



CIRCULAR

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To : All Surveyors and whom it may concern

No : 2017-10-E

Date : 2017. 12. 22

Subject	9.108 Notice for Amendments to the KR Technical Rules (Effective from 1 Jan 2018)
Application	Refer to Effective date for each KR Technical Rules specified in Par.1

1. Please be informed that the amendments have been made to the following KR Technical Rules 2017 as attachment to reflect IMO/IACS Resolutions which are to be applied on or after 1 January 2018. You are kindly requested to apply these amendments on the relevant works according to the relevant effective date.

Amended KR Technical Rules	Effective Date	Reflected IMO/IACS Res.
Rules/Guidance for the Classification of Steel Ships Pt 1	The application date for survey on or after 2018.1.1	To reflect result of internal review
Guidance for the Classification of Steel Ships Pt 5	The contract date for ship construction or the application date for approval for the plans on or after 2018.1.1	IACS UR M77 (Rev.1)
Rules/Guidance for the Classification of Steel Ships Pt 7	The contract date for ship construction or the application date for survey on or after 2018.1.1	IMO MSC 93/22/Add.1/Corr.3 IACS UI GC15 (Rev.1) IACS UI GC18 (New & Rev.1) IACS UI GC19 (New) IMO MSC.1/Circ.1559
Guidance for the Classification of Steel Ships Pt 8	The contract date for ship construction on or after 2018.1.1	IACS UI SC269 (Rev.1)
Rules for the Classification of Steel Ships Pt 9	The contract date for ship construction on or after 2018.1.1	To reflect result of internal review
Guidance for LNG Fuel Ready Ships	The contract date for ship construction on or after 2018.1.1	To reflect result of internal review
Guidance for Gas-fuelled Ships	The contract date for ship construction or the application date for survey on or after 2018.1.1	IACS UR Z25 (Rev.1) IACS Rec. 148 (New) IACS UI GF1 (New & Rev.1) IMO MSC.1/Circ.1558

2. Furthermore, please be informed that the amendments will be included in 2018 edition of KR Technical Rules which are published in the first half of 2018.

Attachment: Amended KR Technical Rules --- 1 copy. (The End)

Kim Chang-wook

Executive Vice President, Technical Division

<Attachment>

Amended KR Technical Rules

- I. Rules/Guidance for the Classification of Steel Ships Pt 1 Classification and Surveys
- II. Guidance for the Classification of Steel Ships Pt 5 Machinery Installations
- III. Rules/Guidance for the Classification of Steel Ships Pt 7 Ch 5 Ships of Special Service
- IV. Guidance for the Classification of Steel Ships Pt 8 Fire Protection and Fire Extinction
- V. Rules for the Classification of Steel Ships Pt 9 Additional Installations
- VI. Guidance for LNG Fuel Ready Ships
- VII. Guidance for Gas-fuelled Ships

Amended Rules for the Classification of Steel Ships

(Part 1 Classification and Surveys)



- Main Amendments -

(1) Effective date : 1 Jan. 2018 (Date of which application for survey is submitted)

● Regarding laid-up ships

- To reflect results of internal review

- To reflect comments of Technical Sub-committee

Present	Amendment
<p style="text-align: center;">CHAPTER 1 CLASSIFICATION</p> <p style="text-align: center;"><omitted></p> <p style="text-align: center;">CHAPTER 2 PERIODICAL AND OTHER SURVEYS</p> <p style="text-align: center;">Section 1 General</p> <p>101. ~ 104. <omitted></p> <p>105. Laid-up ships</p> <p><u>No periodical surveys are to be carried out for classed ships when they are laid-up. In order to put the laid-up ship into service, the ship has to receive the heaviest kind of survey amongst all the due surveys during laid-up period.</u></p> <p style="text-align: center;"><hereafter, omitted></p>	<p style="text-align: center;">CHAPTER 1 CLASSIFICATION</p> <p style="text-align: center;"><same as the present></p> <p style="text-align: center;">CHAPTER 2 PERIODICAL AND OTHER SURVEYS</p> <p style="text-align: center;">Section 1 General</p> <p>101. ~ 104. <same as present></p> <p>105. Laid-up ships 【See Guidance】 (2018)</p> <ol style="list-style-type: none"> 1. <u>Where classed ships are laid-up and the owner notifies the Society of the fact, no normal periodical surveys are to be carried out during laid-up period.</u> 2. <u>Laid-up survey at the beginning of laid-up are to be performed in accordance with the Guidance relating to the Rules.</u> 3. <u>In order to put the laid-up ship into service, the ship is to receive the re-commissioning survey in accordance with the Guidance relating to the Rules.</u> 4. <u>If the Owner does not notify the Society of the laid-up of the ship or the surveys as required in the this Article is not implemented, the classification may be suspended or withdrawn in accordance with Ch 1 Sec 9 901.</u> 5. <u>Laid-up attestation may be issued at the request of the Owner provided that the laid-up condition is in satisfactory after the laid-up survey with approved Laid-up Maintenance Program in accordance with the Guidance relating to the Rules.</u> <p style="text-align: center;"><hereafter, same as the present></p>

Amended Guidance Relating to the Rules for the Classification of Steel Ships (Part 1 Classification and Surveys)



- Main Amendments -

(1) Effective date : 1 Jan 2018

(Regardless of the date of which application for survey is submitted or date of which application for survey is submitted)

● Additionally added for requirement of Suspension/Withdrawal of Class
(Regardless of the date of which application for survey is submitted)

- To reflect internal opinion

● Regarding laid-up ships (Date of which application for survey is submitted)

- To reflect results of internal review

- To reflect comments of Technical Sub-committee

Present	Amendment
<p style="text-align: center;">CHAPTER 1 CLASSIFICATION</p> <p style="text-align: center;">Section 1 ~ Section 8 <omitted></p> <p style="text-align: center;">Section 9 Suspension/Withdrawal of Class and Reclassification</p> <p>901. Suspension/Reinstatement of class In application to 901. 1 and 6 of the Rules, the surveys to be carried out for reinstatement of class are to be based upon the survey requirements at the original date due and not on the age of the vessel when the survey is carried out.</p> <p>902. Withdrawal of class <u>When a ship classed with the Society is detained following a Port State Control inspection with serious deficiencies found, the class of the ship may be suspended or withdrawn through the deliberation of the Classification Committee.</u></p> <p><hereafter, omitted></p>	<p style="text-align: center;">CHAPTER 1 CLASSIFICATION</p> <p style="text-align: center;">Section 1 ~ Section 8 <same as present></p> <p style="text-align: center;">Section 9 Suspension/Withdrawal of Class and Reclassification</p> <p>901. Suspension/Reinstatement of class In application to 901. 1 and 6 of the Rules, the surveys to be carried out for reinstatement of class are to be based upon the survey requirements at the original date due and not on the age of the vessel when the survey is carried out.</p> <p>902. Withdrawal of class <i>(2018)</i> <u>In the case of the following ships classed with the Society, the class of the ships may be suspended or withdrawn through the deliberation of the Classification Committee.</u> (1) <u>When a ship is detained following a Port State Control inspection with serious deficiencies found</u> (2) <u>When a ship for which statutory certificates have been withdrawn by the relevant Administration or a ship is operating with no certificate of ship's nationality without any special reason</u></p> <p><hereafter, same as present></p>

Amendment

<Newly added>

Annex 1-17 Laid-up and recommissioning of ships (2018)

Section 1 General

101. General

1. This Annex provides requirements for ships to maintain classification during lay up and to be recommissioned after laid-up required in **Ch 2, 105.** of the Rules.
2. Types of laid-up divided in cold laid-up and hot laid-up in accordance with **Sec 5.**
3. Requirements of this Annex applies normally to ships laid-up over 12 months(e.g. cold lay up). For ships laid-up less than 12 months(e.g. hot laid-up), requirements in this Annex are to be appropriately applied in consideration of laid-up condition of the ship.
4. This Annex covers minimum requirements for classification and insurance companies or the local authorities may requires to meet additional requirements.

Section 2 Surveys

201. Laid-up survey

1. At the beginning of the laid-up period, a laid-up survey is to be carried out as the followings;
 - (1) General condition of hull above the waterline
 - (2) Laid-up condition and anchoring arrangement.
In particular, the recommendation which is affected her laid-up directly is to be surveyed with special attention.
 - (3) Main engine operating condition for emergency
 - (4) Lightings and her whistle equipment for prevention of collision.
 - (5) Sanitary and accommodation condition
 - (6) Fire fighting and life saving equipment.
 - (7) Drainage arrangements.
 - (8) Radio apparatus for communication to ashore.
 - (9) Closing appliance conditions of sea chest in engine room and double bottom manhole cover.

Amendment

202. Re-commissioning survey

1. Owners are to make the necessary arrangements to remove the temporary laid-up installations provided for preservation measures and the protective materials and coatings (oil, grease, inhibitors, desiccants), before the survey is commenced. It is the Owners' responsibility to verify that the ship parts that are not covered by class are reactivated in satisfactory operational condition.
2. The scope of the re-commissioning survey is to include:
 - (1) a general examination of the hull, deck fittings, safety systems, machinery installations
 - (2) all docking survey, shaft survey, boiler survey, occasional Survey due at the date of re-commissioning or which became overdue during the lay-up period and heaviest kind of periodical surveys in case the more than 2 kinds of periodical survey became overdue.
 - (3) dealing with the recommendations due at the date of recommissioning or which became due during the laid-up period.
3. For the hull the following is to be carried out:
 - (1) examination of shell plating above the waterline, deck plating, hatch covers and coamings
 - (2) examination of load line items
 - (3) overall survey of all cargo tanks/holds
 - (4) overall survey of representative ballast tanks when the laid-up period does not exceed two years
 - (5) overall survey of all ballast tanks when the laid-up period is two years and over
 - (6) function tests of bilge and ballast systems.
4. For the deck fittings the following is to be carried out:
 - (1) examination of the fire main under working pressure
 - (2) where possible, examination of deck piping under working pressure
 - (3) function tests of class items
 - (4) checking inert gas installation under working condition after inspection of water seal and function test of deck non-return valve and pressure/vacuum valves.
5. For machinery installations the following is to be checked:
 - (1) lubricating oil of main engines, auxiliary engines, reduction gears, main thrust bearings and stern tube
 - (2) the general condition of crankcase, crankshaft, piston rods and connecting rods of diesel engines
 - (3) the deflection of crank webs of diesel engines.
 - (4) the condition of blades of turbines through the inspection doors
 - (5) the condition of the water side of condensers and heat exchangers
 - (6) the condition of expansion arrangements
 - (7) the condition of reduction gears through the inspection doors
 - (8) the condition after overhauling of pressure relief devices
 - (9) the test of bilge level alarms, when fitted.
6. The main and emergency electrical installations are to be tested. The parallel shedding of main generators and main switchboard safety devices are to be checked. A megger test of the electrical installation is to be performed.

Amendment

7. For the fire prevention, detection and fire-fighting systems, the following is to be examined or tested:
 - (1) remote control for quick closing of fuel oil valves, stopping of fuel oil pumps and ventilation systems, closing of fire doors and watertight doors
 - (2) fire detectors and alarms
 - (3) fire-fighting equipment.
8. The automated installation is to be checked for proper operation.
9. When classed, the installations for refrigerated cargo are to be examined under working conditions. Where the laid-up period exceeds two years, representative components of the installation are to be dismantled.
10. For other specific classed installations, the Owners are to submit a survey program to the Society.
11. On completion of the above surveys, following tests are to be performed.
 - (1) For passenger ships, sea-trial is to be carried out and survey details are referred to **Sec. 605, Ch. 4, Pt. 2 of Instruction for the Classification Survey.**
 - (2) In addition to function tests for each machinery installations, engine trial and when deemed unnecessary, sea trial under attendance of the Surveyor, to be performed.

203. Issue of Laid-up attestation

1. Where issue of Laid-up attestation is requested by the Owner in accordance with of **Ch 2, 105. 5** of Rules, Laid-up attestation may be issued provided that the laid up condition is in satisfactory after laid-up survey. At the laid-up survey, it is to verify that the safety conditions, preservation measures, laid-up site and mooring arrangements are in accordance with the program approved by the Society in accordance with of **Sec 3.**
2. An annual laid-up condition survey is to be performed in lieu of the normal annual class surveys to ascertain that the laid-up condition is maintained continuously by the laid-up maintenance program in accordance with of **Sec 3.** At the annual laid-up condition survey, it is to be checked that the arrangements made for the laid-up are unchanged and that the maintenance work and tests are carried out in accordance with the maintenance manual and recorded in the lay-up log-book.

Section 3 Laid-up Maintenance Program

301. General

This Section provides detail contents for the laid-up maintenance program required in **Ch 2, 105. 2** of the Rules.

302. Safety conditions

1. Safety conditions to be kept throughout the laid-up period are as the followings
 - (1) Power supply
Adequate power supply is to be supplied, or readily available either from movable generator on board the ship or from shore.

Amendment

(2) Manning

Watch personnel are to be provided. The number of the watch personnel will depend on the size of the ship, the lay-up site and mooring arrangements, the shore assistance available in case of fire, leakage or flooding, the maintenance required to provide adequate preservation.

(3) Safety

(A) The fire alarm system shall be tested before laid-up. The alarm shall be arranged so that the watch keeping crew member may hear the alarm at the work place during lay up periods.

(B) The emergency fire pump shall be tested before laid-up and also tested once a week during laid-up periods.

(C) Other safety systems and equipment is to be prepared which is deemed necessary for crews' safety during laid-up period.

303. Preservation measures for laid-up and maintenance

1. A laid-up log-book is to be kept on board, in which the maintenance work and tests carried out during the laid-up period are to be entered with the corresponding dates. The nature and frequency of the maintenance, inspections and tests are also to be defined in the lay-up log book.

2. The following measures for preservation and maintenance during the laid-up period are to be taken by Owners according to the type of ship, hull equipment, machinery installations and the specific cases of laid-up conditions.

(1) Exposed parts of the hull

(A) Underwater parts of the hull are to be protected against corrosion.

(B) All accesses leading to internal spaces are to be kept closed.

(C) All vent pipes and ventilation trunks are to be kept closed.

(2) Internal spaces

(A) Cargo tanks and cargo holds are to be emptied, cleaned and kept dry.

(B) Ballast tanks are to be kept either full or empty. When ballast spaces are kept filled with sea water, special care is to be taken to keep such spaces topped up and protected against corrosion.

(C) Chain lockers are to be drained, cleaned and kept dry. Coating with bituminous paint is recommended.

(D) Fuel oil and lubricating oil tanks are to be drained regularly.

(E) Empty fuel and lubricating oil tanks are to be cleaned and kept dry.

(F) Fresh water or distilled water tanks are to be kept full or empty. Empty tanks are to be cleaned and kept dry.

(G) The bilge and tank top in engine rooms are to be cleaned and kept dry.

(H) Ship side sea suction and overboard discharge valves not in use are to be kept closed.

(3) Deck fittings

(A) The windlass, capstans and winches are to be regularly greased and turned once a week.

(B) Cargo piping on deck is to be drained, blown through if deemed necessary and kept dry by opening up drains.

(C) Electrical machinery and navigational equipment are to be regularly checked for preservation condition.

(4) Machinery

(A) Machinery spaces

(a) The air temperature inside the machinery spaces is normally to be kept above 0°C.

(b) Humidity is to be kept as low as possible and within acceptable limits.

Amendment

- (B) Machinery - General
 - (a) Exposed mechanical parts of machinery are to be greased.
 - (b) All rotating machinery such as diesel engines, reciprocating engines, pumps, turbines, electric motors and generators are to be turned at regular intervals with a limited number of revolutions (the lubricating oil system should be put in operation or proper priming applied). Units are not to be stopped in the same position as the previous one.
- (C) Main turbines
 - (a) Turbines are to be kept dry.
 - (b) Expansion arrangements are to be suitably greased.
- (D) Auxiliary turbine-driven machinery
 - (a) Stators are to be drained and kept dry.
 - (b) Shaft sealing glands are to be lubricated.
 - (c) Exhaust steam pipes are to be kept dry.
- (E) Condensers and heat exchangers
 - (a) Condensers and heat exchangers are to be drained and kept dry.
- (F) Auxiliary machinery
 - (a) Air receivers are to be drained, opened up and cleaned. Pressure relief valves are to be cleaned and slightly lubricated.
 - (b) Air compressor crankcases are to be drained, cleaned and refilled with clean oil. Cylinders and valves are to be lubricated. Coolers are to be drained and dried. Air drains are to be opened and the system dried.
 - (c) Air start lines are to be drained and dried.
 - (d) All steam, feed, condensate systems are to be drained and dried.
 - (e) Rotating machine is to be greased or supplied of lubricating oil for rotating parts and shall be turned at least once a month.
- (G) Piping
 - Pipes not in use are to be drained and kept dry.
- (H) Diesel engines
 - (a) Sea water cooling pipes are to be drained.
 - (b) Starting valves are to be lubricated (internally and externally).
 - (c) Motor oil is to be sprayed in cylinders and on all external parts liable to corrosion.
 - (d) Turbo charger ball bearings are to be oil sprayed and rotated for an integer number of revolutions plus one quarter of a revolution.
 - (e) Scavenge spaces are to be cleaned
 - (f) Engines are to be turned weekly.
- (I) Shaft lines
 - (a) Shaft lines are to be coated with grease.
 - (b) Shaft bearing cooling pipes are to be drained.
 - (c) For sea water lubricated propeller shafts, the packing gland of the engine room stuffing box is to be tightened.
 - (d) For oil lubricated stern tubes, ingress of sea water in the oil is to be check regularly. The oil level in the tank is to be verified regularly.
 - (e) Propeller shaft lines are to be rotated an integer number of revolutions plus one quarter of a revolution.
 - (f) Bearing boxes are to be emptied, cleaned and refilled with new oil.

Amendment

- (5) Electrical installations
 - (A) Switchboards, sub-feeder panels, fuse panels and starters are to be made tight. Desiccant is to be provided.
 - (B) Electrical insulation of each item is to be kept at a minimum 200 k Ω and general insulation is to be not less than 50 k Ω . Local electric heating may be necessary to improve the level of insulation, particularly in the generators/alternators and large motors.
 - (C) A megger test is to be performed regularly.
- (6) Steering gear
 - (A) It is recommended that the steering gear should be operated monthly.
- (7) Boilers
 - (A) Safety device for boiler shall be kept in good condition in case of using boiler during laid-up periods.
 - (B) Resting boiler is to be kept with dry method, wet method, inert gas method, etc.
 - (C) It is desirable that dry method using dehumidifier is taken in case ship is laid up for a long time. Also dehumidifier shall be exchanged or dried periodically.
 - (D) In case wet method is taken, distilled water mixed with anti-corrosions shall fill boiler including superheater and economizer. When icing is possible, wet method shall not be taken.
- (8) Automated installation
 - (A) Recommendations for electronic components are the same as those given for electrical installations.
 - (B) For pneumatic parts the manufacturers' recommendations are to be followed and the system is to be checked regularly.
 - (C) Pressure, temperature or level sensors are generally not affected by damage when not used. However, when available, the manufacturers' recommendations are to be followed.

Section 4 Laid-up site and mooring arrangements

401. General

The choice and suitability of the laid-up site, as well as the type of mooring conditions, the mooring arrangements and their efficiency during the laid-up period remain the responsibility of the Owner. However, at the Owner's request, the mooring arrangement may be reviewed by the Society.

402. Recommendations for the laid-up site

1. The following recommendations are to be considered by Owners regarding the choice and suitability of the laid-up site.
 - (1) sheltered from open sea, strong currents and waves
 - (2) not exposed to whirling winds or turbulent tidal waves
 - (3) not exposed to moving ice
 - (4) clear of corrosive waste waters
 - (5) provided with adequate ship/shore communications.

Amendment

403. Recommendations for the mooring arrangements

1. The following recommendations are to be considered by Owners with respect to the mooring arrangements:
 - (1) ground holding should be adequate
 - (2) vessels laid-up to buoys or anchored should be moored in such a way as to be prevented from swinging with normal wind and tidal changes
 - (3) chain cables should not be subject to cross-contact or twisting and stern anchorage should generally be provided
 - (4) laid-up ships should be in ballast condition in order to reduce the effects of wind. Due consideration should be given to the still water bending moment. For guidance, normal ballast draft should be roughly between 30% and 50% of the maximum draft.
2. Ships should normally be moored singly. However, when several ships are moored together, the following provisions are to be made:
 - (1) Ships are to be moored bow to stern.
 - (2) Ships are to be of approximately the same size.
 - (3) the number of ships moored together is, in principle, not to exceed six.
 - (4) Breast-lines are to be of similar elasticity.
 - (5) Fender are to be provided.

404. Review of the mooring arrangements

1. At the Owners' request, the mooring arrangements may be reviewed by the Society.
2. The proposal for the mooring arrangements is in such case to be submitted by the Owner and is to include the following information.
 - (1) Mooring site:
 - (A) geographical area (to be specified on a map)
 - (B) characteristics of the sea bottom
 - (C) water depth
 - (D) effects of wind/tide/current indicated according to statistical studies
 - (E) wave characteristics (amplitude, periods)
 - (2) Geometry of mooring arrangements:
 - (A) ship's position and direction
 - (B) shore anchorage
 - (C) diagram showing mooring equipment (fore and aft)
 - (D) angle between chain cables and ship's centreline
 - (3) Characteristics of mooring equipment:
 - (A) maximum holding strength of each anchor
 - (B) type of mooring lines (chains, cables, sinkers, etc.)
 - (C) length of each section, weight of each section, mechanical characteristics of each section (breaking load)
 - (D) weight of sinkers.
3. On completion of the installation, the mooring arrangements are to be surveyed by the Society. When the ship is anchored, the underwater installation is to be inspected by a diver whose report is to be presented to the Society.

Amendment

4. It is the responsibility of the Owners to ascertain the efficiency of the mooring arrangements during the laid-up period. The mooring arrangements are to be re-examined at regular intervals (at least each year when the ship is anchored) and when abnormal weather conditions occur at the laid-up site.

Section 5 TYPES OF Laid-UP

501. General

1. Choice of the type and extent of laid-up

- (1) The extent to which a Ship Owner will lay-up its ship depends on various factors, including:
 - (A) expected period of lay-up
 - (B) need to reduce overhead running/operational costs
 - (C) anticipated time to resumption of trading
 - (D) time and expenses needed for re-commissioning
 - (E) intended situation after re-commissioning (trade, repair yard, scrap yard)
 - (F) age of the ship
 - (G) value of the ship in respect to scrap/recycling value.

2. Type of laid-up

- (1) Depending on the type of laid-up, hot or cold laid-up as detailed **502.** and **503.**, the degree of involved risk varies and the P&I Policies on return of calls will be different between these two types of laid-up condition. In addition to the absence of cargo on-board and the criteria listed herebelow, the presence, or absence, of seamen on-board is a key differentiation for determination of the type of laid-up, of the subsequent increased or reduced P&I risks.

502. "Hot" laid-up

1. Period

This laid-up condition is normally appropriate for up to 12 months out of commission. The P&I Policies normally require the ship to be laid-up for at least 30 consecutive days in order to qualify for a laid-up return.

2. Manning

The ship has reduced crew on-board as the ship's manning is generally reduced below the manning level required under the Flag State safe manning document and in accordance with any applicable requirement from other involved parties, namely local authorities and insurance companies.

3. Machinery operation

The ship has some of the machinery maintained under working conditions and kept operational by the skeleton crew on-board.

4. re-commissioning

The ship can be reactivated with reduced cost, time and effort, normally in the range of less than 1 week recommissioning time.

Amendment

503. "Cold" lay-up

1. Period

This laid-up condition is normally appropriate over 12 months out of commission.

2. Manning

- (1) A specialist laid-up personnel may be employed, possibly only one or more watchmen, in order to deal with emergency requirements related mainly to fire, flooding, mooring and security aspects.
- (2) Requirements and guidance from the Flag State, the local authorities and the insurance companies should there again also be investigated and complied with by the Owner, before deciding on the final manning level.

3. Machinery operation

The machinery is normally shut-down.

4. Re-commissioning

- (1) The ship is normally re-commissioned within a period in the range of 3 weeks, or more depending on the effective period of laid-up and on the level and scope of maintenance and preservation implemented by the Owner.
- (2) The ship might need to be directly dry-docked before trading, depending on the efficiency of the hull preservation during the lay-up period, on the possible hull degradation and depending on the classification requirements for maintenance of class in case the bottom survey in dry-dock became overdue during the lay-up period.
- (3) On modern ships, the efficient preservation maintenance of automated systems, computerized equipment and electronic gears is to be carefully planned and considered by the Owner, in order to ensure that these sophisticated systems will not deteriorate and will restart correctly.
- (4) More generally speaking, a cold laid-up situation is to be carefully prepared by the Owner, in terms of manning, laid-up site, mooring arrangements, safety and security conditions, preservation, maintenance and inspection measures, classification survey requirements, in collaboration and consultation with all other Parties, in order to avoid machinery or hull degradation, long term damages to the machinery and a subsequent costly and long reactivation.

Amended Guidance Relating to the Rules for the Classification of Steel Ships (Part 5 Machinery Installations)



- Main Amendments -

(1) Effective date : 1 Jan 2018 (The contract date for ship construction or an application date for approval for the plans)

● To reflect IACS UR M77(Rev.1 Sep 2016)

Present	Amendment
<p>Annex 5-10 Selective Catalytic Reduction System Using Ammonia Solutions or Urea Solutions as the Reductant Agents</p> <p>1. ~ 3. <omitted></p> <p>4. Special requirements in cases where the urea solution is used as reductant agent</p> <p>(1) <newly added></p>	<p>Annex 5-10 Selective Catalytic Reduction System Using Ammonia Solutions or Urea Solutions as the Reductant Agents</p> <p>1. ~ 3. <same as the present></p> <p>4. Special requirements in cases where the urea solution is used as reductant agent (2018)</p> <p>(1) <u>Urea solution storage tank</u></p> <p>(A) <u>The storage tank is to be arranged so that any leakage will be contained and prevented from making contact with heated surfaces. All pipes or other tank penetrations are to be provided with manual closing valves attached to the tank.</u></p> <p>(B) <u>The storage tank may be located within the engine room.</u></p> <p>(C) <u>The storage tank is to be protected from excessively high or low temperatures applicable to the particular concentration of the solution. Depending on the operational area of the ship, this may necessitate the fitting of heating and/or cooling systems. The physical conditions recommended by applicable recognized standards (such as ISO 18611-3) are to be taken into account to ensure that the contents of the aqueous urea tank are maintained to avoid any impairment of the urea solution during storage.</u></p> <p>(D) <u>Where urea based ammonia solution is stored in integral tanks, the following are to be considered during the design and construction:</u></p> <p>(a) <u>These tanks may be designed and constructed as integral part of the hull, (e.g. double bottom, wing tanks).</u></p> <p>(b) <u>These tanks are to be coated with appropriate anti-corrosion coating and cannot be located adjacent to any fuel oil and fresh water tank.</u></p> <p>(c) <u>These tanks are to be designed and constructed as per the structural requirements applicable to hull and primary support members for a deep tank construction.</u></p> <p>(d) <u>These tanks are to be fitted with but not limited to level gauge, temperature gauge, high temperature alarm, low level alarm, etc.</u></p> <p>(e) <u>These tanks are to be included in the ship's stability calculation.</u></p>

Present	Amendment
<p>(1) Ventilation</p> <p>(A) <u>The mechanical ventilation system is to be installed in the compartment where the urea solution storage tanks and urea injection systems are installed so that gas does not accumulate in the independent compartment.</u></p> <p>(B) In cases where urea solution is transferred to a tank which forms part of the ship's hull, the enclosed spaces(excluding water tanks and oil tanks) adjacent to the urea solution tanks are to be provided with the mechanical ventilation which can be operated from outside the spaces.</p> <p>(2) <u>Venting system of urea solution storage tank</u></p> <p>(A) <u>Effective venting systems are to be provided to the urea solution storage tank.</u></p>	<p>(E) <u>Each urea storage tank is to be provided with temperature and level monitoring arrangements. High and low level alarms together with high and low temperature alarms are also to be provided.</u></p> <p>(F) <u>Urea storage tanks are to be arranged so that they can be emptied of urea, purged and vented.</u></p> <p>(2) Ventilation</p> <p>(A) <u>If a urea storage tank is installed in a closed compartment, the area is to be served by an effective mechanical supply and exhaust ventilation system providing not less than 6 air changes per hour which is independent from the ventilation system of accommodation, service spaces, or control stations. The ventilation system is to be capable of being controlled from outside the compartment and is to be maintained in operation continuously except when the storage tank is empty and has been thoroughly air purged. If the ventilation stops, an audible and visual alarm shall be provided outside the compartment adjacent to each point of entry and inside the compartment, together with a warning notice requiring the use of such ventilation. Alternatively, where a urea storage tank is located within an engine room a separate ventilation system is not required when the general ventilation system for the space is arranged so as to provide an effective movement of air in the vicinity of the storage tank and is to be maintained in operation continuously except when the storage tank is empty and has been thoroughly air purged.</u></p> <p>(B) In cases where urea solution is transferred to a tank which forms part of the ship's hull, the enclosed spaces(excluding water tanks and oil tanks) adjacent to the urea solution tanks are to be provided with the mechanical ventilation which can be operated from outside the spaces.</p> <p>(3) <u>Piping system and venting system of urea solution storage tank</u></p> <p>(A) <u>The reductant piping and venting systems are to be independent of other ship service piping and/or systems. Reductant piping systems are not to be located in accommodation, service spaces, or control stations. The vent pipes of the storage tank are to terminate in a safe location on the weather deck and the tank venting system is to be arranged to prevent entrance of water into the urea tank.</u></p>

Present

(B) The position of vent outlets for urea solution storage tanks are to be arranged at exposed decks where the crew does not normally approach in consideration of the emission of ammonia gas from the vent outlets in case of a fire near the tanks.

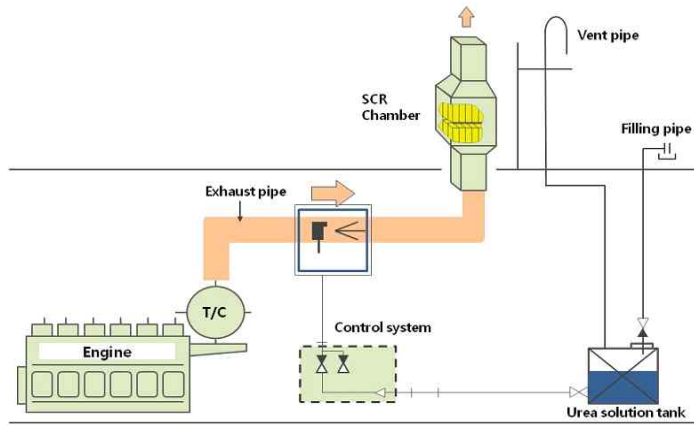


Figure 2 Selective Catalytic Reduction System using the urea as the reductant agent

5. Special requirements in cases where the ammonia solution is used as reductant agent

(1) <newly added>

(1) ~ (11) <omitted>

Amendment

(B) Reductant related piping systems, tanks, and other components which may come into contact with the reductant solution are to be of a suitable grade of non-combustible compatible material established to be suitable for the application.

(4) Safety & Protective equipment

(A) For the protection of crew members, the ship is to have on board suitable personnel protective equipment. Eyewash and safety showers are to be provided, the location and number of these eyewash stations and safety showers are to be derived from the detailed installation arrangements.

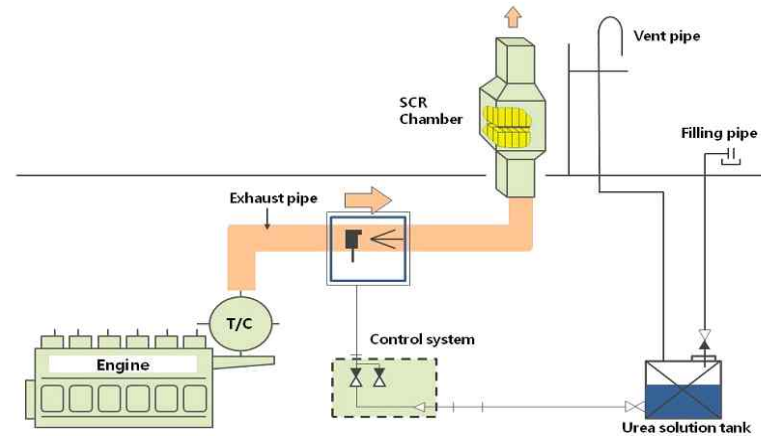


Figure 2 Selective Catalytic Reduction System using the urea as the reductant agent

5. Special requirements in cases where the ammonia solution is used as reductant agent

(1) General

(A) Ammonia is not to be used as a reductant in a SCR except where it can be demonstrated that it is not practicable to use a urea based reductant. Where an application is made to use aqueous ammonia as the reductant then the arrangements for its loading, carriage and use are to be derived from a risk based analysis. (2018)

(2) ~ (12) <same as present>

Amendment

<Newly added>

Annex 5-15-A Exhaust Gas Cleaning system(EGC) Ready ships (2018)

1. General

- (1) This Guidance applies to ships which are prepared for conversion with the design or the partial installation related with exhaust gas cleaning system mentioned in **Pt 5, Annex 5-15** during the new building phase or in-service.
- (2) EGC ready levels are defined in 2 steps, and additionally defined in 4 steps according to type of system.

2. Class Notation

(1) General

- (A) The class notations specified in **(2)~(4)** may be assigned according to the EGC ready levels.
- (B) The requirements for the class notations in this Section are to comply with **Sec 3**.

(2) EGC Ready D

EGC Ready C as an additional special feature notation may be assigned to ships for which the concept design is prepared.

(3) EGC Ready I

EGC Ready I as an additional special feature notation may be assigned to ships for which parts of the systems(scrubber main unit) are installed or the detailed design in addition to the concept design.

(4) D, O, C, H (Type of system)

EGC Ready D, O, C or H as an additional special feature notation may be assigned to ships according to type of system in addition to the EGC ready C or I.

Table 1. Class Notation according to EGC Type

Class Notation	Type
D	Dry type
O	Wet open type
C	Wet closed type
H	Wet hybrid type

For example, EGC Ready I (EX, O) is given to the detailed design of the exhaust gas scrubber with wet open type and the ship equipped with the exhaust gas system, and the basis for the exhaust gas scrubber with wet closed type EGC Ready D (C) is granted for vessels prepared for design only.

Amendment

3. Requirements for levels of EGC Ready

(1) General

- (A) This Guidance prescribes plans to be submitted and consideration for preparing (refer to below (4)) the exhaust gas cleaning system. The design and installation of structures and systems are to be in accordance with applicable requirements in **Annex 5-15**.
- (B) Drawing approval and survey for EGC ready are not accepted as Drawing approval and survey for conversion of exhaust gas cleaning system. When the ship is converted, drawing approval and survey are to be carried out in accordance with **Annex 5-15** in force at the time of the ship conversion. Approved Drawings and certifications from new building stage may be used as reference for conversion.

(2) Level of preparing concept design(D)

(A) Plans and documents

- (a) General arrangement of ship
- (b) Arrangement of the EGC installation, layout, and systems
- (c) Arrangement of machinery space including EGC component
- (d) Arrangement and capacity of tanks for storage, chemicals, process washwater, exhaust gas cleaning residues, etc
- (e) Arrangement of exhaust gas system
- (f) Arrangement of washwater system(if applicable)
- (g) Arrangement of chemical treatment system(if applicable)
- (h) Schematic diagram for electrical, control, alarm, and monitoring system
- (i) Documentation detailing the effect on Load Line and Stability of the exhaust gas cleaning system
- (j) Documentation detailing the effect on electric load

(3) Level of detailed design and installation(I)

- (A) EGC Ready I includes the approval of the detailed drawings and the installation of the specific equipment mounted on the ship and is classified as a separate system as shown below

- (a) Hull structural arrangement and reinforcement-SR
- (b) Exhaust gas system-EX
- (c) Washwater system-WR
- (d) Chemical treatment system, if applicable-CH
- (e) Residue system-SD
- (f) SO_x Scrubber system-EG

(B) Plans and documents

In order to receive EGC Ready I, the following drawings must be submitted and approved according to the specific equipment. However, if approved by the Society, some modifications may be made depending on the type of equipment.

- (a) Hull structural arrangement and reinforcement-SR
 - Hull plans showing the foundation and attachments of accessories to the vessel's structure, including scantlings, welding details, and foundation details of principal components
- (b) Exhaust gas system-EX
 - Detailed drawings of the exhaust system

Amendment

- (c) Washwater system-WR
 - Detailed drawings of washing water system and related equipment (washing water supply and drainage equipment)
 - (d) Chemical treatment system, if applicable-CH
 - Detailed drawings of chemical treatment piping system and related equipment
 - (e) Residue system-SD
 - Detailed drawings of the residue piping system and related equipment
 - (f) SOx Scrubber system-EG
 - Arrangement of the EGC installation, layout, and systems
 - Material specifications for the EGC equipment and associated systems, including coolers, blowers, pumps, valves, storage/process tanks, residue tanks, piping, distribution systems, separators, and associated components
 - Documentation detailing the effect on Load Line and Stability of the exhaust gas cleaning system(retrofit only)
 - Documentation detailing the effect on electric load
- (4) Consideration for preparing
- (A) It is to be considered for EGC ready C as below:
- (a) The engine casings are to be designed and arranged considering size of the scrubber unit.
 - (b) The machinery space are to be designed and arranged considering related scrubber unit and tanks if applicable.
 - (c) The sea suction and overboard discharge outlets are to be designed considering installation of washwater system, washwater treatment system, and related component if applicable.
 - (d) In calculating the capacity of the generator and switch board, the electric load/switch board that is increased/added due to the installation of the EGC are to be considered and reflected in the submitted drawings in **Sec 3 (2)**.
 - (e) The effects of stability and load line due to the installation of the EGC are to be considered and reflected in the drawings submitted in **Sec 3 (2)**.
 - (f) In the calculation of fire extinguishing agents for fixed fire extinguishing systems for machinery space, the increase or decrease in the volume of the machinery is to be considered due to the installation of the EGC.
 - (g) Consideration is to be given to fire extinguishing equipment which is required to be installed or maintained in the machinery space due to installation of the EGC.

4. Survey

- (1) Classification survey during construction systems are to be tested at the shops of manufacturer and after installation on board in accordance with **Annex 5-15**.
- (2) Periodical surveys in application of this Guidance, the general condition of the relevant systems installed on board is to be examined visually at periodical surveys for the vessels having EGC Ready I notation. The systems are to be surveyed and evaluated for the condition at time of conversion, and the scope of test will be defined depending on time elapsed from new building and maintenance level of the systems.

Amended Rules for the Classification of Steel Ships

(Part 7 Ships of Special Service

Ch 5 Ships Carrying Liquefied Gases in Bulk)



- Main Amendments -

(1) Effective date : 1 Jan 2018 (The contract date for ship construction)

● To reflect MSC 93/22/Add.1/Corr.3

Present	Amendment
<p style="text-align: center;">CHAPTER 5 SHIPS CARRYING LIQUEFIED GASES IN BULK</p> <p style="text-align: center;">Section 1 ~ Section 6 <omitted></p> <p style="text-align: center;">Section 7 Cargo Pressure/Temperature Control</p> <p>701. ~ 707. <omitted></p> <p>708. Availability (IGC Code 7.8) [See Guidance]</p> <p>1. ~ 3. <omitted></p> <p>4. for any cargo heating or cooling medium, provisions are to be made to detect the leakage of toxic or flammable vapours into an otherwise non-hazardous area or overboard in accordance with 1306. Any vent outlet from this leak detection arrangement is to be to <u>a non-hazardous area</u> and be fitted with a flame screen.</p> <p style="text-align: center;">Section 8 Vent System for Cargo Containment</p> <p>801. <omitted></p> <p>802. Pressure relief systems (IGC Code 8.2)</p> <p>1. ~ 17. <omitted></p> <p>18. The adequacy of the vent system fitted on tanks loaded in accordance with 1505. 2 is to be demonstrated by the Society, taking into account the requirements of IMO Res. A. 829(19). A relevant certificate is to be permanently kept on board the ship. For the purposes of this paragraph, vent system means: [See Guidance]</p> <p><hereafter, omitted></p> <p style="text-align: center;">Section 11 Fire Protection and Fire Extinction</p> <p>1101. <omitted></p>	<p style="text-align: center;">CHAPTER 5 SHIPS CARRYING LIQUEFIED GASES IN BULK</p> <p style="text-align: center;">Section 1 ~ Section 6 <same as the present></p> <p style="text-align: center;">Section 7 Cargo Pressure/Temperature Control</p> <p>701. ~ 707. <omitted></p> <p>708. Availability (IGC Code 7.8) [See Guidance]</p> <p>1. ~ 3. <same as the present></p> <p>4. for any cargo heating or cooling medium, provisions are to be made to detect the leakage of toxic or flammable vapours into an otherwise non-hazardous area or overboard in accordance with 1306. Any vent outlet from this leak detection arrangement is to be to <u>a safe location</u> and be fitted with a flame screen. <i>(2018)</i></p> <p style="text-align: center;">Section 8 Vent System for Cargo Containment</p> <p>801. <same as the present></p> <p>802. Pressure relief systems (IGC Code 8.2)</p> <p>1. ~ 17. <same as the present></p> <p>18. The adequacy of the vent system fitted on tanks loaded in accordance with 1505. 2 is to be demonstrated by the Society, taking into account the requirements of IMO Res. A. 829(19). A relevant certificate is to be permanently kept on board the ship. For the purposes of this paragraph, vent system means: [See Guidance] <i>(2018)</i></p> <p><hereafter, same as the present></p> <p style="text-align: center;">Section 11 Fire Protection and Fire Extinction</p> <p>1101. <same as the present></p>

Present	Amendment
<p>1102. Fire mains and hydrants (IGC Code 11.2)</p> <p>1. Irrespective of size, ships carrying products that are subject to this Chapter are to comply with the requirements of regulation II-2/10.2 of the SOLAS Convention, as applicable to cargo ships, except that the required fire pump capacity and fire main and water service pipe diameter are not to be limited by the provisions of regulations II-2/10.2.2.4.1 and II-2/10.2.1.3, when a fire pump is used to supply the water-spray system, as permitted by 1103. 3. The capacity of this fire pump is to be such that these areas can be protected when simultaneously supplying two jets of water from fire hoses with 19 mm nozzles at a pressure of at least <u>0.5 MPa</u>. [See Guidance]</p> <p><hereafter, omitted></p> <p>Section 13 Instrumentation and Automation Systems</p> <p>1301. ~ 1305. <omitted></p> <p>1306. Gas detection (IGC Code 13.6)</p> <p>1. ~ 10. <omitted></p> <p>11. When gas sampling equipment is located in a non-hazardous space, a flame arrester and a manual isolating valve are to be fitted in each of the gas sampling lines. The isolating valve is to be fitted on the nonhazardous side. Bulkhead penetrations of sample pipes between hazardous and non-hazardous areas are to maintain the integrity of the division penetrated. The exhaust gas is to be discharged to the open air in a <u>nonhazardous area</u>.</p> <p><hereafter, omitted></p> <p>Section 16 Use of Cargo as Fuel</p> <p>1609. Alternative fuels and technologies (IGC Code 16.9)</p> <p>1. ~ 4. <omitted></p> <p>5. In addition to the requirements of 1604. 3 (2), both ventilation inlet and outlet are to be in a <u>non-hazardous area external to the machinery space</u>.</p> <p><hereafter, omitted></p>	<p>1102. Fire mains and hydrants (IGC Code 11.2)</p> <p>1. Irrespective of size, ships carrying products that are subject to this Chapter are to comply with the requirements of regulation II-2/10.2 of the SOLAS Convention, as applicable to cargo ships, except that the required fire pump capacity and fire main and water service pipe diameter are not to be limited by the provisions of regulations II-2/10.2.2.4.1 and II-2/10.2.1.3, when a fire pump is used to supply the water-spray system, as permitted by 1103. 3. The capacity of this fire pump is to be such that these areas can be protected when simultaneously supplying two jets of water from fire hoses with 19 mm nozzles at a pressure of at least <u>0.5 MPa gauge</u>. [See Guidance] (2018)</p> <p><hereafter, same as the present></p> <p>Section 13 Instrumentation and Automation Systems</p> <p>1301. ~ 1305. <same as the present></p> <p>1306. Gas detection (IGC Code 13.6)</p> <p>1. ~ 10. <same as the present></p> <p>11. When gas sampling equipment is located in a non-hazardous space, a flame arrester and a manual isolating valve are to be fitted in each of the gas sampling lines. The isolating valve is to be fitted on the non-hazardous side. Bulkhead penetrations of sample pipes between hazardous and non-hazardous areas are to maintain the integrity of the division penetrated. The exhaust gas is to be discharged to the open air in a <u>safe location</u>. <i>(2018)</i></p> <p><hereafter, same as the present></p> <p>Section 16 Use of Cargo as Fuel</p> <p>1609. Alternative fuels and technologies (IGC Code 16.9)</p> <p>1. ~ 4. <same as the present Rules></p> <p>5. In addition to the requirements of 1604. 3 (2), both ventilation inlet and outlet are to be located outside the machinery space. The inlet shall be <u>in a non-hazardous area and the outlet shall be in a safe location</u>. <i>(2018)</i></p> <p><hereafter, same as the present></p>

Present

Section 19 Summary of Minimum Requirements
[See Guidance]

a	i
Product name	Special requirements
Acetaldehyde	<u>1404.2</u> , <u>1403.3.(1)</u> , <u>1704.1</u> , <u>1706.1</u>
Diethyl ether*	<u>1404.1</u> , <u>1404.2</u> , <u>1702.6</u> , <u>1703.1</u> , <u>1706.1</u> , <u>1709</u> , <u>1710</u> , <u>1711.2</u> , <u>1711.3</u>
Ethyene oxide-propylene oxide mixtures with ethylene oxide content of not more than 30% by weight*	<u>1404.2</u> , <u>1703.1</u> , <u>1704.1</u> , <u>1706.1</u> , <u>1709</u> , <u>1710</u> , <u>1718</u>
Isoprene* (all isomers)	<u>1404.2</u> , <u>1708</u> , <u>1709</u> , <u>1711.1</u>
Isoprene (part refined)*	<u>1404.2</u> , <u>1708</u> , <u>1709</u> , <u>1711.1</u>
Isopropylamine*	<u>1404.1</u> , <u>1404.2</u> , <u>1702.4</u> , <u>1709</u> , <u>1710</u> , <u>1711.1</u> , <u>1715</u>
Propylene oxide*	<u>1404.2</u> , <u>1703.1</u> , <u>1704.1</u> , <u>1706.1</u> , <u>1709</u> , <u>1710</u> , <u>1718</u>
Vinyl chloride	<u>1404.1</u> , <u>1404.2</u> , <u>1702.2</u> , <u>1702.3</u> , <u>1703.1</u> , <u>1706</u> , <u>1719</u>
Vinyl ethyl ether*	<u>1404.1</u> , <u>1404.2</u> , <u>1702.2</u> , <u>1703.1</u> , <u>1706.1</u> , <u>1708</u> , <u>1709</u> , <u>1710</u> , <u>1711.2</u> , <u>1711.3</u>
Vinylidene chloride*	<u>1404.1</u> , <u>1404.2</u> , <u>1702.5</u> , <u>1706.1</u> , <u>1708</u> , <u>1709</u> , <u>1710</u>

Amendment

Section 19 Summary of Minimum Requirements [See
Guidance] ***(2018)***

a	i
Product name	Special requirements
Acetaldehyde	<u>1404.3</u> , <u>1403.3.(1)</u> , <u>1704.1</u> , <u>1706.1</u>
Diethyl ether*	<u>1404.2</u> , <u>1404.3</u> , <u>1702.6</u> , <u>1703.1</u> , <u>1706.1</u> , <u>1709</u> , <u>1710</u> , <u>1711.2</u> , <u>1711.3</u>
Ethyene oxide-propylene oxide mixtures with ethylene oxide content of not more than 30% by weight*	<u>1404.3</u> , <u>1703.1</u> , <u>1704.1</u> , <u>1706.1</u> , <u>1709</u> , <u>1710</u> , <u>1718</u>
Isoprene* (all isomers)	<u>1404.3</u> , <u>1708</u> , <u>1709</u> , <u>1711.1</u>
Isoprene (part refined)*	<u>1404.3</u> , <u>1708</u> , <u>1709</u> , <u>1711.1</u>
Isopropylamine*	<u>1404.2</u> , <u>1404.3</u> , <u>1702.4</u> , <u>1709</u> , <u>1710</u> , <u>1711.1</u> , <u>1715</u>
Propylene oxide*	<u>1404.3</u> , <u>1703.1</u> , <u>1704.1</u> , <u>1706.1</u> , <u>1709</u> , <u>1710</u> , <u>1718</u>
Vinyl chloride	<u>1404.2</u> , <u>1404.3</u> , <u>1702.2</u> , <u>1702.3</u> , <u>1703.1</u> , <u>1706</u> , <u>1719</u>
Vinyl ethyl ether*	<u>1404.2</u> , <u>1404.3</u> , <u>1702.2</u> , <u>1703.1</u> , <u>1706.1</u> , <u>1708</u> , <u>1709</u> , <u>1710</u> , <u>1711.2</u> , <u>1711.3</u>
Vinylidene chloride*	<u>1404.2</u> , <u>1404.3</u> , <u>1702.5</u> , <u>1706.1</u> , <u>1708</u> , <u>1709</u> , <u>1710</u>

Amended Guidance Relating to the Rules for the Classification of Steel Ships

(Part 7 Ships of Special Service

Ch 5 Ships Carrying Liquefied Gases in Bulk)



- Main Amendments -

- (1) Effective date : 1 Jan 2018 (The contract date for ship construction or application date for survey)
 - To reflect IACS UI GC15 (Rev.1 Aug 2017)
 - To reflect IACS UI GC18 (New Nov 2016 & Rev.1 July 2017)
 - To reflect IACS UI GC 19 (New Aug 2017)
 - To reflect IMO MSC.1/Circ.1559

Present	Amendment									
<p style="text-align: center;">CHAPTER 5 SHIPS CARRYING LIQUEFIED GASES IN BULK</p> <p style="text-align: center;">Section 1 ~ Section 2 <omitted></p> <p style="text-align: center;">Section 3 Ship Arrangements</p> <p>301. Segregation of the cargo area <omitted></p> <p>302. Accommodation, service and machinery spaces and control stations</p> <p>1. ~ 2. <omitted></p> <p>3. Closing devices of air intakes and openings (2017)</p> <p>(1) For the purpose of the requirements in 302. 6 of the Rules, closing devices for air intakes and openings are to have suitable gas-tightness where steel made fire protection flaps without gaskets are not accepted.</p> <p>(2) For the purpose of the requirements in 302. 6 of the Rules, ~ <omitted></p> <p>(A) The requirements in the preceding (1) are to be complied with.</p> <p>(B) The closing devices need not be operable from within the single spaces <u>and</u> may be located in centralized positions.</p>	<p style="text-align: center;">CHAPTER 5 SHIPS CARRYING LIQUEFIED GASES IN BULK</p> <p style="text-align: center;">Section 1 ~ Section 2 <same as the present></p> <p style="text-align: center;">Section 3 Ship Arrangements</p> <p>301. Segregation of the cargo area <same as the present></p> <p>302. Accommodation, service and machinery spaces and control stations</p> <p>1. ~ 2. <same as the present></p> <p>3. Closing devices of air intakes and openings (2017)</p> <p>(1) <same as the present></p> <p>(2) For the purpose of the requirements in 302. 6 of the Rules, ~ <same as the present></p> <p>(A) The requirements in the preceding (1) are to be complied with.</p> <p>(B) The closing devices <u>that</u> need not be operable from within the single spaces may be located in centralized positions. (2018) (refer to Table 7.5.1-1)</p> <p style="text-align: center;">Table 7.5.1-1 Installation of means of operation inside space</p> <table border="1" data-bbox="1184 1190 2022 1409"> <thead> <tr> <th></th> <th>Usually manned space</th> <th>Usually not manned space</th> </tr> </thead> <tbody> <tr> <td>Space carrying toxic products</td> <td>Install inside space</td> <td>May not installed inside space</td> </tr> <tr> <td>Space not carrying toxic products</td> <td>May not installed inside space</td> <td>May not installed inside space</td> </tr> </tbody> </table>		Usually manned space	Usually not manned space	Space carrying toxic products	Install inside space	May not installed inside space	Space not carrying toxic products	May not installed inside space	May not installed inside space
	Usually manned space	Usually not manned space								
Space carrying toxic products	Install inside space	May not installed inside space								
Space not carrying toxic products	May not installed inside space	May not installed inside space								

Present	Amendment
<p>(C) Engine room casings, cargo machinery spaces, electric motor rooms and steering gear compartments are generally considered as spaces not covered by 302. 6. of the Rules and therefore the requirement for closing devices need not be applied to these spaces.</p> <p>(3) <Newly added></p> <p>303. ~ 308. <omitted></p> <p style="text-align: center;">Section 4 ~ Section 7 <omitted></p> <p style="text-align: center;">Section 8 Vent System for Cargo Containment</p> <p>801. <omitted></p> <p>802. Pressure relief systems</p> <p>1. ~ 5. <omitted></p> <p>6. <Newly added></p> <p>6. to 11. <omitted></p> <p>803. <omitted></p> <p>804. Size of pressure relieving system</p> <p>1. <omitted></p>	<p>(C) Engine room casings, cargo machinery spaces, electric motor rooms and steering gear compartments are generally considered as spaces not covered by 302. 6. of the Rules and therefore the requirement for closing devices need not be applied to these spaces.</p> <p><u>(3) Regardless of (2), the closing devices should be operable from outside of the protected space. (SOLAS regulation II-2/5.2.1.1). (2018)</u></p> <p>303. ~ 308. <same as the present></p> <p style="text-align: center;">Section 4 ~ Section 7 <same as the present></p> <p style="text-align: center;">Section 8 Vent System for Cargo Containment</p> <p>801. <Same as the present></p> <p>802. Pressure relief systems</p> <p>1. ~ 5. <Same as the present></p> <p>6. <u>Safe means of emergency isolation of pressure relief valves (2018)</u></p> <p><u>The "safe means of emergency isolation", as required by 803. 9 of the Rules, is to be provided so that a PRV can be isolated on a temporary basis to reseal or repair the valve before putting the PRV back into service. Such means of emergency isolation is to be installed in a manner that does not allow their inadvertent operation.</u></p> <p>7. ~ 12. <Same as the present></p> <p>803. <Same as the present></p> <p>804. Size of pressure relieving system</p> <p>1. <Same as the present></p>

Present	Amendment
<p>2. <Newly added></p> <p><hereafter, omitted></p> <p>Section 13 Instrumentation and Automation Systems</p> <p>1301. ~ 1302. <omitted></p> <p>1303. Overflow control</p> <p>1. ~ 2. <omitted></p> <p>3. <Newly added></p> <p><hereafter, omitted></p>	<p><u>2. External surface area of the tank for determining sizing of pressure relief valve (2018)</u></p> <p><u>In application to Fig. 7.5.19 of the Rules, external surface area for prismatic tanks is to be in accordance with followings:</u></p> <p>(1) <u>Lmin, for non-tapered tanks, is the smaller of the horizontal dimensions of the flat bottom of the tank. For tapered tanks, as would be used for the forward tank, Lmin is the smaller of the length and the average width.</u></p> <p>(2) <u>For prismatic tanks whose distance between the flat bottom of the tank and bottom of the hold space is equal to or less than Lmin/10:</u> <u>A = external surface area minus flat bottom surface area.</u></p> <p>(3) <u>For prismatic tanks whose distance between the flat bottom of the tank and bottom of the hold space is greater than Lmin/10:</u> <u>A = external surface area.</u></p> <p><hereafter, same as the present Rules></p> <p>Section 13 Instrumentation and Automation Systems</p> <p>1301. ~ 1302. <same as the present></p> <p>1303. Overflow control</p> <p>1. ~ 2. <same as the present Rules></p> <p><u>3. Test for cargo tank's high level alarm (2018)</u></p> <p><u>For the purpose of the requirements in 1303. 2 and 5 of the Rules, the following requirements are to be complied with :</u></p> <p>(1) <u>The expression "each dry-docking" is considered to be the survey of the outside of the ship's bottom required for the renewal of the Cargo Ship Safety Construction Certificate and or the Cargo Ship Safety Certificate.</u></p> <p>(2) <u>The expression "high-level alarms" is considered to be high liquid level alarm in 1303. 1 and does not include the independent sensor which activates the emergency shutdown system (ESD) and additional sensor(s) specified in paragraph 1303. 2 of the Rules.</u></p> <p>(3) <u>The expression "first occasion of full loading" after "dry-docking" is considered to be the first loading where conditions allow for testing provided that the position of sensors for all high-level alarms(s), additional sensor(s) specified in paragraph 1303. 2 of the Rules, and sensor(s) which activates the ESD were tested by simulation at the dry-docking. The testing of the high-level alarms with liquid cargo is to be recorded in the ship's logbook or cargo log by the Master and verified by the Society at the first annual survey after "each dry-docking".</u></p> <p><hereafter, same as the present Rules></p>

Amended Guidance Relating to the Rules for the Classification of Steel Ships

(Part 8 Fire Protection and Fire Extinction Chapter 10 Escape)



- Main Amendments -

(1) Effective date : 1 Jan 2018 (The contract date for ship construction)

● To reflect IACS UI SC269 (Rev.1 Dec 2016)

Present	Amendment
<p style="text-align: center;">CHAPTER 10 ESCAPE</p> <p style="text-align: center;">Section 2 Means of escape</p> <p>201. ~ 202. <omitted></p> <p>203. Means of escape from machinery spaces</p> <p>1. ~ 8. <omitted></p> <p>9. In applying 203. 2 (2) & (3) of the Rules, means of escape from the steering gear space in cargo ships shall satisfy the following requirements.</p> <p>(1) Steering gear spaces which do not contain the emergency steering position need only have one means of escape.</p> <p>(2) Steering gear spaces containing the emergency steering position can have one means of escape provided it leads directly onto the open deck. Otherwise, two means of escape are to be provided but they do not need to lead directly onto the open deck.</p> <p>(3) Escape routes that pass only through stairways and/or corridors that have fire integrity protection equivalent to steering gear spaces are considered as providing a “direct access to the open deck”.</p> <p><hereafter, omitted></p>	<p style="text-align: center;">CHAPTER 10 ESCAPE</p> <p style="text-align: center;">Section 2 Means of escape</p> <p>201. ~ 202. <same as present></p> <p>203. Means of escape from machinery spaces</p> <p>1. ~ 8. <same as present></p> <p>9. In applying 203. 2 (2) & (3) of the Rules, means of escape from the steering gear space in cargo ships shall satisfy the following requirements.</p> <p>(1) Steering gear spaces which do not contain the emergency steering position need only have one means of escape.</p> <p>(2) Steering gear spaces containing the emergency steering position can have one means of escape provided it leads directly onto the open deck. Otherwise, two means of escape are to be provided but they do not need to lead directly onto the open deck.</p> <p>(3) Escape routes that pass only through stairways and/or corridors are considered as providing a “direct access to the open deck”, <u>provide that the escape routes from the steering gear spaces have fire integrity protection equivalent to: (2018)</u></p> <p style="margin-left: 20px;">- <u>steering gear spaces; or</u> - <u>stairways/corridors, whichever is more stringent.</u></p> <p><hereafter, same as present></p>

Amended Rules for the Classification of Steel Ships

(Part 9 Additional Installations Chapter 10 Ballast Water Management)



- Main Amendments -

(1) Effective date : 1 Jan 2018 (The contract date for ship construction)

● To reflect internal opinion

Present	Amendment
<p style="text-align: center;">CHAPTER 10 BALLAST WATER MANAGEMENT</p> <p style="text-align: center;">Section 1 ~ Section 2 <omitted></p> <p style="text-align: center;">Section 3 Ballast Water Management Systems</p> <p>301. General</p> <p>1. Application</p> <p>(1) ~ (2) <omitted></p> <p>(3) The ballast water management system is to be type-approved by Flag Administration or the Society in accordance with Guidelines G8, Guidelines for Approval of Ballast Water Management Systems (IMO Res. MEPC.174(58))</p> <p>(4) ~ (5) <omitted></p> <p>2. <omitted></p> <p>302. <omitted></p> <p>303. Arrangement of BWMS</p> <p>1. Where the operating principle of the BWMS involves the generation of a dangerous gas, the following requirements are to be satisfied:</p> <p>(1) ~ (2) <omitted></p> <p>(3) The arrangements used for gas relieving, i.e. degas equipment or equivalent, are to be provided with monitoring measures with independent shutdown. The open end of the gas relieving device is to be led to a safe area on open deck.</p> <p>(hereafter, omitted)</p> <p>304. ~ 305. <omitted></p>	<p style="text-align: center;">CHAPTER 10 BALLAST WATER MANAGEMENT</p> <p style="text-align: center;">Section 1 ~ Section 2 <same as the present></p> <p style="text-align: center;">Section 3 Ballast Water Management Systems</p> <p>301. General</p> <p>1. Application</p> <p>(1) ~ (2) <same as the present></p> <p>(3) The ballast water management system is to be type-approved by Flag Administration and the Society in accordance with Guidelines G8, Guidelines for Approval of Ballast Water Management Systems (IMO Res. MEPC.174(58)) <i>(2018)</i></p> <p>(4) ~ (5) <same as the present></p> <p>2. <same as the present></p> <p>302. <same as the present></p> <p>303. Arrangement of BWMS</p> <p>1. Where the operating principle of the BWMS involves the generation of a dangerous gas, the following requirements are to be satisfied:</p> <p>(1) ~ (2) <same as the present></p> <p>(3) The arrangements used for gas relieving, i.e. degas equipment or equivalent, are to be provided with monitoring measures with independent shutdown. The open end of the gas relieving device is to be led to a safe area on open deck. [See Guidance]</p> <p>(hereafter, same as the present)</p> <p>304. ~ 305. <same as the present></p>

Amended Guidance for LNG Fuel Ready Ships



- Main Amendments -

(1) Effective date : 1 Jan 2018 (The contract date for ship construction)

● To reflect result of internal review

Present	Amendment
<p style="text-align: center;">CHAPTER 2 REQUIREMENTS FOR LEVELS OF LNG FUEL READY</p> <p style="text-align: center;">Section 1 <omitted></p> <p style="text-align: center;">Section 2 Level of Preparing Generic Design</p> <p>201. General</p> <p>1. ~ 2. <omitted></p> <p>3. <newly added></p> <p>202. Plans and documents to be submitted</p> <p>1. The following plans and documents are to be submitted to the Society for review</p> <p>(1) <u>Arrangement</u> plans showing location of:</p> <p>(A) to (B) <Omitted></p> <p>(C) Gas pump room <u>and</u> compressor rooms</p> <p>(D) Gas piping with shore connections</p> <p>(E) to (H) <Omitted></p> <p><Hereafter, omitted></p>	<p style="text-align: center;">CHAPTER 2 REQUIREMENTS FOR LEVELS OF LNG FUEL READY</p> <p style="text-align: center;">Section 1 <same as the present></p> <p style="text-align: center;">Section 2 Level of Preparing Generic Design</p> <p>201. General</p> <p>1. ~ 2. <same as the present></p> <p>3. <u>Where parts of plans and documents required in this section are not available, alternative documents may be accepted by the Society's review. (2018)</u></p> <p>202. Plans and documents to be submitted</p> <p>1. The following plans and documents are to be submitted to the Society for review <i>(2018)</i></p> <p>(1) <u>General arrangement</u> plans showing location of:</p> <p>(A) to (B) <Same as the present Guidance></p> <p>(C) <u>Gas pump room, compressor rooms and fuel preparation room</u></p> <p>(D) <u>Gas piping routing</u> with shore connections</p> <p>(E) to (H) <Same as the present></p> <p><Hereafter, same as the present Guidance></p>

Amended Guidance for Gas-fuelled Ships



- Main Amendments -

(1) Effective date : 1 Jan 2018 (The contract date for ship construction or application date for survey)

- To reflect IACS UR Z25 (Rev.1 Sep 2017)
- To reflect IACS Rec 148 (New Jan 2017)
- To reflect IACS UI GF1 (New Jan 2017 & Rev.1 July 2017)
- To reflect IMO MSC.1/Circ.1558

Present	Amendment
<p style="text-align: center;">CHAPTER 1 GENERAL</p> <p style="text-align: center;">Section 1 General</p> <p>101. <omitted></p> <p>102. Definitions</p> <p>1. ~ 14. <omitted></p> <p>15. <omitted></p> <p>(1) ~ (2) <omitted></p> <p>(3) Tank connection space is a space surrounding all tank connections and tank valves that is required for tanks with such connections in enclosed spaces.</p> <p>16. <omitted></p> <p>17. Fuel preparation room means any space containing pumps, compressors and/or vaporizers for fuel preparation purposes.</p> <p><hereafter, omitted></p>	<p style="text-align: center;">CHAPTER 1 GENERAL</p> <p style="text-align: center;">Section 1 General</p> <p>101. <same as the present></p> <p>102. Definitions</p> <p>1. ~ 14. <same as the present></p> <p>15. <same as the present></p> <p>(1) ~ (2) <same as the present></p> <p>(3) Tank connection space is a space surrounding all tank connections and tank valves that is required for tanks with such connections in enclosed spaces. <u>A tank connection space which has equipment such as vaporizers or heat exchangers installed inside is not regarded as a fuel preparation room. Such equipment is considered to only contain potential sources of release, but not sources of ignition. (2018)</u></p> <p>16. <same as the present></p> <p>17. Fuel preparation room means any space containing pumps, compressors and/or vaporizers for fuel preparation purposes. <u>A tank connection space which has equipment such as vaporizers or heat exchangers installed inside is not regarded as a fuel preparation room. Such equipment is considered to only contain potential sources of release, but not sources of ignition. (2018)</u></p> <p><hereafeter, same as the present></p>

Present	Amendment
<p style="text-align: center;">CHAPTER 2 CLASSIFICATION SURVEYS</p> <p style="text-align: center;">Section 1 <omitted></p> <p style="text-align: center;">Section 2 Periodical Surveys</p> <p>201. Annal Survey</p> <p>1. For ships with natural gas fuelled engine installations, the survey is to include:</p> <ul style="list-style-type: none"> (1) External examination and function testing of remote operated valves in the gas piping system (2) External examination of gas pipe ducts (3) Testing of instrumentation (4) Testing of emergency shutdown system, as a minimum by: <ul style="list-style-type: none"> (A) Releasing gas detectors and fire detectors (B) Checking electrical disconnection in ESD protected engine rooms (C) Checking safety functions in connection with the ventilation systems in gas engine rooms (D) Verification of the functioning of ventilation systems (E) Examination of drip trays in bunker station. (5) Manual with instructions for operation and/or maintenance is to be verified. (6) List of required signboards or notice plates is to be verified. 	<p style="text-align: center;">CHAPTER 2 CLASSIFICATION SURVEYS</p> <p style="text-align: center;">Section 1 <same as the present></p> <p style="text-align: center;">Section 2 Periodical Surveys</p> <p>201. Annal Survey (2018)</p> <p><u>The following is to be carried out during the survey of the fuel Storage, fuel bunkering System, and fuel supply System.</u></p> <p>1. Logbooks/Records</p> <p><u>The logbooks and operating records are to be examined with regard to correct functioning of the gas detection systems, fuel supply/gas systems, etc. The hours per day of the reliquefaction plant, gas combustion unit, as applicable, the boil-off rate, and nitrogen consumption (for membrane containment systems) are to be considered together with gas detection records.</u></p> <p>2. Operating and Maintenance Instruction Manuals</p> <p><u>The manufacturer/builder instructions and manuals covering the operations, safety and maintenance requirements and occupational health hazards relevant to fuel storage, fuel bunkering, and fuel supply and associated systems for the use of the fuel, are to be confirmed as being aboard the vessel.</u></p> <p>3. Control, Monitoring and Safety Systems</p> <ul style="list-style-type: none"> <u>(1) Gas detection and other leakage detection equipment in compartments containing fuel storage, fuel bunkering, and fuel supply equipment or components or associated systems, including indicators and alarms, is to be confirmed in satisfactory operating condition. Recalibration of the gas detection systems should be verified in accordance with the manufacturers' recommendations.</u> <u>(2) Verification of the satisfactory operation of the control, monitoring and automatic shutdown systems as far as practicable of the fuel supply and bunkering systems.</u> <u>(3) Operational test, as far as practicable, of the shutdown of ESD protected machinery spaces.</u> <p>4. Fuel Handling Piping, Machinery and Equipment</p> <p><u>Piping, hoses, emergency shut-down valves, remote operating valves, relief valves, machinery and equipment for fuel storage, fuel bunkering, and fuel supply such as venting, compressing, refrigerating, liquefying, heating, cooling or otherwise handling the fuel is to be examined, as far as practicable. Means for inerting is to be examined. Stopping of pumps and compressors upon emergency shut-down of the system is to be confirmed as far as practicable.</u></p>

Present	Amendment
	<p>5. Ventilating System</p> <p><u>Examination of the ventilation system, including portable ventilating equipment where fitted, is to be made for spaces containing fuel storage, fuel bunkering, and fuel supply units or components or associated systems, including air locks, pump rooms, compressor rooms, fuel preparation rooms, fuel valve rooms, control rooms and spaces containing gas burning equipment. Where alarms, such as differential pressure and loss of pressure alarms, are fitted, these should be operationally tested as far as practicable.</u></p> <p>6. Drip Trays</p> <p><u>Portable and fixed drip trays and insulation for the protection of the ship's structure in the event of leakage are to be examined.</u></p> <p>7. Hazardous Areas</p> <p><u>Electrical equipment and bulkhead/deck penetrations including access openings in hazardous areas are to be examined for continued suitability for their intended service and installation area.</u></p> <p>8. Electrical Bonding</p> <p><u>Electrical bonding arrangements in hazardous areas, including bonding straps where fitted, are to be examined.</u></p> <p>9. Fuel Storage System</p> <ul style="list-style-type: none"> <u>(1) External examination of the storage tanks including secondary barrier if fitted and accessible</u> <u>(2) General examination of the fuel storage hold place</u> <u>(3) Internal examination of tank connection space</u> <u>(4) External examination of tank and relief valves</u> <u>(5) Verification of satisfactory operation of tank monitoring system</u> <u>(6) Examination and testing of installed bilge alarms and means of drainage of the compartment</u> <u>(7) Testing of the remote and local closing of the installed main tank valve</u> <p>10. Fuel Bunkering System</p> <ul style="list-style-type: none"> <u>(1) Examination of bunkering stations and the fuel bunkering system</u> <u>(2) Verification of satisfactory operation of the fuel bunkering control, monitoring and shutdown systems</u> <p>11. Fuel Supply System</p> <p><u>Examination of the fuel supply system during working condition as far as practicable</u></p> <ul style="list-style-type: none"> <u>(1) Verification of satisfactory operation of the fuel supply system control, monitoring and shut-down systems.</u> <u>(2) Testing of the remote and local closing of the master fuel valve for each engine compartment.</u>

Present	Amendment
<p>202. Intermediate Survey</p> <p>1. For ships with natural gas fuelled engine installations, in addition to the requirement in 201. 1, the survey is to include testing of all alarm and shutdown functions for:</p> <p>(1) Gas compressor (2) Gas engine</p> <p>203. Special Survey</p> <p>1. For ships with natural gas fuelled engine installations, in addition to the requirement in 202. 1, the survey is to include :</p> <p>(1) Examination of gastight bulkheads with cable and shaft sealing etc. Special attention is to be paid to bulkheads in the electrical motor and or compressor room. Shaft sealing is to be checked for lubrication and possible overheating.</p> <p>(2) Testing of gas tanks high level alarm</p> <p>(3) Examination and testing of:</p> <p>(A) Gas tanks safety relief valves (B) Tank connection space or second barrier space P/V valves and relief hatches, as relevant (C) Gas handling machinery and equipment (D) Auxiliary systems and equipment for gas installations (E) Portable gas detectors and oxygen analyser. ↓</p>	<p>202. Intermediate Survey (2018)</p> <p><u>At the Intermediate Survey, in addition to all the requirements for Annual Survey, the following items are to be surveyed.</u></p> <p>1 Safety Systems</p> <p><u>Gas detectors, temperature sensors, pressure sensors, level indicators, and other equipment providing input to the fuel safety system are to be randomly tested to confirm satisfactory operating condition. Proper response of the fuel safety system upon fault conditions is to be verified.</u></p> <p>203. Special Survey (2018)</p> <p>1. General</p> <p><u>The Special Survey is to include, in addition to the requirements of the Annual Survey, examination, tests and checks of sufficient extent to ensure that the fuel installations are in a satisfactory condition and is fit for its intended purpose for the new period of class of 5 years to be assigned, subject to proper maintenance and operation and to periodical surveys being carried out at the due dates.</u></p> <p>2. Fuel Handling and Piping</p> <p><u>All piping for fuel storage, fuel bunkering, and fuel supply such as venting, compressing, refrigerating, liquefying, heating storing, burning or otherwise handling the fuel and liquid nitrogen installations are to be examined. Removal of insulation from the piping and opening for examination may be required. Where deemed suspect, a hydrostatic test to 1.25 times the Maximum Allowable Relief Valve Setting (MARVS) for the pipeline is to be carried out. After reassembly, the complete piping is to be tested for leaks. Where water cannot be tolerated and the piping cannot be dried prior to putting the system into service, the Surveyor may accept alternative testing fluids or alternative means of testing.</u></p> <p>3. Fuel Valves</p> <p><u>Fuel valves in (1) and (2) are to be examined and proven operable. A random selection of valves is to be opened for examination.</u></p> <p>(1) <u>Emergency shut-down valves, check valves, block and bleed valves, master gas valves, remote operating valves,</u></p> <p>(2) <u>Isolating valves for pressure relief valves in the fuel storage, fuel bunkering, and fuel supply piping systems are to be examined and proven operable.</u></p> <p>4. Pressure Relief Valves</p> <p>(1) <u>Fuel Storage Tank Pressure Relief Valves</u></p> <p><u>The pressure relief valves for the fuel storage tanks are to be opened for examination, adjusted, and function tested. If the tanks are equipped with relief valves with non-metallic membranes in the main or pilot valves, such non-metallic membranes are to be replaced.</u></p>

Present	Amendment
	<p>(2) <u>Fuel Supply and Bunkering Piping Pressure Relief Valves</u> <u>A random selection of pressure relief valves for the fuel supply and bunkering piping are to be opened for examination, adjusted, and function tested. Where a proper record of continuous overhaul and retesting of individually identifiable relief valves is maintained, consideration will be given to acceptance on the basis of opening, internal examination, and testing of a representative sampling of valves, including each size and type of liquefied gas or vapor relief valve in use, provided there is logbook evidence that the remaining valves have been overhauled and tested since crediting of the previous Special Survey.</u></p> <p>(3) <u>Pressure/Vacuum Relief Valves</u> <u>The pressure/vacuum relief valves, rupture disc and other pressure relief devices for interbarrier spaces and hold spaces are to be opened, examined, tested and readjusted as necessary, depending on their design.</u></p> <p>5. Fuel Handling Equipment <u>Fuel pumps, compressors, process pressure vessels, inert gas generators, heat exchangers and other components used in connection with fuel handling are to be examined as required in the Rules of each individual Society for periodical survey of machinery.</u></p> <p>6. Electrical Equipment</p> <p>(1) <u>Examination of electrical equipment to include the physical condition of electrical cables and supports, intrinsically safe, explosion proof, or increased safety features of electrical equipment.</u></p> <p>(2) <u>Functional testing of pressurized equipment and associated alarms.</u></p> <p>(3) <u>Testing of systems for de-energizing electrical equipment which is not certified for use in hazardous areas.</u></p> <p>(4) <u>An electrical insulation resistance test of the circuits terminating in, or passing through, the hazardous zones and spaces is to be carried out.</u></p> <p>7. Safety Systems <u>Gas detectors, temperature sensors, pressure sensors, level indicators, and other equipment providing input to the fuel safety system are to be tested to confirm satisfactory operating condition.</u></p> <p>(1) <u>Proper response of the fuel safety system upon fault conditions is to be verified.</u></p> <p>(2) <u>Pressure, temperature and level indicating equipment are to be calibrated in accordance with the manufacturer's requirements.</u></p> <p>8. Fuel Storage Tanks <u>Fuel storage tanks are to be examined in accordance with an approved survey plan and liquefied gas fuel storage tanks are to be examined based upon followings;</u></p> <p>(1) <u>All Fuel tanks are to be examined internally. Vacuum insulated independent fuel storage tanks of type C need not be examined internally. Where fitted, the vacuum monitoring system should be examined and records should be reviewed.</u></p>

Present	Amendment
	<p>(2) <u>Special attention is to be given to the fuel tank and insulation in way of chocks, supports and keys. The tank insulation and tank support arrangements should be visually examined. Removal of insulation may be required in order to verify the condition of the tank or the insulation itself if found necessary by the Surveyor. Non-destructive testing may be required if conditions raise doubt to the structural integrity.</u> <u>Where the arrangement is such that the insulation cannot be examined, the surrounding structures of wing tanks, double bottom tanks and cofferdams are to be examined for cold spots when the fuel tanks are in the cold condition unless voyage records together with the instrumentation give sufficient evidence of the integrity of the insulation system.</u></p> <p>(3) <u>Non-destructive testing:</u> (A) <u>Non-destructive testing is to supplement fuel tank inspection with special attention to be given to the integrity of the main structural members, tank shell and highly stressed parts, including welded connections as deemed necessary by the surveyor. However, for type C tanks, this does not mean that non-destructive testing can be dispensed with totally. The following items are, inter alia, considered as highly stressed parts:</u> - <u>fuel tanks supports and anti-rolling/anti-pitching devices</u> - <u>web frames or stiffening rings</u> - <u>swash bulkhead boundaries</u> - <u>dome and stump connections to tank shell</u> - <u>foundations for pumps, towers, ladders, etc.</u> - <u>pipe connections</u> (B) <u>For independent tanks type B, the extent of non-destructive testing shall be as given in a programme specially prepared for the fuel tank design.</u></p> <p>(4) <u>The tightness of all fuel tanks is to be verified by an appropriate procedure. Provided that the effectiveness of the ship's gas detection equipment has been confirmed, it will be acceptable to utilize this equipment for the tightness test of independent tanks below deck.</u></p> <p>(5) <u>Where findings of (1) to (4) or an examination of the voyage records raises doubts as to the structural integrity of a fuel tank, a hydraulic or hydro-pneumatic test is to be carried out. For integral tanks and for independent tank type A and B, the test pressure is to be carried out in accordance with proper pressure based on design of each tank. For independent tanks type C, the test pressure is not to be less than 1.25 times the MARVS.</u></p> <p>(6) <u>At every other special survey (i.e., 2nd, 4th, 6th, etc.), all independent fuel tanks type C are to be either:</u> (A) <u>Hydraulically or hydro-pneumatically tested to 1.25 times MARVS, followed by nondestructive testing in accordance with (3) (A), or</u> (B) <u>Subjected to a thorough, planned non-destructive testing. This testing is to be carried out in accordance with a programme specially prepared for the tank design. If a special programme does not exist, the following applies:</u></p>

Present	Amendment
	<ul style="list-style-type: none"> - <u>fuel tank supports and anti-rolling/anti-pitching devices,</u> - <u>stiffening rings,</u> - <u>Y-connections between tank shell and a longitudinal bulkhead of bilobe tanks,</u> - <u>swash bulkhead boundaries,</u> - <u>dome and sump connections to the tank shell,</u> - <u>foundations for pumps, towers, ladders etc.,</u> - <u>pipe connections.</u> <p><u>At least 10% of the length of the welded connections in each of the above mentioned areas is to be tested. This testing is to be carried out internally and externally as applicable. Insulation is to be removed as necessary for the required non-destructive testing.</u></p> <p>(7) <u>As far as practicable all hold spaces and hull insulation (if provided), secondary barriers and tank supporting structures are to be visually examined. The secondary barrier of all tanks is to be checked for their effectiveness by means of a pressure/vacuum test, a visual examination or another acceptable method.</u></p> <p>(8) <u>Membrane and semi-membrane tanks systems,</u></p> <p>(A) <u>For membrane and semi-membrane tanks systems, inspection and testing are to be carried out in accordance with programmes specially prepared in accordance with an approved method for the actual tank system.</u></p> <p>(B) <u>For membrane storage systems a tightness test of the primary and secondary barrier shall be carried out in accordance with the system designers' procedures and acceptance criteria as approved by the classification society. Low differential pressure tests may be used for monitoring the fuel storage system performance, but are not considered an acceptable test for the tightness of the secondary barrier.</u></p> <p>(C) <u>For membrane storage systems with glued secondary barriers if the designer's threshold values are exceeded, an investigation is to be carried out and additional testing such as thermographic or acoustic emissions testing should be carried out.</u></p> <p>(9) <u>The pressure/vacuum relief valves, rupture disc and other pressure relief devices for interbarrier spaces and hold spaces are to be opened, examined, tested and readjusted as necessary, depending on their design.</u></p> <p>(10) <u>The pressure relief valves for the fuel tanks are to be opened for examination, adjusted, function tested, and sealed. If the fuel tanks are equipped with relief valves with non-metallic membranes in the main or pilot valves, such non-metallic membranes are to be replaced. Where a proper record of continuous overhaul and retesting of individually identifiable relief valves is maintained, consideration will be given to acceptance on the basis of opening, internal examination, and testing of a representative sampling of valves, including each size and type of liquefied gas or vapor relief valve in use, provided there is logbook evidence that the remaining valves have been overhauled and tested since crediting of the previous Special Survey.↓</u></p>

Present	Amendment
<p style="text-align: center;">CHAPTER 3 SHIP DESIGN AND ARRANGEMENT</p> <p style="text-align: center;">Section 1 ~ Section 3 <omitted></p> <p style="text-align: center;">Section 4 Arrangement of Other Systems and Spaces</p> <p>401. <omitted></p> <p>402. Fuel preparation room</p> <p>Fuel preparation rooms are to be located on an open deck, unless those rooms are arranged and fitted in accordance with the regulations of this Guidance for tank connection spaces.</p> <p style="text-align: center;"><hereafter, omitted></p>	<p style="text-align: center;">CHAPTER 3 SHIP DESIGN AND ARRANGEMENT</p> <p style="text-align: center;">Section 1 ~ Section 3 <same as the present></p> <p style="text-align: center;">Section 4 Arrangement of Other Systems and Spaces</p> <p>401. <same as the present></p> <p>402. Fuel preparation room (2018)</p> <p>Fuel preparation rooms are to be located on an open deck, unless those rooms are arranged and fitted in accordance with the regulations of this Guidance for tank connection spaces <u>based upon followings;</u></p> <ol style="list-style-type: none"> <u>1. Fuel preparation rooms, regardless of location, is to be arranged to safely contain cryogenic leakages.</u> <u>2. The material of the boundaries of the fuel preparation room is to have a design temperature corresponding with the lowest temperature it can be subjected to in a probable maximum leakage scenario unless the boundaries of the space, i.e. bulkheads and decks, are provided with suitable thermal protection.</u> <u>3. The fuel preparation room is to be arranged to prevent surrounding hull structure from being exposed to unacceptable cooling, in case of leakage of cryogenic liquids.</u> <u>4. The fuel preparation room is to be designed to withstand the maximum pressure build up during such a leakage. Alternatively, pressure relief venting to a safe location (mast) can be provided.</u> <p style="text-align: center;"><hereafter, same as the present></p>

Present	Amendment
<p style="text-align: center;">CHAPTER 4 FUEL CONTAINMENT SYSTEM</p> <p style="text-align: center;">Section 1 <omitted></p> <p style="text-align: center;">Section 2 Liquefied gas fuel containment</p> <p>201. ~ 271. <omitted></p> <p>1. ~ 2. <omitted></p> <p>3. Sizing of pressure relieving system</p> <p>(1) Sizing of pressure relief valves</p> <p>(A) <omitted></p> <p>(a) ~ (b) <omitted></p> <p>(c) <newly added></p> <p><hereafter, omitted></p>	<p style="text-align: center;">CHAPTER 4 FUEL CONTAINMENT SYSTEM</p> <p style="text-align: center;">Section 1 <same as the present></p> <p style="text-align: center;">Section 2 Liquefied gas fuel containment</p> <p>201. ~ 271. <same as the present></p> <p>1. ~ 2. <same as the present></p> <p>3. Sizing of pressure relieving system</p> <p>(1) Sizing of pressure relief valves</p> <p>(A) <same as the present></p> <p>(a) ~ (b) <same as the present></p> <p>(c) For prismatic tanks: (2018)</p> <p>(i) <u>L_{min}, for non-tapered tanks, is the smaller of the horizontal dimensions of the flat bottom of the tank. For tapered tanks, as would be used for the forward tank, L_{min} is the smaller of the length and the average width.</u></p> <p>(ii) <u>For prismatic tanks whose distance between the flat bottom of the tank and bottom of the hold space is equal to or less than L_{min}/10:</u></p> <p style="text-align: center;"><u>A = external surface area minus flat bottom surface area.</u></p> <p>(iii) <u>For prismatic tanks whose distance between the flat bottom of the tank and bottom of the hold space is greater than L_{min}/10:</u></p> <p style="text-align: center;"><u>A = external surface area</u></p> <p><hereafter, same as the present></p>

Present	Amendment
<p style="text-align: center;">Section 3 Maintaining of fuel storage condition</p> <p>301. Control of tank pressure and temperature</p> <p>1. (1) With the exception of liquefied gas fuel tanks designed to withstand the full gauge vapour pressure of the fuel under conditions of the upper ambient design temperature, liquefied gas fuel tanks' pressure and temperature are to be maintained at all times within their design range by means acceptable to the Society, e.g. by one of the following methods:</p> <p>(A) ~ (D) <omitted></p> <p>The method chosen is to be capable of maintaining tank pressure below the set pressure of the tank pressure relief valves for a period of 15 days assuming full tank at normal service pressure and the ship in idle condition, i.e. only power for domestic load is generated.</p> <p><hereafter, omitted></p> <p style="text-align: center;">CHAPTER 6 BUNKERING AND FUEL SUPPLY</p> <p style="text-align: center;">Section 1 Bunkering</p> <p>101. <omitted></p> <p>102. Bunkering station</p> <p>1. The bunkering station is to be located on open deck so that sufficient natural ventilation is provided. Closed or semi-enclosed bunkering stations are to be subject to special consideration within the risk assessment.</p> <p><hereafter, omitted></p>	<p style="text-align: center;">Section 3 Maintaining of fuel storage condition</p> <p>301. Control of tank pressure and temperature</p> <p>1. (1) With the exception of liquefied gas fuel tanks designed to withstand the full gauge vapour pressure of the fuel under conditions of the upper ambient design temperature, liquefied gas fuel tanks' pressure and temperature are to be maintained at all times within their design range by means acceptable to the Society, e.g. by one of the following methods:</p> <p>(A) ~ (D) <omitted></p> <p>The method chosen is to be capable of maintaining tank pressure below the set pressure of the tank pressure relief valves for a period of 15 days assuming full tank at normal service pressure and the ship in idle condition, i.e. only power for domestic load is generated. <u>Liquefied gas fuel tanks' pressure and temperature should be controlled and maintained within the design range at all times including after activation of the safety system required in Ch 9. 201. 2. (1) (B) for a period of minimum 15 days. The activation of the safety system alone is not deemed as an emergency situation. (2018)</u></p> <p><hereafter, same as the present></p> <p style="text-align: center;">CHAPTER 6 BUNKERING AND FUEL SUPPLY</p> <p style="text-align: center;">Section 1 Bunkering</p> <p>101. <omitted></p> <p>102. Bunkering station</p> <p>1. The bunkering station is to be located on open deck so that sufficient natural ventilation is provided. Closed or semi-enclosed bunkering stations are to be subject to special consideration within the risk assessment. <u>The special consideration is to be as a minimum include, but not be restricted to, the following design features: (2018)</u></p> <p>(1) <u>Segregation towards other areas on the ship</u></p> <p>(2) <u>Hazardous area plans for the ship</u></p> <p>(3) <u>Requirements for forced ventilation</u></p> <p>(4) <u>Requirements for leakage detection (e.g. gas detection and low temperature detection)</u></p> <p>(5) <u>Safety actions related to leakage detection (e.g. gas detection and low temperature detection)</u></p> <p>(6) <u>Access to bunkering station from non-hazardous areas through airlocks</u></p> <p>(7) <u>Monitoring of bunkering station by direct line of sight or by CCTV.</u></p> <p><hereafter, same as the present></p>

Present	Amendment
<p style="text-align: center;">CHAPTER 8 FIRE SAFETY AND EXPLOSION PREVENTION</p> <p style="text-align: center;">Section 1 ~ Section 2 <omitted></p> <p style="text-align: center;">Section 3 Ventilation</p> <p>301. ~ 303. <omitted></p> <p>304. Machinery spaces containing gas-fuelled consumers</p> <ol style="list-style-type: none"> 1. The ventilation system for machinery spaces containing gas-fuelled consumers is to be independent of all other ventilation systems. 2. ~ 4. <omitted> <p>305. ~ 306. <omitted></p> <p>307. Ducts and double pipes</p> <ol style="list-style-type: none"> 1. <omitted> 2. The ventilation system for double piping and for gas valve unit spaces in gas safe engine-rooms is to be independent of all other ventilation systems. 3. The ventilation inlet for the double wall piping or duct is always to be located in a non-hazardous area away from ignition sources. The inlet opening is to be fitted with a suitable wire mesh guard and protected from ingress of water. <p><hereafter, omitted></p>	<p style="text-align: center;">CHAPTER 8 FIRE SAFETY AND EXPLOSION PREVENTION</p> <p style="text-align: center;">Section 1 ~ Section 2 <same as the present></p> <p style="text-align: center;">Section 3 Ventilation</p> <p>301. ~ 303. <same as the present></p> <p>304. Machinery spaces containing gas-fuelled consumers</p> <ol style="list-style-type: none"> 1. The ventilation system for machinery spaces containing gas-fuelled consumers is to be independent of all other ventilation systems. <u>Spaces enclosed in the boundaries of machinery spaces (such as purifier's room, engine-room workshops and stores) are considered an integral part of machinery spaces containing gas-fuelled consumers and, therefore, their ventilation system does not need to be independent of the one of machinery spaces. (2018)</u> 2. ~ 4. <same as the present> <p>305. ~ 306. <same as the present></p> <p>307. Ducts and double pipes</p> <ol style="list-style-type: none"> 1. <same as the present> 2. The ventilation system for double piping and for gas valve unit spaces in gas safe engine-rooms is to be independent of all other ventilation systems. <u>Double piping and gas valve unit spaces in gas safe engine-rooms are considered an integral part of the fuel supply systems and, therefore, their ventilation system does not need to be independent of other fuel supply ventilation systems provided such fuel supply systems contain only gaseous fuel. (2018)</u> 3. The ventilation inlet for the double wall piping or duct is always to be located in a non-hazardous area <u>in open air</u> away from ignition sources. The inlet opening is to be fitted with a suitable wire mesh guard and protected from ingress of water. (2018) <p><hereafter, same as the present></p>

Present	Amendment
<p style="text-align: center;">CHAPTER 9 ELECTRICAL INSTALLATIONS AND CONTROL SYSTEMS</p> <p style="text-align: center;">Section 1 <omitted></p> <p>Section 2 CONTROL, MONITORING AND SAFETY SYSTEMS</p> <p>201. ~ 202. <omitted></p> <p>203. Bunkering and liquefied gas fuel tank monitoring</p> <p>1. <omitted></p> <p>2. Overflow control</p> <p>(1) ~ (2) <omitted></p> <p>(3) The position of the sensors in the liquefied gas fuel tank is to be capable of being verified before commissioning. At the first occasion of full loading after delivery and after each dry-docking, testing of high level alarms is to be conducted by raising the fuel liquid level in the liquefied gas fuel tank to the alarm point.</p> <p style="text-align: center;"><hereafter, omitted></p>	<p style="text-align: center;">CHAPTER 9 ELECTRICAL INSTALLATIONS AND CONTROL SYSTEMS</p> <p style="text-align: center;">Section 1 <omitted></p> <p style="text-align: center;">Section 2 Control, Monitoring and Safety Systems</p> <p>201. ~ 202. <same as the present></p> <p>203. Bunkering and liquefied gas fuel tank monitoring</p> <p>1. <same as the present></p> <p>2. Overflow control</p> <p>(1) ~ (2) <same as the present></p> <p>(3) The position of the sensors in the liquefied gas fuel tank is to be capable of being verified before commissioning. At the first occasion of full loading after delivery and after each dry-docking, testing of high level alarms is to be conducted by raising the fuel liquid level in the liquefied gas fuel tank to the alarm point.</p> <p><u>(A) The expression “each dry-docking” refers to: (2018)</u></p> <p><u>(a) the survey of the outside of the ship’s bottom required for the renewal of the Cargo Ship Safety Construction Certificate and or the Cargo Ship Safety Certificate, for cargo ships.</u></p> <p><u>(b) the survey of the outside of the ship’s bottom to be carried out every 60 months according to IMO Resolution A.1104(29, paragraphs 5.10.1 and 5.10.2), for passenger ships.</u></p> <p><u>(B) In applying 402. 3 of this Rules, The expression “high-level alarms” is considered to be high liquid level alarm(s) in 1 and does not include the independent sensor(s) which activates the automatic shutdown of liquefied gas fuel tank filling and additional sensor(s) specified in 2 of this Rules.</u></p> <p><u>(C) In applying 402. 3 of this Rules, “first occasion of full loading” after “dry-docking” is considered to be the first loading of the liquefied gas fuel where conditions allow for testing provided that the position of sensors for all high-level alarm(s) additional sensor(s) specified in 2 of this Rules and independent sensor(s) which activates the automatic shutdown of liquefied gas fuel tank filling were tested by simulation at the dry-docking. The testing of the high-level alarms with liquefied gas fuel is to be recorded in the ship’s logbook by the Master and verified by the Administration or recognized organisation at the first annual survey of a cargo ship, or the first renewal survey of a passenger ship, after “each dry-docking”.</u></p> <p style="text-align: center;"><hereafter, same as the present></p>