80, DWT ≥ 40000

(*) if delivery of each washing machine < 60 m^3/h, exemption may be granted

(**) if delivery of each washing machine < 60 m^3/h, exemption is automatic

SECTION K - LIFESAVING APPLIANCES

	General requirement for lifesaving appliances	**all ships** III/19.2	**All ships:** to be kept in good order and availability for immediate use at all times during the voyage.

K-1 - LIFEBOATS

	Item	Ref.	Guidelines
1	Required number	**S 48** III/8, 32 **S 60** III/8, 35 **S 74** III/8, 35 **S 92** III/26	**S 48:** one open lifeboat on each side for the total number of persons on board. Ships ≥ 1600 GT: at least one to be a motor or mechanically propelled lifeboat. Tankers ≥ 3000 GT: two lifeboats aft plus two amidships. **S 60, S 74:** one open lifeboat on each side for the total number of persons on board. Ships ≥ 1600 GT: at least one to be a motor lifeboat (tankers: one for each side). **S 92:** one totally enclosed lifeboat on each side for the total number of persons on board or one free-fall totally enclosed lifeboat after. Ships having length < 85 m, other than oil tankers, chemical tankers and gas carriers may have only liferafts. Lifeboats for chemical tankers and gas carriers carrying toxic cargoes shall be provided also with a self-contained air support system. Lifeboats for oil tankers, chemical tankers and gas carriers carrying cargoes with flashpoint ≤ 60°C shall also be fire-protected. Additionally, a rescue boat shall be provided.
1 to 17	Inventory	**S 48** III/11, 12 **S 60** III/11, 12 **S 74** III/11, 12 **S 92** III/41.8, 47	See annexes 3, 4, 5.
11	Lifeboats properly marked	**S 48** III/15 **S 60** III/20 **S 74** III/20 **S 92** III/41.9, 47.1	**S 48, S 60, S 74:** dimensions, number of persons, ship's name. **S 92:** lifeboats and rescue boat: dimensions, number of person, ship's name, port of registry on each side; ship's identification and number of the lifeboat on top.
12	Retro-reflective tapes	**all ships** III/30.2.7	**all ships** refer to the Recommendation on the Use and Fitting of Retro-Reflective Materials on Life Saving Appliances adopted by IMO Res. A.658(16) made mandatory under SOLAS
15	Embarkation arrangement	**S 48** III/14 **S 60** III/19 **S 74** III/19 **S 92** III/11, 15	**S 48:** one embarkation ladder for each davit. Embarkation areas properly lighted, means to stop water from ship to lifeboats. **S 60, S 74, S 92:** one embarkation ladder for each davit (S 92: not required for free-fall lifeboats). Embarkation and lowering areas properly lighted (also from emergency source), means to stop water from ship to lifeboats.
17	Winches, davits, cables, blocks and sheaves	**S 48** III/33 **S 60** III/36 **S 74** III/36 **S 92** III/15, 48	**S 48:** ship's length > 46 m: gravity type (luffing type accepted where lifeboat's weight < 4064 kg). Ring accepted between sheaves and lifeboat's hooks. **S 60, S 74:** tankers ≥ 1600 GT: gravity type. Other ships: luffing type accepted only where lifeboat's weight < 2300 kg. Limit switches if mechanical hoisting is provided. **S 92:** gravity or free-fall type, provided with launching and recovery arrangements. Limit switches if mechanical hoisting is provided. Launching system from survival craft provided.
19	Operating instructions posted	**all ships** III/9	**All ships:** to be posted near the launching appliances where lighted by the emergency lighting, indicating procedures for launching, adopting IMO blue symbols.
27	Thorough examination and dynamic test	**all ships** III/20.11.1	**All ships:** launching appliances to be serviced at recommended intervals in accordance with onboard maintenance instructions and subject at intervals not exceeding 5 years to a thorough examination(to be carried out with the same philosophy adopted for cargo lifting appliances) and a dynamic test of the winch brake
28	On-load release gear	**all ships** III/20.11.2	**All ships:** lifeboats on-load release gear to be serviced at recommended intervals in accordance with onboard maintenance instructions and to a thorough examination and test during the surveys of the Safequ/Safpas Certificates by properly trained personnel; they shall be also operationally tested under an over load whenever the release gear is overhauled (at least once every 5 years)
29	Falls used in launching	**all ships** III/20.4	**All ships:** to be turned end for end every 30 months and renewed when necessary but not later than 5 years or alternatively to be renewed not later than 4 years without end-for-ending

K-2 - RESCUE BOATS			
	Item	**Ref.**	**Guidelines**
1 to 4	Rescue boats	**S 92** III/26.2,47.	**S 92**: cargo ships shall carry at least one rescue boat complying with the requirements of Reg. III/47. A lifeboat may be accepted as a rescue boat provided that it also complies with the requirements for a rescue boat.

K-3 - LIFERAFTS			
	Item	**Ref.**	**Guidelines**
1-7	Required number	**S 92** III/26.1 except all ships built before 01.07.86: **S 92** III/26.3	**New ships:** one or more rigid or inflatable liferafts for the total number of persons on board where they can be readily transferred on either side of the ship, otherwise total number required on each side. Where a free-fall lifeboat is provided, liferafts for the total number of persons on board to be provided on each side of the ship and at least one side shall be served by launching appliances. Ships having length < 85 m, other than oil tankers, chemical tankers and gas carriers provided only with liferafts shall have the above mentioned liferafts provided that they are sufficient for the total number of persons on each side even when one is lost or damaged (the transferring criteria can be used). If they are not readily transferrable, they must be sufficient for 150% the total persons on each side. Additionally, where survival craft are stowed more than 100 m from the stem or stern, a liferaft stowed as far as possible shall be provided. **Existing ships:** one or more rigid or inflatable liferafts for the total number of persons on board. Additionally, where survival craft are stowed more than 100 m from the stem or stern, a liferaft stowed as far as possible shall be provided.
1-7	Stowage	**S 92** III/26.1.4, 29 except all ships built before 01.07.86: **S 92** III/26.3.2, 29	**New ships:** any liferaft to be stowed being connected to the ship through a float-free arrangement (i.e.: a hydrostatic release unit) with its painter permanently attached to the ship through a weak link. The additional “more than 100 m” liferaft may be securely fastened (not float-free) so as to permit manual release and need not launching appliances. **Existing ships:** any liferaft to be stowed being connected to the ship through a float-free arrangement (i.e.: a hydrostatic release unit) with its painter permanently attached to the ship through a weak link. The additional “more than 100 m” liferaft may be securely fastened (not float-free) so as to permit manual release.
2	Inflatable liferafts servicing	**all ships** III/19.8.1	**All ships:** every 12 months
2	Hydrostatic release units servicing	**all ships** III/19.9.1	**All ships:** every 12 months
3	Marking	**S 60** III/20 **S 74** III/20 **S 92** III/39.7.3, 40.7 **all ships** III/38.6.3.5	**S 60, S 74:** number of persons, serial number, maker (inflatable), number of persons, ship’s name, port of registry (rigid). **S 92:** inflatable: maker’s name, serial number, name of approving authority, SOLAS, type of emergency pack enclosed, date of last servicing, length of painter, maximum permitted height of stowage, launching instructions. Rigid liferafts: as above (apart from date of servicing) + ship’s name and port of registry, number of persons. **All ships:** hydrostatic release unit permanently marked with type and serial number.
4	Embarkation arrangement	**S 60** III/19 **S 74** III/19 **S 92** III/11	**S 60, S 74:** one embarkation ladder for each davit. Embarkation and lowering areas properly lighted, means to stop water from ship to lifeboats.
6	Winches, davits, cables, lifting hooks (if applicable)	**S 92** III/48	**S 92:** gravity launching type. Launching system from survival craft provided.

K-4 - LIFEBUOYS			
	Item	**Ref.**	**Guidelines**
1-5	Required number	**S 48** III/34 **S 60** III/37 **S 74** III/37 **S 92** III/27	**S 48:** at least 8, half provided with automatic light (tankers: battery powered), one for each side provided with 27,5 m lifeline. Immediately available. **S 60, S 74:** at least 8, half provided with automatic light (tankers: battery powered) two of them also with smoke signal, one for each side provided with 27,5 m lifeline. Immediately available and marked with ship’s name and port of registry. **S 92:** 8 (L < 100 m), 10 (L < 150 m), 12 (L < 200 m), 14 (L ≥ 200 m), half provided with self-igniting light (tankers: battery powered) two of them also with smoke signal and quickly releasable from the bridge, one for each side provided with a lifeline of 30 m or twice the stowage height (the greater). Immediately available and marked with ship’s

			name and port of registry.

SECTION K - 4 - LIFEBUOYS

	Item	Ref.	Guidelines
6	Retro-reflective material	**all ships** III/30.2.7	**All ships:** all lifesaving appliances to be fitted with retro-reflective material according to IMO recommendations.

K-5 - LIFEJACKETS			
	Item	**Ref.**	**Guidelines**
1	Required number	**S 48** III/17 **S 60** III/22 **S 74** III/22 **S 92** III/7.2	**S 48:** one for each person. Immediately available, position clearly marked. **S 60, S 74:** one for each person, also inflatable (tankers: not accepted) and provided with whistle. Immediately available, position clearly marked. **S 92:** one for each person + suitable number for persons on watch and for use at remotely located survival craft stations, also inflatable and provided with whistle. Immediately available, position clearly marked.
2	Inflatable lifejackets servicing	**all ships** III/19.8.1	**All ships:** every 12 months
4	Lights	**all ships** III/27.2	**All ships:** each lifejacket to be provided with a light.
5	Retro-reflective material	**all ships** III/30.2.7	**All ships:** all lifesaving appliances to be fitted with retro-reflective material according to IMO recommendations.

K-6 - IMMERSION SUITS AND THERMAL PROTECTIVE AIDS			
	Item	**Ref.**	**Guidelines**
1	Required number	**all ships** III/27.3 **S 92** III/7.3	**All ships:** three immersion suits for each lifeboat and one thermal protective aid for each person not provided with an immersion suit where lifeboats are open or partially enclosed type. Ships provided only with liferafts to have an immersion suit for each person on board, unless liferafts are davit-launched. **S 92:** one immersion suit for every person assigned to crew the rescue boat. This requirement can be fulfilled by the above.
3	Retro-reflective material	**all ships** III/30.2.7	**All ships:** all lifesaving appliances to be fitted with retro-reflective material according to IMO recommendations.

K-7 –LIVESAVING AND SAFETY EQUIPMENT (MISCELLANEOUS)			
	Item	**Ref.**	**Guidelines**
1	Stowage locations	**S 92** III/20.10	**All ships:** containers, brackets, racks and other similar stowage locations for life-saving equipment shall be marked with symbols in accordance with IMO Res. A.760(18), indicating the devices stowed in that location and their number, if more than one device is stowed.
2	Distress signals	**S 48** III/19 **S 60** III/24 **S 74** III/24 **S 92** III/6.3	**S 48:** number to the satisfaction of the Administration (parachute to be included). **S 60, S 74:** number to the satisfaction of the Administration (12 parachute to be included).
3	Two-way VHF radiotelephone apparatus	**all ships** III/6.2.1	**All ships:** 300 ≤ GT < 500: two two-way VHF radiotelephone apparatus to be provided; GT ≥ 500: three two-way VHF radiotelephone apparatus to be provided. Apparatus installed before 01.02.92 can be accepted until 01.02.99 if compatible to the new standards.
4	Radar transponders	**all ships** III/6.2.2	**All ships:** 300 ≤ GT < 500: one radar transponder to be provided; GT ≥ 500: one radar transponder for each side to be provided. They are to be stowed in way they can be rapidly placed into any survival craft apart from liferafts required by III/26.1.4. Alternatively, one radar transponder may be placed in any survival craft (liferafts included).
5	Line-throwing appliances	**S 48** III/18 **S 60** III/23 **S 74** III/23 **S 92** III/17, 49	**S 48, S 60, S 74, S 92:** one with 4 projectiles and 4 lines.
6	On-board communication and alarm system	**S 92** III/4.1	**S 92 (01.07.86):** an emergency means comprising either fixed or portable equipment or both shall be provided for two-way communications between emergency control stations, muster and embarkation stations and strategic positions on board.
7	General alarm system	**S 92** III/4.2, 50	**S 92 (01.07.86):** provided to be used for summoning crew to muster stations and to initiate the actions included in the muster list. Capable of sounding the general alarm signal on the ship's whistle and on an electrically operated warning system. Operable from bridge and other strategic positions (not ship's whistle). Audible throughout accommodations and crew areas. Powered also by emergency source. To be supplemented by either a public address system or

			other suitable means of communication.

SECTION L - POLLUTION PREVENTION

L-1 - ANNEX I: OIL

	Item	Ref.	Guidelines
1 2	Oily-water separator	**M I**/9, 16	**All ships delivered before 6.7.93:** may discharge outside special areas into the sea through a 15 ppm oily-water separating equipment (100 ppm accepted until 6.7.98). Ships ≥ 10000 GT shall be also provided with an oil discharge monitoring and control system unless they are provided with a 15 ppm oily-water separating equipment. Ships delivered after 6.7.93 may discharge outside special areas into the sea through a 15 ppm oily-water separating equipment. Ships ≥ 10000 GT shall be also provided with a 15 ppm alarm and automatic stop of discharge. Ships trading in special areas can retain oily waters on board in an holding tank of adequate volume. All oily water to be discharged to reception facilities, quantity, time and port of discharge to be recorded in the Oil Record Book. Discharge of oily waters in special areas are permitted through 15 ppm separators provided with 15 ppm automatic stopping device.
3	Segregation of oil fuel and water ballast systems	**M I**/14	New oil tankers ≥ 150 GT and other new ships ≥ 4000 GT shall not carry ballast water in any oil fuel tank. Ships ≥ 400 GT, built on or after 1.7.82 shall not carry oil fuel in a forepeak or in a compartment forward the collision bulkhead.
5, 6	Sludge tank arrangements	**M I**/17, 19	Compulsory for all ships ≥ 400 GT. To be connected only to two standard discharge connections (outside diameter = 215 mm, inner diameter according to pipe outside diameter, bolt circle diameter = 183 mm, 6 slotted holes 22 mm diameter, flange thickness = 20 mm, 6 bolts 20 mm diameter suitable length).
8, 9	Oil Discharge Monitoring and Control System (ODMS)	**M I**/15, 16	Compulsory for all oil tankers ≥ 150 GT, residues to be transferred to slop tank(s) (at least two for new oil tankers ≥ 70000 t DWT). An oil discharge monitoring and control system to be provided. Effective oil/water interface detectors to be provided. Some exemptions granted for restricted service.
10 to 12	Segregated ballast tanks system	**M I**/13	Compulsory for all new crude oil tankers ≥ 20000 t DWT, all new product carriers ≥ 30000 t DWT, all existing crude oil tankers ≥ 40000 t DWT unless provide with COW system
14	Crude Oil Washing (COW) system	**M I**/13	Compulsory for all new crude oil tankers ≥ 20000 t DWT
16	Check discharge piping for dirty or oil-contaminated water and part flow system	**M I**/18	One manifold for connection to reception facilities compulsory for all oil tankers on the open deck on both sides of the ship. Pipelines for discharge of ballast or oily waters from cargo area to be led to open deck or to the ship's side above waterline. Stoppage from open deck where discharge is visible to be provided in new oil tankers.

L-2 - ANNEX II: CHEMICAL

1 to 9	Chemical tankers Oil tankers with NLS/IPPC certificate Gas tankers with NLS/IPPC certificate	**M II**/5A, Standards for procedures and arrangements	New: ships constructed on or after 1.7.86, Ex: other ships A, B, C, D: category A, B, C, D substances Every ship to be provided with pumping and piping arrangements such as to limit the residue in pipes and suction well to a quantity of 0,1 m3 (New-B), 0,3 m3 (New-C, EX-B), 0,9 m3 (Ex-C). Ex need not to comply if prewash procedure is adopted and subsequent washing or ballast water is discharged to reception facilities. Some substances require a cargo heating system. The underwater discharge of noxious substances is to be fitted in the cargo area near the turn of bilge. Slop tanks are not compulsory but they are needed for some washing procedures. Cargo tanks may be used for this purpose. Residues of cargo may be removed by means of ventilation provided that precautions are taken against ignition. All a.m. procedures to be in accordance with the ship's P&A Manual approved by the Administration.

SECTION M - RADIO EQUIPMENT

Guidelines:T = transmitter; R = receiver

GMDSS SHIPS

All ships shall be provided with the following equipment, according to the sea area in which they are engaged (i.e.: a ship engaged in sea areas A1+A2 shall be provided with the equipment required for sea area A1 + the equipment required for the sea area A2).

Sea area A1: area within the RTP coverage of at least one VHF coast station in which continuous DSC alerting is available,

Sea area A2: area, excluding A1, within the RTP coverage of at least one MF coast station in which continuous DSC alerting is available,

Sea area A3: area, excluding A1 and A2, within the coverage of an INMARSAT geostationary satellite in which continuous alerting is available,

Sea area A4: area outside A1, A2 and A3.

GMDSS radio station shall be capable of transmitting and receiving:

a) ship-to-shore distress alerts,
b) ship-to-ship distress alerts,
c) search and rescue co-ordinating communications,
d) on-scene communications,
e) signals for locating (finding of ships, aircraft, persons in distress),
f) maritime safety information (navigational and meteorological warnings and forecasts),
g) general radiocommunications to and from shore-based radio systems or networks (operational and public correspondence traffic other than distress),
h) bridge-to-bridge communications (with other ships).

■: identifies an item which is compulsory,

▲x: identifies a family of items among which one is to be compulsorily installed,

①: identifies a set of items which may be an alternative to the set identified by ②.

	Guidelines	Ref.	A1	A2	A3	A4
1	Every radio station shall be provided with electrical lighting, independent of the main and emergency sources of the ship, for radio controls. Call sign, ship station identity and other required codes to be clearly marked. Controls of the VHF RT safety channels shall be immediately available on the bridge convenient to the conning position. Adequate tools and spares for maintenance shall be provided.	**S92** IV/4, 6	■	■	■	■
2	Radio personnel: all ships shall carry personnel qualified for distress and safety radiocommunication purposes to the satisfaction of the Administration. They shall be holders of certificates specified in the Radio Regulations.	**S92** IV/16	■	■	■	■
3	Radio logs: a record shall be kept of all incidents connected to the radiocommunication service relevant to safety.	**S92** IV/17	■	■	■	■
4	Sources of energy: there shall be available at all times a supply of energy sufficient to operate the radio installations and to charge any batteries used as part of a reserve source. A reserve source shall be available in the event of failure of the ship's main and emergency sources and shall be independent of the propelling power of the ship. Where batteries are used: a means for automatically charging to minimum capacity within 10 h shall be provided, the capacity shall be checked once a year (not at sea) by fully discharging using normal current and period (10 h). The reserve source shall supply: VHF (7.1.1), MF radio installation (9.1.1), MF/HF radio installation (10.2.1 or 11.1), INMARSAT ship earth station (10.1.1), all radio installations capable of being connected to the reserve source, electrical lighting, devices for receiving input of information. The period of supply shall be 1 h for ships built before 1.2.95, if they have an emergency source in full compliance with S92, otherwise shall be 6 h. It shall be 1 h for ships built on or after 1.2.95.	**S92** IV/13	■	■	■	■
5	Maintenance requirements: availability of the functional requirements shall be ensured by using one (A1, A2) or two (A3, A4) of the following choices: a) duplication of equipment, b) shore-based maintenance, c) at-sea electronic maintenance.	**S92** IV/15	■	■	■	■
6	VHF T+R operating on DSC frequency 156.525 MHz (channel 70) and on RTP frequencies 156.300 MHz (channel 6), 156.650 MHz (channel 13), 156.800 MHz (channel 16). Incorporated VHF DSC watch receiver on channel 70 (may be separated). A1: capable also of transmitting and receiving general RTP radiocommunications (may be separated).	**S92** IV/7.1.1 **S92** IV/7.1.2 **S92** IV/8.2	■	■	■	■
7	9 Ghz radar transponder stowed for easy utilisation (may be one of those used for survival craft if readily available).	**S92** IV/7.1.3	■	■	■	■
8	NAVTEX receiver for international service broadcasts	**S92** IV/7.1.4	■	■	■	■
9	INMARSAT radio facility for reception of maritime safety information on enhanced group calling system if ship engaged where NAVTEX coverage is not provided.	**S92** IV/7.1.5	▲1	▲1	▲1	▲1
10	HF maritime system information receiver using direct-printing telegraphy if ship engaged only in areas where such service is provided.	**S92** IV/7.1.5	▲1	▲1	▲1	▲1

11	Satellite emergency position-indicating radio beacon (satellite EPIRB) installed in easily accessible position, ready to be manually released and activated, capable of floating free and being automatically activated when afloat and capable of transmitting a distress alert in the 406 MHz band. A1 ▲3: may be used as a secondary means of ship-to-shore alert from bridge operating on 406 MHz or a separate item should be provided. A2 ▲4, A3 ▲6① ▲7②, A4 ■: may be used as a secondary means of ship-to-shore alert from the bridge by a radio service (A2: other than MF, A3 ▲7②, A4: other than HF) operating on 406 MHz or a separate item should be provided.	**S92** IV/7.1.6 **S92** IV/8.1.2 **S92** IV/9.1.3.1 **S92** IV/10.1.4.1 **S92** IV/10.2.3.1 **S92** IV/11	▲2 ▲3	▲2 ▲4	▲2 ▲6① ▲7②	▲2 ■
12	Satellite emergency position-indicating radio beacon (satellite EPIRB) installed in easily accessible position, ready to be manually released and activated, capable of floating free and being automatically activated when afloat and capable of transmitting a distress alert through the INMARSAT satellite in the 1.6 Ghz band, if ship engaged on voyages where only this coverage is provided. A1 ▲3: may be used as a secondary means of ship-to-shore alert from bridge operating through the INMARSAT service or a separate item should be provided. A2 ▲4, A3 ▲6① ▲7②, A4 ▲8: may be used as a secondary means of ship-to-shore alert from the bridge by a radio service (A2: other than MF, A3, A4: other than HF) operating through the INMARSAT service or a separate item should be provided.	**S92** IV/7.1.6 **S92** IV/8.1.5.2 **S92** IV/10.1.4.3 **S92** IV/10.2.3.2.1 **S92** IV/9.1.3.3.2 **S92** IV/10.2.3.2.2 **S92** IV/11	▲2 ▲3	▲2 ▲4	▲2 ▲6① ▲7②	▲2 ▲8
13	Radiotelephone distress frequency watch receiver preset on 2182 kHz and provided with loudspeaker silencing device (until 1.2.99).	**S92** IV/7.2	■	■	■	■
14	Device for generating the radiotelephone alarm signal (2182 kHz) (until 1.2.99).	**S92** IV/7.3		■	■	■
15	Secondary means of ship-to-shore alert from the bridge by a radio service (A1: MF DSC, A2: non-MF DSC, A3: on HF DSC, A4: HF INMARSAT). A2: may be used as a secondary means of ship-to-shore alert from the bridge by a radio service other than MF operating through the INMARSAT service or a separate item should be provided	**S92** IV/8.1.3 **S92** IV/8.1.4 **S92** IV/9.1.3.2 **S92** IV/10.1.4.2 **S92** IV/9.1.3.3.1 **S92** IV/11	▲3	▲4	▲6①	▲8
16	Emergency position-indicating radio beacon (VHF EPIRB) installed in easily accessible position, ready to be manually released and activated, capable of floating free and being automatically activated when afloat and capable of transmitting a distress alert in DSC on VHF channel 70 and capable of locating 9 Ghz signals, if ship engaged on voyages only in sea area A1. ▲3: may be used as a secondary means of ship-to-shore alert from bridge operating on VHF using DSC or a separate item should be provided.	**S92** IV/8.3 **S92** IV/8.1.1	■ ▲3			
17	MF T+R operating from the bridge on 2187.5 kHz using DSC and on 2182 kHz using RTP, capable of initiating distress alerts from bridge. Incorporated MF DSC watch receiver on 2187.5 kHz (may be separated).A2 ▲5: T+R for general radiocommunications using RTP or direct-printing telegraphy by a radio installation operating between 1605 and 4000 kHz or between 4000 and 27500 kHz (may be separated).	**S92** IV/9.1.1 **S92** IV/9.1.2 **S92** IV/9.3.1 **S92** IV/10.1.2 **S92** IV/10.1.3		■ ▲5	■①	
18	INMARSAT ship earth station (A1: as a secondary means of ship-to-shore alert from bridge, A2: as a T+R for general radiocommunications using RTP or direct-printing telegraphy, A3: capable of transmitting and receiving distress and safety communications from bridge using direct-printing telegraphy, initiating and receiving distress priority calls, maintaining watch for shore-to-ship distress alerts, transmitting and receiving general radiocommunications using either RTP or direct-printing telegraphy.	**S92** IV/8.1.5.1 **S92** IV/9.3.2 **S92** IV/10.1.1	▲3	▲5	■	
19	MF/HF T+R for distress and safety communications using DSC and RTP and direct-printing telegraphy by a radio installation operating from bridge between 1605 and 27500 kHz. Incorporated MF/HF DSC watch receiver on 2187.5 kHz, 8414.5 kHz and at least one of the DSC distress and safety frequencies (4207.5 kHz, 6312 kHz, 12577 kHz or 16804.5 kHz). At any time it shall be possible to select any of the frequencies (may be separated). Incorporated T+R for general radiocommunications using RTP or direct-printing telegraphy by an MF/HF radio installation operating between 1605 and 27500 kHz (may be separated).	**S92** IV/10.2.1 **S92** IV/10.2.2 **S92** IV/10.2.4 **S92** IV/11			■②	■

SECTION N - CHEMICAL TANKERS

Guidelines: Where the text is underlined, it does not refer to the BCH Code.

	Item	Ref.	Guidelines
1	Wheelhouse doors, windows, sidescuttles and windows in superstructure and deck-house ends facing the cargo area satisfactory	**IBC**/3.2.3 **BCH**/2.7.3	Entrances, air inlets and openings to accommodation, service and machinery spaces and control stations should not face the cargo area. They should be on the outboard side of the superstructure at least 4% L from the end bulkhead facing the cargo area (but in no case less than 3 m and more than 5 m). No doors permitted within these limits, apart from doors leading to spaces separated from accommodation and with A-60 boundaries. Bolted plates permitted. Wheelhouse openings permitted provided that fast tightening is ensured. Windows and sidescuttles permitted provided they are non-opening type and, in first tier, they have steel covers.
2	Access ladders to cpr satisfactory	**IBC**/3.3.1-4 **BCH**/2.8.1-5	Unrestricted passage to be ensured at all times from any ladder platform and floor: Unrestricted access to all valves for cargo handling ensured. Guardrailings to be fitted on all ladders and platforms. Normal access ladders not vertical, with platforms at suitable intervals. Permanent arrangements should be made for hoisting an injured person with a rescue line, avoiding obstacles.
3	Removable pipe lengths and equipment for cargo separation available in cpr	**IBC/**3.5.2 **BCH**/2.21.2	Filling of ballast in cargo tanks permitted from permanent ballast pumps through spool pieces and non-return valves.
4	Sealing arrangements of all penetrations of cpr bulkheads satisfactory	**IBC**/3.3.7	Where machinery is driven by shafting through bulkheads/decks, gastight seals with efficient lubrication should be fitted in way of the bulkhead/deck.
5	Test remote operation of cpr bilge system	**IBC**/3.3.5 **BCH**/2.8.6	The bilge system serving the cpr should be operable from outside the cpr. Cpr drainage should go to one or more slop tanks provided with standard coupling shore connection.
6	Check bilge and ballast arrangements and piping	**IBC/**3.5.1, 3 **BCH**/2.21.1, 22	Ballast pumps, lines, vent lines and similar for permanent ballast tanks to be independent of cargo system. Filling permitted from machinery spaces only from tank deck level through non-return valves. Bilge pumping arrangements for spaces within the cargo area should be situated inside this area apart for void spaces, double bottom tanks, ballast tanks separated from cargo tanks by a double bulkhead.
7	Check bow/stern loading/unloading arrangements, test means of communication and remote shutdown for cargo pumps	**IBC**/3.7, 11.3.16 **BCH**: see rules for cargo area	Not permitted for products carried by type 1 ships. Piping outside cargo area at least 760 mm inboard, on open deck, clearly identified and fitted with shutoff valve, spool piece, blank flanges, spray shields and collecting trays at its connection to the cargo piping system within the cargo area. Shore connection provided with shutoff valve and blank flange. Flanges permitted only within cargo area and at shore connection. Purging and gas-safe maintaining to be possible through shutoff valve and blank flange. Entrances, air inlets and openings to accommodation, service and machinery spaces and control stations: see N1. Continuous coamings of suitable height to be fitted for keeping spills on deck away from accommodations. Escape routes not to terminate within 3 m from the coamings. Electric equipment within 3 m to be safe type. One foam monitor to protect shore connection and one portable applicator to protect the pipe to be provided. Means of communication between ccr and shore connection to be provided. Remote shutdown of cargo pumps to be fitted nearby the shore connection.
8	Check cargo transfer arrangements and suitability of hoses	**IBC**/3.3.6, 3.6, 5.5-7 **BCH**/2.8.7, 2.10.3-7, 2.11, 2.12, 2.23	Pumps, valves and pipelines to be identified with service and tanks served. Pump discharge pressure gauges to be provided outside the cpr. In any cpr where a pump serves more than one tank, a stop valve shall be fitted on each line. One stop valve capable of being manually operated to be fitted on each tank filling and discharge line. One stop valve to be fitted at each cargo hose connection. Remote shutdown devices available for each cargo pump. Liquid and vapour hoses to be marked with maximum working pressure (not less than 10 bar), maximum and minimum service temperature.
9	Check cargo heating/cooling system, sampling arrangements, means for measuring temperature and alarms	**IBC**/7.1 **BCH**/2.15	Valves to be provided for each tank to isolate and regulate flow manually. Means for measuring temperature to be provided according to particular requirements for each product. Types accepted: restricted (portable thermometer lowered into a gauge tube of the restricted type) or closed (remote reading thermometer with sensor installed in the tank). Toxic products: system completely separated from other systems and not entering machinery spaces; arrangements in cargo area for sampling.

	Item	Ref.	Guidelines
10	Check cargo tank vent system, P/V valves, devices for preventing passage of flame, drain lines	**IBC**/8.1, 2 **BCH**/2.13, 14	Liquid head in any tank due to venting system not to exceed the test head. To this aim, high level alarms, overflow control system, spill valves, automatic closing valves together with gauging devices to be provided. Flame screens on discharge openings to be easily accessible and removable for cleaning. Vent lines fitted with drainage system. Open vents or controlled vents with pressure/vacuum valves can be provided for each tank or commonly if segregation not required, shutoff valves not accepted. Height of vent outlets not less than 4 m above deck or gangway (if within 4 m from outlets). Height can be reduced to 3 m if high velocity valves are fitted on the outlets. Vent outlets to be at least 10 m from air intakes or openings of accommodation, service and machinery spaces. Additional requirements for ships constructed on or after 1.1.94: master to be provided with maximum permissible loading and unloading rates for each tank. Height of vent outlets not less than 6 m above deck or gangway (if within 4 m from outlets). Height can be reduced to 3 m if high velocity valves are fitted on the outlets. Gas freeing accepted through ship's outlets or portable hoses with high velocity valves, at a minimum height of 2 m above deck.
11	Check gauging devices, high-level alarms, overflow control valves	**IBC**/13.1, 15.19 **BCH**/3.9-10, 4.14	Specific requirement for certain products. Alarm for power failure of systems essential for safe loading to be provided. Visual and audible high level alarm to be fitted, provided with power failure alarm and capable of being tested prior to loading. HL alarm to indicate approaching to normal full condition. Overflow control system to be fitted to come into operation for failure of normal procedure to stop tank filling, giving visual and audible alarm. A signal system for onshore personnel even dependent on operator's intervention to be provided. Use of shipboard automatic closing valves accepted upon Administration approval. Gauging system, HL alarm and overflow control system to be independent. BCH Code provides an alternative to the above: high level alarm to be fitted, capable of being tested prior to loading. Automatic overflow control system to be fitted to come into operation for failure of normal procedure to stop tank filling. When automatic closing valves are included, they shall be fail-safe type. HL alarm and overflow control system to be independent. Gauging systems can be different depending on the type of product: open (ullage opening), restricted (emitting small quantity of vapour, normally closed, avoiding spraying during opening), closed (float-type, electronic / magnetic probe, protected sight glass) Open and restricted types need arrangements for relieving tanks pressure before operating the gauge..
12	Check arrangements for sufficient gas carried/generated for normal losses compensation	**IBC**/9.1.3.1 **BCH**/2.19.3(a)	An adequate supply of inert gas or padding medium for use in filling and discharging the cargo tanks should be carried or manufactured on board unless a shore supply is available. In addition, sufficient inert gas or padding medium should be available on the ship to compensate for normal losses during transportation.
13	Check means for monitoring ullage spaces	**IBC**/9.1.3.4 **BCH**/2.19.3(d)	Means should be provided for monitoring ullage spaces containing a gas blanket to ensure that the correct atmosphere is being maintained.
14	Check arrangements for sufficient medium carried where drying agents are used on air inlets of cargo tanks	**IBC**/9.1.4 **BCH**/2.19.3(f)	Where drying agents are used as the drying medium on all air inlets to the tank, sufficient medium should be carried for the duration of the voyage, taking into consideration the diurnal temperature and the expected humidity.
15	Check electrical equipment in dangerous zones for maintenance and suitability, pipelines and independent cargo tanks electrically bonded	**IBC**/10 **BCH**/3.3-8	The use of intrinsically safe systems and circuits (ISS) in all hazardous locations is always accepted and particularly recommended for measurement, monitoring, control and communication purposes. Non-flammable cargoes: submerged cargo pumps motors and cables may be accepted provided that a shutdown device with alarm is fitted for low liquid level alarm. Electrical equipment in cpr to be non-sparking type. When cargo is heated within 15°C from its flashpoint, cpr and areas within 3 m are hazardous areas and equipment to be safe type. Flammable cargoes: in addition to ISS, the following equipment is accepted: cables (open decks, holds containing cargo tanks), cables in heavy gauges gastight steel pipes (void spaces), depth sounding and log devices in gastight enclosures (void spaces, holds containing cargo tanks), lighting with pressurised enclosures or flameproof type with switches in safe area (holds containing cargo tanks, cpr), flameproof general alarm indicators (cpr), safe-type certified equipment (open decks). Independent cargo tanks to be electrically bonded to the hull. All gasketed cargo pipes and hose connections to be electrically bonded. Apart from what indicated above (not underlined) BCH Code requires explosion proof equipment in spaces provided with forced ventilation and explosion proof lighting in cpr. Equipment of enclosed ventilated design may be used in non-hazardous areas.

	Item	Ref.	Guidelines
16	Check fixed fire-fighting system for cpr	**IBC**/11.2 **BCH**/3.13.3-4	CO2 (0,56 m3/kg) available for 45% of the gross volume of the cpr. Halon 1301 available for 7% of the gross volume of the cpr. Pipe provided with a valve operable from the deck clearly marked with "cargo pump room" (clear instructions to be posted). Shutdown for ventilators and closing appliances operable from outside the cpr. Automatic sound alarm, safe for flammable products, provided before discharge (suitably delayed). Bottle storage room to be in safe and accessible position and effectively ventilated, separated from cpr and with gastight boundaries and outwards opening door. Means provided to crew for checking the content of bottles. Notice outside: system only for fire fighting and not for inerting. Water spray and high expansion foam may be accepted by the Administration for certain cargoes (specified in ICOF/COF).
17	Check deck foam system for cargo area	**IBC**/11.3 **BCH**/3.14	Only one type of foam provided, suitable for maximum number of cargoes. Additional requirements for other cargoes according to Administration. Main control station outside of cargo tank area, adjacent to accommodation, readily accessible and operable. Rate of supply not less than 2 litres per minute per square metre (ship's breadth x cargo tanks total length) or 20 litres per minute per square metre (horizontal area of the greatest cargo tank) or 10 litres per minute per square metre (area protected by largest monitor, not less than 1250 l/minute) (the greater) for at least 30 minutes. Each monitor to provide at least 50% required froth rate. A monitor and a hose connection for a froth applicator provided each side accommodation front facing cargo area. At least 4 applicators to be provided, capacity 400 l and throw 15 m. Valves provided in both the froth main and the fire main, fwd each monitor. Operation of froth system at nominal output to allow contemporary use of fire main with two jets of water.
18	Check arrangements for ventilation of spaces normally entered during cargo-handling operations and other spaces in the cargo area, spares for mechanical ventilation fans	**IBC**/12 **BCH**/3.1-2	Cpr and other enclosed spaces containing cargo handling equipment to have mechanical ventilation. Notice outside: ventilate before entering. Accumulation of vapours to be avoided, not less than 30 changes per hour to be provided. Ventilation shall be always extraction type. Spaces for motors running cargo pumps shall have positive pressure. Exhaust ducts at least 10 m from air intakes and openings of accommodation, service and machinery spaces. Electric motors outside the ventilated space, fans to be non-sparking type. Sufficient spare parts for each fan. Protection screens of not more than 13 mm square mesh fitted in outside openings of ducts. Pump rooms and other spaces normally entered, to have mechanical ventilation controlled from outside 20 changes per hour. Spaces not normally entered: fixed ventilation / portable (8 / 16 changes per hour). Electric motors outside the ventilated space, fans to be non-sparking type.
19	Check instrumentation	**IBC**/13.2 **BCH**/3.11.1-2	Ships carrying toxic or flammable products, to have at least two portable instruments designed and calibrated for testing the specific vapours. If a fixed system is provided, at least one portable instrument is required.
20	Check equipment for personnel protection: protective clothing, safety equipment and associated breathing apparatus, emergency-escape respiratory and eye protection, medical first-aid equipment, stretchers, oxygen resuscitation equipment, antidotes for cargoes, decontamination arrangement and eyewashes, gas-detection instruments, stowage of cargo samples	**IBC**/14 **BCH**/3.16	Crew members engaged in cargo operations provided with protective equipment (large aprons, special gloves with long sleeves, suitable footwear, coveralls of chemical-resistant material, tight-fitting goggles or face shields. Protective equipment to be kept in suitable lockers easily accessible, not in accommodation unless segregated. Ships carrying toxic products shall carry at least three safety equipment (In addition to SOLAS requirements) including: one breathing apparatus, protective clothing, boots, gloves, tight-fitting goggles, fireproof lifeline with resistant belt, ex-proof lamp. Each breathing apparatus shall have fully charged spare air bottles with 6000 l free air capacity or one set of fully charged air bottles and a special air compressor with charging manifold. A cpr of a ship carrying toxic products shall have a low pressure line to be used with breathing apparatus without using its air bottles for 1 hour or equivalent spare bottled air. Safety equipment to be kept in suitable, clearly marked, easily accessible places (one near cpr entrance). A stretcher for hoisting an injured person should be placed in a readily accessible position. Certain cargoes need filter-type respiratory protection, emergency escape respiratory protection for at least 15'. Medical first-aid equipment with oxygen resuscitation and antidotes for cargoes to be provided. Suitably marked decontamination showers and an eyewash to be available on deck, operable in all ambient conditions.

SECTION O - GAS CARRIERS

0Guidelines: Where the text is underlined, it does not refer to the GC Code; where the text is in *italics* it does not refer to the GC ex Code.

	Item	Ref.	Guidelines
1	Wheelhouse doors, windows, sidescuttles and windows in superstructure and deck-house ends facing the cargo area satisfactory	**IGC**/3.2.4-6 **GC**/3.2.4-6 **GC ex**/3.2.2-4	Entrances, air inlets and openings to accommodation, service and machinery spaces and control stations should not face the cargo area. They should be on the outboard side of the superstructure at least 4% L from the end bulkhead facing the cargo area (but in no case less than 3 m and more than 5 m). No doors permitted within these limits, unless non-opening type. Wheelhouse openings permitted provided that fast tightening is ensured. Windows and sidescuttles permitted provided they are non-opening type. All air intakes and openings to be fitted with closing devices *(operable from the inside where toxic gases are carried).*
2	Check cargo pump rooms and cargo compressor rooms	**IGC**/3.3 **GC**/3.3 **GC ex**/3.3	Where pumps and compressors are driven by shafting passing through a bulkhead / deck, gastight seals with efficient lubrication or equivalent should be fitted in way of the bulkhead / deck. Safe and unrestricted access to be ensured to personnel wearing protective clothing and breathing apparatus. Removal of unconscious / injured personnel to be allowed. All cargo handling valves to be accessible. Suitable means of drainage to be provided.
3	Check manually operated and automatic emergency shutdown of cargo pumps and compressors	**IGC**/5.6.1.3	Shutdown of pumps / compressors to be automatic where the emergency shutdown valves in O-12 are shut automatically by fusible element or by fail-safe closure.
4	Check cargo control room (ccr)	**IGC**/3.4 **GC**/3.4 **GC ex**/3.4	*To be a gas-safe space if within accommodation, service spaces and control stations. Access to accommodation, service spaces or control stations admitted granted that entrances to ccr comply with O-1, otherwise access forbidden and boundaries to be A-60*. If gas-safe, instrumentation to be indirect reading system, preventing gas escape. If not gas-safe and ship carries flammable products, sources of ignition to be excluded and electrical installations to be safe-type.
5 27	Check gas-detection equipment	**IGC**/9.1.2-2.2.2, 13 **GC**/9.1.2-2.2(b), 13 **GC ex**/9.1.2-2.2(b), 13	A sufficient number of sampling point for checking operation of cargo tanks and piping gas-freeing and purging to be provided. Gas sampling connections to be valved on main deck. Detection of leakages from tanks to be also available. Audible and visual alarms should be located on navigating bridge, remote control position for cargo valves and at the gas detector readout position. Where gas detection system is located in a gas-safe space pipes should have shutoff valves and exhaust gas from detector should be discharged in safe location. Suitable equipment and span gas for periodical calibration to be available. A permanent gas detection system to be provided for: cpr, cargo compressor room, motor room, ccr unless gas-safe, other enclosed spaces in cargo area, ventilation hoods and ducts, air-locks. Sampling frequency for each space not to exceed 30 min (hoods and ducts: continuous). For some cargoes, portable detectors in lieu of fixed system are accepted. Alarm should come out for 30% of lower flammable limit.
6	Check arrangements for air-locks	**IGC**/3.6 **GC**/3.6 **GC ex**/3.6	Permitted between gas-dangerous zone on open deck and gas-safe space. Consisting of two steel, gastight doors *spaced at least 1,5 m but not more than 2,5 m*. Doors to be self-closing and without hold back hook. Audible and visual alarm both sides indicating more than one door open. Air-lock to be mechanically ventilated from a gas-safe space and to be overpressure to the gas-dangerous zone. To be monitored for cargo vapour. *Doors sill not less than 300 mm*. In ships carrying flammable products, electrical equipment not safe-type in spaces protected by air-lock to be de-energised upon loss of overpressure (GC ex: only motors in cargo motor rooms). *Non safe-type equipment for manoeuvring, anchoring, mooring, fire-fighting not admitted in spaces protected by air-lock*.
7	Check bilge, ballast oil fuel arrangements	**IGC**/3.7 **GC**/3.7 **GC ex**/3.7	Hold spaces or insulation spaces, where fitted, to be provided with drainage system not connected with the machinery spaces. Detection system of leakages to be provided. *These systems are not required for internal insulation tanks and interbarrier spaces filled by insulation material*. Drainage system for interbarrier spaces should provide return to cargo tanks. Ballast spaces, fuel oil tanks and gas-safe spaces may be connected to the machinery spaces. Pump vents should not be open to machinery spaces.

	Item	Ref.	Guidelines
8	Check bow/stern loading/unloading arrangements, test means of communication between ccr and shore	**IGC**/3.8, 11.3.1.3, 11.4.7 **GC**/3.8, 11.4.7 **GC ex**/3.8	*Not permitted for products carried by type 1G ships. Piping outside cargo area at least 760 mm inboard, on open deck, clearly identified and fitted with shutoff valve, spool piece, blank flanges at its connection to the cargo piping system within the cargo area. Flanges permitted only within cargo area and at shore connection. Purging and gas-safe maintaining to be possible through shutoff valve and blank flange. Entrances, air inlets and openings to accommodation, service and machinery spaces and control stations: see O-1. Deck openings and air inlets within 10 m from the cargo shore connection to be kept closed while using the bow/stern arrangement. Electric equipment within 3 m to be safe type. One additional dry chemical powder unit with one monitor and one hand hose line to protect the pipe and shore connection to be provided. Additionally, a water spray system to be provided where flammable and/or toxic cargoes are carried. Means of communication between ccr and shore connection to be provided.* GC ex: to the satisfaction of the Administration.
11	Check cargo and process piping, expansion arrangements, insulation from the hull structure, pressure-relief and drainage arrangements	**IGC**/5.2 **GC**/5.2 **GC ex**/5.2	Offsets, loops, bends and mechanical expansion joints (bellows, slip joints and ball joints) to be provided to protect the piping from excessive stresses due to thermal and structure movements. Low temperature piping to be isolated from hull structure. Where dismantling is frequent or leakage is predictable (shore connections, pump seals), protection for the hull beneath to be provided. Pipelines or components that may be isolated in a liquid full condition, to be provided with relief valves connected with cargo tanks or vent system (if liquid detection system provided).
12	Check cargo tank/interbarrier space pressure and relief valves, safety systems and alarms	**IGC**/5.6 **GC**/5.3 **GC ex**/5.3	Where MARVS ≤ 0,7 bar, all liquid and vapour connections except safety relief valves and liquid level gauging devices, should have shutoff valves close to the tank. The valves may be remotely controlled but should be capable of local manual operation. Additionally, one remotely controlled emergency shutdown valve between ship and shore to be provided. Where MARVS > 0,7 bar, the same connections should be equipped with a manually operated stop valve and a remotely controlled emergency shutdown valve located close to the tank. One remotely operated emergency shutdown valve should be provided at each cargo hose connection in use. Emergency shutdowns valves to be operable by single controls in at least two remote locations (one being ccr or the remote control location for cargo valves, if provided). Fusible elements for automatic shutdown for fire to be provided. Emergency shutdown valves to be fail-safe (loss of power) and capable of closing in 30 s.
13	Check liquid/vapour hoses for suitability	**IGC**/5.7 **GC**/5.4 **GC ex**/5.4	To be suitable for cargo and temperature. To be permanently marked with maximum working pressure (not less than 10 bar), maximum and minimum temperature.
14	Check cargo pressure/temperature control	**IGC**/7 **GC**/7 **GC ex**/7	Maintenance below the MARVS provided by: mechanical refrigeration, boil-off cargo vapours used as shipboard use fuel / waste heat or other equivalent systems approved by the Administration. A refrigeration system should consist at least of a unit and of an equivalent stand-by unit arranged in way that evaporated cargo is compressed, condensed and returned to cargo tanks or cooled / condensed without being compressed or compressed / condensed and returned to cargo tanks.
15	Check cargo, bunker, ballast and vent piping, vent masts and protective screens	**IGC**/8 **GC**/8 **GC ex**/8	Each cargo tank > 20 m3 to have two pressure relief valves (prv) (one accepted for lesser volume). Interbarriers: according to Administration. Prv are to be set and sealed by the Administration and a record must be kept on board. Where two settings are admitted, it may be accomplished by installing two set and sealed valves capable of being isolated when not in use or providing means not requiring testing after changing setting. Change under Master's responsibility and recorded in the log-book. Stop valves before prv admitted provided that not more than one out of service, automatic indication of the excluded prv and nominal relieving capacity performed by the remaining prv are granted. Each prv to be connected to a venting system with exits height ≥ B/3 or 6 m (the greater) above the weather deck. Prv exits ≥ B or 25 m (the greater) from air intakes or openings of accommodations, service and control stations (other exits ≥ 10 m). Drainage to be provided. Vent outlets with suitable screens. Depending on cargo tanks scantling, a vacuum protection system may be provided (two independent pressure switches to sequentially alarm and stop all cargo suctions, vacuum relief valves suitably sized and set, or other equivalent arrangements). The system should be capable of being tested.

	Item	Ref.	Guidelines
16	Check arrangements for sufficient inert gas carried/generated for normal losses compensation, spaces monitoring	**IGC**/9.4-5 **GC**/9.4-5 **GC ex**/9.3-4	Inert gas may be provided from the shore or from the ship. Inert gas for fire-fighting to be separated from that used for environmental control. Backflow of cargo vapour to igs to be prevented. Each inerted space capable of being isolated and pressure control available. O2 continuous reading fitted on the igs supply, with an alarm for O2 exceeding 5%. Igs room and piping not inside accommodations, service spaces and control stations but may be in machinery spaces (provided that two non-return valves are fitted). Inert gas to be sufficient for *30 days of* normal consumption.
17	Check air drying system, interbarrier and hold space purging IGS	**IGC**/9.1-3 **GC**/9.1-3 **GC ex**/9.1-2	A system for gas-freeing and purging to be available for cargo tanks and piping. Where permitted by the cargo nature, dry air may be used in lieu of inert gas (provided that a reserve for inerting the largest space is available).
18	Check electrical equipment in dangerous zones for maintenance and suitability, pipelines and independent cargo tanks electrically bonded	**IGC**/5.2.1.4, 10 **GC**/5.2.3, 10 **GC ex**/5.2.3, 10	Electrical bonding to the hull of insulated piping and tanks and between gasketed joints to be provided. Intrinsically safe electrical equipment and wiring may be fitted in all gas-dangerous spaces. Submerged cargo pumps and wiring may be fitted in cargo tanks. In case of low liquid level, the motors should shut down automatically, giving an alarm in ccr. Cargo pump motors capable of being isolated from electrical supply during gas-freeing. Supply cables for submerged cargo pumps may be installed in holds for tanks with interbarrier. Where interbarrier is not needed, the following may be installed: cables, flameproof type lighting with switches in gas-safe area, electrical depth sounding or log devices in gastight enclosures. Equipment of cargo pumps and compressors rooms: flameproof type lighting with switches in gas-safe area, electric motors for cargo pumps and compressors to be separated by a gastight bulkhead / deck (gastight seals with efficient lubrication or equivalent should be fitted in way of the bulkhead / deck), general alarm audible indicators in flameproof enclosures. Open decks: within 3 m from cargo tanks outlets, cargo pipe flanges, cpr openings, compressor room openings, etc. and for 2,4 m height from deck only cables and certified safe type equipment are accepted. Enclosed spaces containing cargo arrangements: cables and flameproof type lighting. Spaces protected by air-locks: certified safe type equipment unless capable of being de-energised (see O-6).
19	Test the remote means of starting of one fire pump	**IGC**/11.2.5 **GC**/11.2.5 **GC ex**/11.2.5	Where the engine room is unattended, at least one fire pump should be started and connected to the fire main by remote control from bridge or other control station outside the cargo area.
20 23	Check fixed fire-fighting system for gas-dangerous spaces, means of operation clearly marked	**IGC**/3.3.1.1, 11.5 **GC**/3.3.1(a), 11.5 **GC ex**/11.5.1, 11.5	Enclosed spaces normally entered where flammable liquid or vapour leakage may occur, such as cargo pumps and compressors rooms, to be protected by a fixed installation (see J-3 and J-4).
21	Test water-spray system for cooling, fire protection, crew protection, means of operation clearly marked	**IGC**/11.3 **GC**/11.3 **GC ex**/11.3	Compulsory for ships carrying flammable and/or toxic products. It should cover: exposed cargo tanks / deck storage vessels and domes, cargo liquid and vapours manifolds, boundaries of superstructures normally manned, cargo compressor and cargo pumps rooms all facing the cargo area. Minimum capacity: 10 l/m2 per minute (horizontal surfaces), 4 l/m2 per minute (vertical surfaces). Stop valves to be provided for isolating damaged sections or the system could be divided into sections, independently operated. A dedicated water spray pump could be provided or the fire pumps may be used provided that their capacity is increased by the amount needed for the water spray system.
22	Check deck dry chemical powder system, means of operation clearly marked	**IGC**/11.4 **GC**/11.4 **GC ex**/11.4	Compulsory for ships carrying flammable products. Capable of delivering powder from two hand hose lines or monitors to any part of deck cargo area. The system should be activated by nitrogen or similar. The system should consist of at least two independent self-contained units (one for cargo capacity < 1000 m3). A monitor to be provided for manifolds, capable of being remotely actuated (not required if satisfactory coverage provided from a single position. All hoses and monitors provided with local actuator. One hose line or monitor to be located aft the cargo area. Monitor capacity not less than 10 kg/s (3,5 for hand hose lines). Each unit to have sufficient powder for all the connected monitors and hose lines for 45 s.

	Item	Ref.	Guidelines
24 29	Check equipment for personnel protection: two complete sets of safety equipment for entering gas-filled spaces, supply of compressed air and special air compressor (if provided), emergency-escape respiratory and eye protection, medical first-aid equipment, stretchers, oxygen resuscitation equipment, decontamination arrangement and eyewashes, arrangements to protect personnel against cargo release	**IGC**/11.6, 14 **GC**/11.6, 14 **GC ex**/11.6, 14	*All ships carrying flammable products should carry fireman's outfits (see J-1.14/15) according to its cargo capacity as follows: 2 (< 2000 m3), 4 (between 2000 and 5000 m3), 5 (> 5000 m3).* GC ex: 3 outfits and sets of protective clothing (< 25000 m3), 5 outfits and sets (≥ 25000 m3). All breathing apparatus to be self-contained type with 1200 l free air minimum capacity. In addition to be provided at least two safety equipment (1200 l breathing apparatus, protective clothing, boots, gloves, tight-fitting goggles, rescue line with belt, ex-proof lamp) with adequate supply of compressed air (one set of charged bottles for each BA and recharge compressor with manifold and spare air bottles or 6000 l charged air bottles for each BA). *As an alternative to air supply, to be provided a low pressure air line in gas-dangerous spaces for connection to BA and recharge compressor*. Suitable protective equipment for personnel engaged in loading operation to be provided. Safety and protective equipment to be kept in suitable, clearly marked lockers located in readily accessible places. Compressed air equipment to be inspected once a month by a responsible officer and recorded in log-book, and tested by an expert once a year. A hoistable stretcher to be kept in readily accessible location. Medical first-aid equipment including oxygen resuscitation equipment to be provided. For some products, the following to be provided: respiratory and eye protection for each person on board (filter type respiratory *or 15 min SCBA plus two on navigating bridge*), suitably marked decontamination showers and an eyewash on deck*, operable in all ambient conditions*, two (GC ex: three) additional safety equipment *with three spare charged air bottles (cargo capacity ≥ 2000 m3).*
25	Check arrangements for ventilation of spaces normally entered during cargo-handling operations and other spaces in the cargo area, spares for mechanical ventilation fans	**IGC**/12 **GC**/12 **GC ex**/12	Electric motors, cargo pumps and compressors rooms to be fitted with a mechanical ventilation system operable from the outside. Spaces to be ventilated before entering (warning notice to be placed outside). Minimum capacity: *30* (GC ex: 20) air changes per hour (8 for gas-safe ccr). *Gas-safe spaces to have positive pressure type system, gas-dangerous spaces: negative. Gas-dangerous spaces outlets to be at least 10 m from accommodations, service spaces and control stations openings. Electric motors for fans to be outside the ducts if flammable products are carried, fans to be non-sparking type. Spare parts for each type of fan to be available. Protection screens of not more than 13 mm square mesh to be fitted on outlets*. Spaces not normally entered should have at least portable ventilation system, *non-sparking type*.
26	Check liquid level indicators, pressure gauges, high/low pressure alarms, overflow control valves, temperature indicators	**IGC**/13 **GC**/13 **GC ex**/13	Each cargo tank to have level, pressure and temperature indicators to be fitted near remote controls of cargo valves, if provided. Instruments to be tested and recalibrated at regular intervals according to approved procedures. Level indicators to be of the following types (according to cargo nature): indirect, closed (penetrating the tank or not), restricted. Each cargo tank shall have a high liquid level alarm independent from indicators. Another independent sensor shall operate a shutoff valve to avoid overpressure and tank becoming liquid full (see O-12). HL alarm not required for pressure tanks < 200 m3. Level alarms electrical circuits capable of being tested before loading. Each cargo tank to have a high pressure alarm and, where vacuum protection is required, a low pressure alarm in navigating bridge. Tanks fitted with multiple set relief valves to have a HP alarm for each set. Each cargo pump and liquid / vapour manifold to have a pressure gauge. Each cargo tank to have two temperature indicators, one in the lower part one in the upper.
28	Check two sets of portable gas-detection equipment, one suitable instrument for measuring oxygen level	**IGC**/13.6.13-14 **GC**/13.6.13-14 **GC ex**/13.6.12-13	Every ship should have two portable gas detectors and one portable oxygen-meter.
30	Check arrangements for use of cargo as fuel (if provided): gas supply cut-off for exhaust ventilation failure, master gas fuel valve remote closure from machinery space	**IGC**/16 **GC**/16 **GC ex**/16	Use of cargo as fuel is permitted only for methane (LNG). Gas fuel lines not to pass inside accommodations, service spaces or control stations unless double wall pipe (space between two pipes filled with inert gas at a pressure greater than that of fuel gas and alarm for loss of pressure) or pipe inside ventilated duct (pressure inside duct lower than atmospheric, 30 changes per hour, external fans, outlets far from ignition sources, gas and air pressure detection with alarm and shutdown of gas fuel). Each gas utilisation unit to be provided with three automatic valves: two in series in the gas fuel pipe and one on a pipe venting the pipe between the two a.m. valves. Failure of forced draft, loss of flame, abnormal fuel gas pressure, failure of the valve control system should cause the two valves to close and the third to open. A master valve on the fuel gas supply operable from inside the machinery space to be fitted outside it. This valve should close for detection of gas, duct ventilation loss, double wall pipe pressure loss.

			Pipes in machinery space fitted with inerting and gas-freeing systems.

SECTION P - NATIONAL REQUIREMENTS

P-1 - USA

All foreign ships in U.S. waters and calling U.S. ports	U.S. Code of Federal Regulations	**CFR**
All foreign ships in U.S. waters and calling U.S. ports	MARPOL 73/78 Annex V	**M V**

	Item	Ref.	Guidelines
1	Radiotelephone (Ch. 13, 16, 22A) VHF-FM	33 CFR 26.03, .04	All power-driven ships ≥ 300 GT shall have a radiotelephone capable of operation from the navigating bridge and of transmitting and receiving within the 152-162 MHz.
2	Cargo oil containment	33 CFR 155.310	All tankers with carrying capacity ≥ 250 barrels shall have under each loading manifold a fixed container having a capacity of at least: 0,5 barrel if it serves one or more hoses (inside diameter ≤ 2 inches), 1 barrel if it serves one or more hoses (inside diameter > 2 inches but ≤ 4 inches), 2 barrels if it serves one or more hoses (inside diameter > 4 inches but ≤ 6 inches), 3 barrels if it serves one or more hoses (inside diameter > 6 inches but ≤ 12 inches), 4 barrels if it serves one or more hoses (inside diameter > 12 inches). Suitable means of draining shall be provided for each container. A mechanical means of closing each drain and scupper in the container shall be provided.
3	Fuel oil and bulk lubricating oil discharge containment	33 CFR 155.320	All ships ≥ 100 GT shall have under each fuel oil or bulk lubricating oil tank vent, overflow and fill pipe a fixed container having a capacity of at least: 0,5 barrel for a ship ≥ 300 GT but < 1600 GT, - 1 barrel for a ship ≥ 1600 GT.
6	Placard	33 CFR 155.450	All ships shall have a placard of at least 5 by 8 inches made of durable material fixed in a conspicuous place in each machinery space or at the bilge and at the ballast station, stating the following: DISCHARGE OF OIL PROHIBITED The Federal Water Pollution Control Act prohibits the discharge of oil or oily waste into or upon the navigable waters of the United States or the waters of the contiguous zone if such discharge causes a film or sheen upon or a discoloration of the surface of the water or causes a sludge or emulsion beneath the surface of water. Violators are subject to a penalty of $ 5000.
7	Oil transfer procedures	33 CFR 155.720-760	All ships with a capacity of oil ≥ 250 barrels shall have oil transfer procedures permanently posted at a place easily seen by personnel engaged in transfer operations.
8	Emergency shutdown	33 CFR 155.780	All tankers with carrying capacity ≥ 250 barrels shall have on board means to stop the flow of oil in transfer operation. This can be: a pump control, a quick-acting power actuated valve or an operating procedure. This means shall be operable from cargo deck, cargo control room or usual transfer station.
9	Deck lighting	33 CFR 155.790	All ships with capacity of oil ≥ 250 barrels shall have suitable lighting for each oil transfer operations work area and each transfer connection point.
10	Oil transfer hose	33 CFR 155.800, 805, 156.170	All transfer hoses shall be tested annually under 1,5 times the maximum allowable working pressure.
11	Transfer records	33 CFR 155.820	The vessel operator shall keep a written record of the name of the person in charge for oil transfer procedures, hoses inspections, the declaration of inspection.
12	Marine sanitation device (Type I-II-III, nameplate, placard)	33 CFR 159.7, 55(b), 59	All ships shall have a marine sanitation device Type I, II, III that has a label placed on it stating compliance with section 312 of the Federal Water Pollution Control Act Amendments of 1972 or with 33 CFR 159.53. The device shall have a nameplate with name of manufacturer, name and model number of the device, month and year of manufacture, serial number, device certified for inspected / uninspected vessel, Type I, II, III. The device shall have a placard with operating instructions, safety precautions and warnings pertinent to the device.
13	Electronic position fixing devices	33 CFR 164.41	All ships shall have a Type I or II LORAN C receiver and a satellite navigation receiver.

Annex 1
Supplies from the emergency source

	Item	Required time			
		S 92	**S 81**	**S 74**	**S 60**
1	Emergency lighting at every muster and embarkation station and over the sides	3h	3h	6h	6h
2	Emergency lighting in service and accommodation alleyways, stairways and exits and (S 81, S92) personnel lift cars and personnel lift trunks	18h	18h	6h	6h
3	Emergency lighting in machinery spaces and main generating stations	18h	18h	6h	6h
4	Emergency lighting in all control stations, control rooms main and emergency switchboards (S 74: only navigating bridge)	18h	18h	6h	6h
5	Emergency lighting at all stowage positions for fireman's outfits	18h	18h	-	-
6	Emergency lighting at the steering gear	18h	18h	-	-
7	Emergency lighting at the fire emergency pump	18h	18h	-	-
8	Navigation lights	18h	18h	6h	6h
9	VHF radio installation (IV/7.1.1, 7.1.2) (1.2.95)	18h	18h	-	-
10	MF radio installation (IV/9.1.1, 9.1.2, 10.1.2, 10.1.3)	18h	-	-	-
11	Ship earth station (IV/10.1.1)	18h	-	-	-
12	MF/HF radio installation (IV/10.2.1, 10.2.2, 11.1)	18h	-	-	-
13	All internal emergency communication (a)	18h	18h	-	-
14	The shipborne navigational equipment (a)	18h	18h	-	-
15	Fire detection and alarm system (a)	18h	18h	-	-
16	Daylight signalling lamp (a)	18h	18h	6h	6h
17	Ship's whistle (a)	18h	18h	-	-
18	Manually operated call points (a)	18h	18h	-	-
19	Emergency internal signals (a) (S 74: only general alarm)	18h	18h	6h	6h
20	Emergency steering gear	(b)	(b)	-	-

(a) **Unless they have an independent supply for 18 hours.**

(b) **Ships ≥ 10000 GT: 30', other ships: 10'.**

Note **S 74, S 60: requirements valid for ships ≥ 5000 GT. Other ships need only item 1 for 3h.**

Annex 2
Servicing of fire bottles/extinguishers

Permanently installed fire-fighting systems			
Type of system	**Charge check**	**Hydrostatic test**	**Test pressure**
CO2	content check at 2-year intervals	10 % of the bottles at 10-year intervals	25 N/mm^2
NITROGEN			
HALON			1,5 times the w.p.
FOAM	analysis at 3-year intervals (twice during the 5-year period)	—	—
POWDER	smoothness test each year; quantity check at 5-year intervals	—	—

Portable fire extinguishers			
Type of extinguisher	**Charge check**	**Hydrostatic test**	**Test pressure**
Water and foam	replacement of charge each year	at each special survey (5-year intervals)	1,5 times the w.p. (2 N/mm^2 if the w.p. is unknown)
Powder with shell not kept under pressure	check each year replacement of charge at 5-year intervals		
CO2	at 2-year intervals	extinguishers sent ashore for refilling when found empty or low charged (less than 90% for CO2, 95% for halon and with low pressure for powder ones)	25 N/mm^2
Halon Powder with shell kept under pressure			1,5 times the w.p. (2 N/mm^2 if the w.p. is unknown)
Small compressed air or gas bottles used in fire extinguishers not permanently kept under pressure.	internal inspection at 5-year intervals	at 5-year intervals where internal inspection is not possible	2 times the w.p. 25 N/mm^2 if of a CO2 type with safety devices 35 N/mm^2 if of a CO2 type without safety devices

Except for the refilling of the water extinguishers, foam extinguishers and pressurised powder extinguishers, all the checks of the charge and hydrostatic tests are to be carried out under the surveillance of a RINA surveyor.

All the containers of extinguishing agents are to be checked when the inspections and test required at ordinary (annual), intermediate and special survey are carried out.

Attention is drawn to compliance with any additional and/or more stringent requirements issued by the Administration of the State whose flag the ship is entitled to fly.

Annex 3
Lifeboat fittings

	Item	Required no.			
		S 92	S 74	S 60	S 48
1	Automatic draining valve with cap (S 92) or plug attached with lanyard	1	2	2	2
2	Rudder and tiller	1	1	1	1
3	Buoyant (S 92) lifeline around the lifeboat	1	1	1	1
4	Handholds underside the hull	2	2	2	2
5	Watertight lockers for storage of small items	suff	suff	suff	suff
6	Means for storage of collected rainwater	suff	-	-	-
7	Release mechanism for hooks	1	-	-	-
8	Release device for forward painter	1	-	-	-
9	Skates and fenders (not free-fall)	suff	-	-	-
10	Externally manually controlled lamp on top of lifeboat	1	-	-	-
11	Electric lamp inside lifeboat	1	-	-	-
12	Permanently attached foldable canopy (partially enclosed lifeboats)	1	-	-	-
13	Self-contained air support system with pressure indicators (toxic cargoes)	1	-	-	-
14	Water spray system (inflammable cargoes)	1	-	-	-

Annex 4
Lifeboat inventory

	Item	Required no.			
		S 92	S 74	S 60	S 48
1	Boarding ladder	1	1	1	1
2	Buoyant oars, thole pins and crutches (not free-fall lifeboats)	suff	(a)	(a)	(a)
3	Boat hooks	2	-	-	-
4	Buoyant (S 92) bailer	1	1	1	1
5	Buckets	2	2	2	2
6	Survival manual	1	-	-	-
7	Efficient compass in binnacle provided with means of illumination	1	1	1	1
8	Sea-anchor with (S 92) shock-resistant hawser and tripping line	1	1	1	1
9	Painters of 15 m/twice distance stowed lifeboat/waterline (not free-fall lifeboats)	2	2	2	2
10	Hatchets	2	2	2	2
11	Fresh water in watertight receptacles (litres per person)	3	3	3	3
12	Rustproof dipper with lanyard	1	-	-	-
13	Rustproof graduated drinking vessel	1	-	-	-
14	Food ration (b) in airtight packaging (ration per person)	1	1	1	1
15	Rocket parachute flares	4	4	4	2
16	Hand flares	6	6	6	6
17	Buoyant smoke signals	2	2	2	2
18	Waterproof Morse electric torch with spare batteries and bulb	1	1	1	1
19	Daylight signalling mirror with instructions	1	1	1	1
20	Copy of life-saving signals on (S 92) waterproof card/in waterproof container	1	1	1	-
21	Whistle	1	1	1	-
22	First-aid outfit in waterproof case	1	1	1	1
23	Anti-seasickness medicine (doses per person)	6	-	-	-
24	Seasickness bag (per person)	1	-	-	-
25	Jack-knife with lanyard and (not S 92) with tin-opener	1	1	1	1
26	Tin-openers	3	-	-	-
27	Buoyant rescue quoits with 30 m buoyant line	2	-	-	-
28	Manual pump	1	1	1	1
29	Set of fishing tackle	1	1	1	-
30	Tools for minor adjustment to the engine and its accessories	suff	-	-	-
31	Portable fire extinguisher (S 74: only motor lifeboats)	1	1	1	1
32	Searchlight	1	-	-	-
33	Radar reflector or radar transponder stowed in lifeboat	1	-	-	-
34	Thermal protective aids (percentage of persons) but not less than 2	10	-	-	-
35	Efficient 15 m painters suitable for towing (free-fall lifeboats)	2	-	-	-
36	Lamp with oil for 12 hours	-	1	1	1
37	Mast with galvanised wire stays and orange sails	-	1	1	1
38	Vessel with 4,5 l oil attachable to the sea anchor	-	1	1	1
39	Buoyant heaving lines	-	2	2	2
40	Cover of a highly visible colour for protection against exposure	-	1	1	-

(a) A single banked complement of buoyant oars, two spare buoyant oars and a buoyant steering oar; one set and a half of thole pins or crutches attached to the lifeboat by lanyard or chain, a boat hook.

(b) Ration to be 10000 kJ (S 92), to the satisfaction of the Administration (S 74, S 60), 1 kg (S 48).

suff = sufficient

Annex 5
Rescue boat fittings and inventory

	Item	Required no. (S 92)
1	Automatic draining valve with cap or plug attached with lanyard	1
2	Rudder and tiller	1
3	Buoyant lifeline around the rescue boat	1
4	Handholds underside the hull	2
5	Release mechanism for hooks	1
6	Release device for forward painter	1
7	Watertight lockers for storage of small items	1
8	Arrangement for towing liferafts	sufficient
9	Buoyant oars or paddles to make headway in calm seas	sufficient
10	Thole pins and crutches attached with lanyard or equivalent arrangements	for each oar
11	Buoyant bailer	1
12	Efficient compass in binnacle provided with means of illumination	1
13	Sea-anchor and tripping line with hawser of adequate strength (10 m length)	1
14	Painter of sufficient length and strength attached to the release device	1
15	Buoyant line for towing liferafts (50 m length)	1
16	Waterproof Morse electric torch with spare batteries and bulb	1
17	Whistle	1
18	First-aid outfit in waterproof case	1
19	Buoyant rescue quoits with 30 m buoyant line	2
20	Searchlight	1
21	Efficient radar reflector	1
22	Thermal protective aids	10% persons / 2 (the greater)
23	Boat-hook (rigid rescue boats)	1
24	Bucket (rigid rescue boats)	1
25	Knife or hatchet (rigid rescue boats)	1
26	Buoyant safety knife (inflated rescue boats)	1
27	Sponges (inflated rescue boats)	2
28	Efficient manually operated bellows or pump (inflated rescue boats)	1
29	Punctures repair kit in suitable container (inflated rescue boats)	1
30	Safety boat-hook (inflated rescue boats)	1

Annex 6
Rigid liferafts fittings and inventory

	Item	Required no.			
		S 92	S 74	S 60	S 48
1	Boarding ladder (S 74, S 60: at each opening)	1	1	1	-
2	Efficient painter	1	1	1	-
3	Manually controlled lamp powered by cell on top of canopy	1	-	-	-
4	Manually controlled lamp inside the liferaft	1	-	-	-
5	Lifeline around the liferaft and (S 74, S 60) inside	1	1	1	-
6	Painter around the liferaft	1	-	-	-
7	Buoyant rescue quoit with 30 m buoyant line	1	1	1	-
8	Knives of the non-folding type with buoyant handle and lanyard	(a)	(a)	(a)	-
9	Buoyant (S 92) bailers	(a)	(a)	(a)	-
10	Sponges	2	2	2	-
11	Sea-anchor with (S 92) shock-resistant hawser and tripping line	2	2	2	-
12	Buoyant (S 92) paddles	2	2	2	-
13	Tin-openers	3	3	3	-
14	First-aid outfit in waterproof case	1	1	1	-
15	Whistle	1	1	1	-
16	Rocket parachute flares	4	2	2	-
17	Hand flares	6	6	6	-
18	Buoyant smoke signals	2	-	-	-
19	Waterproof Morse electric torch with spare batteries and bulb	1	1	1	-
20	Radar reflector or radar transponder stowed in liferaft	1	-	-	-
21	Daylight signalling mirror with instructions	1	1	1	-
22	Copy of life-saving signals on (S 92) waterproof card/in waterproof container	1	1	1	-
23	Set of fishing tackle	1	1	1	-
24	Food ration (b) in airtight packaging (ration per person)	1	1	1	-
25	Fresh water in watertight receptacles (litres per person)	1,5	1,5	1,5	-
26	Rustproof graduated drinking vessel	1	1	1	-
27	Anti-seasickness medicine (doses per person)	6	6	6	-
28	Survival manual	1	1	1	-
29	Instructions for immediate action	1	-	-	-
30	Thermal protective aids (percentage of persons) but not less than 2	10	-	-	-
31	Canopy	1	1	1	-
32	Buoyant battery powered light with lanyard	-	1	1	-

(a) Liferafts permitted to accommodate 13 persons or more: 2, others: 1.

(b) Ration to be 10000 kJ (S 92), to the satisfaction of the Administration (S 74, S 60).