23-410

RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

Part D Machinery Installations

Rules for the Survey and Construction of Steel Ships
Part D 2023 AMENDMENT NO.2
Guidance for the Survey and Construction of Steel Ships
Part D 2023 AMENDMENT NO.2

Rule No.67 / Notice No.63 22 December 2023
Resolved by Technical Committee on 27 July 2023

ClassNK
NIPPON KAIJI KYOKAI

An asterisk (*) after the title of a requirement indicates that there is also relevant information in the corresponding Guidance.

RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

RULES

Part D Machinery Installations

2023 AMENDMENT NO.2

Rule No.67 22 December 2023

Resolved by Technical Committee on 27 July 2023

An asterisk (*) after the title of a requirement indicates that there is also relevant information in the corresponding Guidance.

Rule No.67 22 December 2023
AMENDMENT TO THE RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

"Rules for the survey and construction of steel ships" has been partly amended as follows:

Part D MACHINERY INSTALLATIONS

Amendment 2-1

Chapter 17 REFRIGERATING MACHINERY AND CONTROLLED ATMOSPHERE SYSTEMS

17.2 Design of Refrigerating Machinery

17.2.4 Pressure Relief Devices

Sub-paragraphs -1 and -2 have been amended as follows.

1 Compressors are to be provided with pressure relief devices as required by **(1)** and **(2)**.

(1) Relief valves are to be provided between compressor cylinders and gas delivery stop valves with ~~any~~ discharge being led to suction side of the compressor. In cases where devices which automatically stop compressors when pressures on high pressure sides of refrigerant piping systems become excessively high are installed, and alarm systems that activate visible and audible alarms when such refrigerant piping systems are in operation are also installed in refrigerating machinery compartments and at monitoring positions to provide an equivalent level of safety, the following **(a)** or **(b)** may be applied.

(a) Discharge from the relief valves specified in **(1)** above is to be led to the open air and openings are to be located at safe places.

(b) The relief valves specified in **(1)** above may be omitted on the condition that caution plates are provided that state all stop valves between the cylinders and pressure vessels specified in **-2** below be kept in the open position before compressors are started.

(2) ~~However~~ Notwithstanding the requirement in **(1)** above, compressors of 11 *kW* or less for refrigerating installations may be provided with pressure control switches ~~in lieu of the above safety device~~ instead of relief valves.

2 Relief valves are to be fitted to pressure vessels which may be isolated and store primary refrigerants in a liquid condition. ~~Any d~~Discharged gases from relief valves are to be released into the atmosphere at a safe place above the weather deck or to the low pressure parts of the equipment.

3 (Omitted)

4 (Omitted)

Chapter 21 SELECTIVE CATALYTIC REDUCTION SYSTEMS AND ASSOCIATED EQUIPMENT

21.4 Requirements for Construction and Arrangements, etc.

21.4.5 Safety Devices and Alarm Devices

Sub-paragraph 1 has been amended as follows.

1 In cases where changeover devices for exhaust gas pipes are fitted, devices which automatically open bypass sides of the changeover devices in the event of any of the following **(1)** and **(2)** failures are to be fitted. The above changeover devices are also to be operated within allowable limits of engine back pressure.

(1) Abnormal increases of the exhaust gas pressures at the inlet or the differential pressures across the catalyst blocks

(2) Abnormal increase of the exhaust gas temperature at the outlet (However, alarms may be omitted in cases where means are provided to prevent damage by soot fire.)

2 Alarm devices, to be activated in the event of any of the abnormal conditions given in **Table D21.1**, are to be provided at control stations of SCR systems.

3 (Omitted)

4 (Omitted)

Chapter 22 EXHAUST GAS CLEANING SYSTEMS AND ASSOCIATED EQUIPMENT

22.4 Requirements for Construction and Arrangements, etc.

22.4.1 Construction and Arrangement

Sub-paragraph -17 has been amended as follows.

17 The following connections on piping systems only for chemical treatment fluids are to be screened or provided with other appropriate means, and fitted with drip trays to prevent the spread of any spillage where they are installed:

(1) Detachable connections between pipes (flanged connections ~~and~~, mechanical joints, etc.);

(2) Detachable connections between pipes and equipment such as pumps, strainers, heaters, valves; and

(3) Detachable connections between equipment mentioned in **(1)** and **(2)** above.

Chapter 23 EXHAUST GAS RECIRCULATION SYSTEMS AND ASSOCIATED EQUIPMENT

23.4 Requirements for Construction and Arrangements, etc.

Paragraph 23.4.3 has been renumbered to Paragraph 23.4.4, and Paragraph 23.4.3 has been added.

23.4.3 Venting Systems of Storage Tanks for Chemical Treatment Fluids

The requirements of **22.4.3** are to be applied.

23.4.~~3~~4 Safety Devices and Alarm Devices

The requirements of **22.4.~~3~~4** are to be applied.

EFFECTIVE DATE AND APPLICATION (Amendment 2-1)

1. The effective date of the amendments is 22 December 2023.

Amendment 2-2

Chapter 13 PIPING SYSTEMS

13.2 Piping

13.2.5 Bulkhead Valves*

Sub-paragraph -2 has been amended as follows.

2 Pipes passing through collision bulkheads are to be ~~in accordance with the following **(1)** or **(2)**:~~

~~(1) A suitable screw-down valves or butterfly valves suitably supported by a seat or flanges that are operable from above the freeboard deck are to be fitted with and valve chests are to be secured to a bulkhead located inside the forepeak. However, these valves may be fitted on the aft side of the collision bulkhead in question provided that the valves are readily accessible under all service conditions, and that the space in which they are located is not a cargo space. Remote control devices for these valves may be omitted.~~

~~(2) Notwithstanding **(1)** above, in case where deemed appropriate by the Society,~~ fitted with a remotely controlled valve capable of being operated from above the freeboard deck ~~is to be fitted~~. The valve is to be normally closed. If the remote control system failure during operation of the valve, the valve is to be close automatically or be capable of being closed manually from a position above the freeboard deck. The valve ~~may~~is to be located at the collision bulkhead on either the forward or aft side, provided the space on the aft side is not a cargo space.

Title of Section 13.8 has been amended as follows.

13.8 Sounding ~~Pipes~~Devices

Paragraph 13.8.7 has been added as follows.

13.8.7 Water Level Detection and Alarm Systems for Multiple-Hold Cargo Ships

1 For cargo ships having multiple holds (excluding the bulk carriers defined in **Annex 1.1 An1.2.1(1), Part 2-2, Part C** and tankers), water level detection and alarm systems are to be fitted in cargo holds intended for dry cargoes in order to give audible and visible alarms at the navigation bridge in accordance with the following **(1)** and **(2)**. However, water level detection and alarm systems are not required for cargo holds located entirely above the freeboard deck.

(1) Systems are to give alarms when water levels reach the following **(a)** and **(b)** at the aft ends of cargo holds. In cases where inner bottoms are not parallel to the designed waterline, systems are to be fitted above lowest parts of cargo holds.
   (a) A height not less than 0.3 *m* above the inner bottom
   (b) A height not less than 15% of the depth of the cargo hold but not more 2.0 *m*

(2) Systems are to have constructions and functions deemed appropriate by the Society.

2 Alarms given by the water level detection and alarm systems specified in **-1** above are to be capable of identifying the space where the water level reaches the alarm level and the water level specified in **-1(1)** above at the navigation bridge. The above alarms are also to be capable of being easily distinguishable from alarms given by other installations at the navigation bridge.

3 The water level detection and alarm systems specified in **-1** above for ballast tanks and cargo

holds which have been designed to carry water ballast may be provided with override devices that are deemed appropriate by the Society.

4 Bilge alarm systems which are fitted in cargo hold bilge wells or other suitable locations may be used as the water level detection and alarm systems required by **-1(1)(a)** on the condition that they give audible and visible alarms in accordance with the following **(1)** to **(3)**.

(1) Systems are to give audible and visible alarms at the navigation bridge when water levels above the inner bottoms of cargo holds reach heights not less than 0.3 *m*. In cases where the bottoms of bilge wells are lower than the inner bottoms of cargo holds, alarms are to be given when water levels reach heights not less than 0.3 *m* above the bottoms of bilge wells.

(2) Alarms are to be capable of identifying the spaces where water levels reach alarm levels and being easily distinguishable from other alarms given by the systems specified in **-1** above.

(3) Systems are to have constructions and functions deemed appropriate by the Society.

5 Manuals documenting operating and maintenance procedures are to be kept on board for the water level detection and alarm systems specified in **-1** above and the bilge alarm systems used as water level detection and alarm systems in accordance with **-4** above.

EFFECTIVE DATE AND APPLICATION (Amendment 2-2)

1. The effective date of the amendments is 1 January 2024.

2. Notwithstanding the amendments to the Rules, the current requirements apply to ships other than ships that fall under the following:

(1) for which the contract for construction is placed on or after the effective date; or

(2) in the absence of a contract for construction, the keels of which are laid or which are at *a similar stage of construction* on or after 1 July 2024; or

(3) the delivery of which is on or after 1 January 2028.

(Note) The term "*a similar stage of construction*" means the stage at which the construction identifiable with a specific ship begins and the assembly of that ship has commenced comprising at least 50 *tonnes* or 1% of the estimated mass of all structural material, whichever is the less.

Amendment 2-3

Chapter 13 PIPING SYSTEMS

13.4 Scuppers, Sanitary Discharges, etc.

Paragraph 13.4.4 has been amended as follows.

13.4.4 Ash-shoots and Rubbish-shoots

~~**1** Inboard openings of ash-shoots, rubbish-shoots, etc. are to be provided with an efficient cover.~~
~~**2** If the inboard openings prescribed in **-1** are situated below the freeboard deck, the cover is to be watertight. In addition, automatic non-return valves are to be fitted in ash-shoots, rubbish-shoots, etc. in an easily accessible position above the tropical load line.~~

~~**3**__**1**__ For ash-shoots and rubbish-shoots, instead of a non-return valve with a positive means of closing from a position above the freeboard deck, two gate valves, which comply with the following requirements, are acceptable.

(1) The two gate valves are to be controlled from the working deck of the chute.

(2) The lower gate valve is to be controlled from a position above the freeboard deck. An interlock system between the two valves is to be arranged.

(3) The inboard end is to be located above the waterline formed by an 8.5 *degrees* heel to port or starboard at a draft corresponding to the assigned summer freeboard, but not less than 1,000 *mm* above the summer waterline. Where the inboard end exceeds $0.01L_f$ above the summer waterline, valve control from the freeboard deck is not required provided that the inboard gate valve is always accessible under service conditions.

~~**4**__**2**__ A hinged weathertight cover at the inboard end of the chute together with a discharge flap may be acceptable in lieu of the upper and lower gate valves that comply with the requirements in ~~**-3**__**1**__. In this case, the cover and flap are to be arranged with an interlock so that the discharge flap cannot be operated until the hopper cover is closed.

~~**5**__**3**__ Controls for the gate valves and/or hinged covers are to be clearly marked: “Keep closed when not in use.”

~~**6**__**4**__ For those ships in which the damage stability requirements specified in **2.3, Part 1, Part C** are applied; the following requirements are to be satisfied in cases where the inboard end of the chute is below the freeboard deck.

(1) Inboard-end hinged covers/valves are to be watertight.

(2) Valves are to be a screw-down non-return valve fitted in an easily accessible position above the deepest load line.

(3) Screw-down non-return valves are to be controlled from positions above the bulkhead deck and provided with open/closed indicators. Valve controls are to be clearly marked: “Keep closed when not in use.”

EFFECTIVE DATE AND APPLICATION (Amendment 2-3)

1. The effective date of this amendment is 1 January 2024.

Amendment 2-4

Chapter 16 WINDLASSES AND MOORING WINCHES

16.3 Mooring Winches

Paragraph 16.3.3 has been added as follows.

16.3.3 Selection of Mooring Winches

Selection of mooring winches is to be in accordance with **14.4.4.3-1, Part 1, Part C**.

EFFECTIVE DATE AND APPLICATION (Amendment 2-4)

1. The effective date of the amendments is 1 January 2024.

2. Notwithstanding the amendments to the Rules, the current requirements apply to ships other than ships that fall under the following:

(1) for which the contract for construction is placed on or after the effective date; or

(2) in the absence of a contract for construction, the keels of which are laid or which are at *a similar stage of construction* on or after 1 July 2024; or

(3) the delivery of which is on or after 1 January 2027.

(Note) The term "*a similar stage of construction*" means the stage at which the construction identifiable with a specific ship begins and the assembly of that ship has commenced comprising at least 50 *tonnes* or 1% of the estimated mass of all structural material, whichever is the less.

Amendment 2-5

Chapter 18 AUTOMATIC AND REMOTE CONTROL

18.5 Automatic and Remote Control of Electric Generating Sets

18.5.2 Emergency Source of Electric Power

Automatic or remote control devices for reciprocating internal combustion engines driving emergency generators are to comply with the following requirements:

(1) Alarm devices, to be activated in the event of any of the abnormal conditions given in **Table D18.2**, are to be provided.

(2) Devices referred to in **(1)** are to provide alarms at both local and navigation bridge. Visual alarms at navigation bridge may be of group indication.

(3) Each reciprocating internal combustion engine with a maximum continuous output of 220 *kW* or over is to be provided with an overspeed protective device specified in **2.4.1-4**.

(4) When devices, other than those referred to in **(3)**, are provided to shutdown reciprocating internal combustion engines, means are to be provided to override those devices automatically during navigation.

(5) The silencing of the audible alarms from navigation bridge is not to cause the silencing of the audible alarms at local positions.

Table D18.2 has been amended as follow.

Table D18.2 Alarms for Reciprocating Internal Combustion Engines to Drive Emergency Generators

Monitored Variables		Alarms	Remarks
Temperature	L.O. inlet	H	Applicable to engines with maximum continuous output of 220 *kW* or over.
	Cooling water or air outlet	H	
Pressure	L.O. inlet	L	
	Cooling water inlet	L	Applicable to engines with maximum continuous output of 220 *kW* or over. Low flow may be accepted.
Others	F.O. Leakage from ~~F.O. burning pipe, level in leakage trunk~~ high pressure pipes	○	Fuel injection pipes and common rails
	Overspeed	○	Applicable to engines with maximum continuous output of 220 *kW* or over.

Note: "H" and "L" mean high and low. "○" means abnormal condition has occurred.

EFFECTIVE DATE AND APPLICATION (Amendment 2-5)

1. The effective date of the amendments is 1 January 2024.

2. Notwithstanding the amendments to the Rules, the current requirements apply to ships the keels of which were laid or which were at *a similar stage of construction* before the effective date.

(Note) The term "*a similar stage of construction*" means the stage at which the construction identifiable with a specific ship begins and the assembly of that ship has commenced comprising at least 50 *tonnes* or 1%* of the estimated mass of all structural material, whichever is the less.

* For high speed craft, "1%" is to be read as "3%".

Amendment 2-6

Chapter 21 SELECTIVE CATALYTIC REDUCTION SYSTEMS AND ASSOCIATED EQUIPMENT

21.1 General

Paragraph 21.1.1 has been amended as follows.

21.1.1 Application

1 The requirements in this ~~C~~chapter apply to selective catalytic reduction systems (hereinafter referred to as "SCR systems") and associated equipment.

2 Urea based ammonia (e.g. AUS 40 (a 40 % urea ~~=~~and 60 % water aqueous urea solution) specified in *ISO* 18611-1:2014) is to be used as reductant agent in SCR systems. In cases where another reductant agent is used, however, special consideration is to be given to such systems in accordance with their respective designs as well as the following **(1)** and **(2)**:

(1) Aqueous ammonia (28 % or less concentration of ammonia by weight) is not to be used as a reductant agent in SCR systems except in cases where it can be demonstrated that it is not practicable to use a urea based reductant agent.

(2) Anhydrous ammonia (99.5 % or greater concentration of ammonia by weight) is not to be used as a reductant agent in SCR systems except in cases where the flag administration agrees to its use and the following **(a)** and **(b)** can be demonstrated:
   (a) It is not practicable to use an aqueous urea solution.
   (b) It is not practicable to use an aqueous ammonia.

3 In cases where a reductant agent specified in **(1)** or **(2)** of **-2** above is used, arrangements for its loading, carriage and use are to be derived from a risk based analysis.

4 When reductant agent tanks with volume below of 500 *litres* and urea based ammonia (e.g. AUS 40 (a 40 % urea and 60 % water aqueous urea solution) specified in *ISO* 18611-1:2014) specified in **-2** above is used as a reductant agent, the requirements for the reducing agent tanks are to be as deemed appropriate by the Society.

~~4~~5 In addition to the requirements in this ~~C~~chapter, the Society may apply special requirements as instructed by the flag administration of the ship or the governments of sovereign nations whose waters the ship navigates.

EFFECTIVE DATE AND APPLICATION (Amendment 2-6)

1. The effective date of the amendments is 1 January 2024.

2. Notwithstanding the amendments to the Rules, the current requirements apply to SCR whose applications for approval are submitted to the Society before the effective date installed on ships for which the date of contract for construction* is before the effective date.

3. Notwithstanding the provision of preceding **2.**, the amendments to the Rules may apply to SCR whose applications for approval are submitted to the Society before the effective date installed on ships for which the date of contract for construction* is before the effective date upon request of the owner.

* "contract for construction" is defined in the latest version of IACS Procedural Requirement (PR) No.29.

IACS PR No.29 (Rev.0, July 2009)

1. The date of "contract for construction" of a vessel is the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. This date and the construction numbers (i.e. hull numbers) of all the vessels included in the contract are to be declared to the classification society by the party applying for the assignment of class to a newbuilding.

2. The date of "contract for construction" of a series of vessels, including specified optional vessels for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective owner and the shipbuilder.

For the purpose of this Procedural Requirement, vessels built under a single contract for construction are considered a "series of vessels" if they are built to the same approved plans for classification purposes. However, vessels within a series may have design alterations from the original design provided:

(1) such alterations do not affect matters related to classification, or

(2) If the alterations are subject to classification requirements, these alterations are to comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective owner and the shipbuilder or, in the absence of the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to the Society for approval.

The optional vessels will be considered part of the same series of vessels if the option is exercised not later than 1 year after the contract to build the series was signed.

3. If a contract for construction is later amended to include additional vessels or additional options, the date of "contract for construction" for such vessels is the date on which the amendment to the contract, is signed between the prospective owner and the shipbuilder. The amendment to the contract is to be considered as a "new contract" to which **1.** and **2.** above apply.

4. If a contract for construction is amended to change the ship type, the date of "contract for construction" of this modified vessel, or vessels, is the date on which revised contract or new contract is signed between the Owner, or Owners, and the shipbuilder.

Note:
This Procedural Requirement applies from 1 July 2009.

Amendment 2-7

Chapter 18 AUTOMATIC AND REMOTE CONTROL

18.1 General

18.1.1 Scope*

Sub-paragraph -4 has been deleted, and Sub-paragraphs -2 and -3 have been amended as follows.

1 The requirements in this Chapter apply to automatic or remote control systems which are used to control the following machinery and equipment:
(1) Main propulsion machinery (in this Chapter, propulsion generating sets in electric propulsion ships are excluded),
(2) Controllable pitch propeller
(3) Steam generating sets
(4) Electric generating sets (in this Chapter, propulsion generating sets in electric propulsion ships are included)
(5) Auxiliary machinery associated with the machinery and equipment listed in **(1)** to **(4)**
(6) Fuel oil systems
(7) Bilge systems
(8) Deck machinery

2 In cases where considered necessary by the Society, the requirements in this Chapter are correspondingly applied to those automatic or remote control systems which are used for controlling machinery and equipment not listed in **-1(1)** to **(8)**.

3 Computer-based systems, including the hardware and software which constitute such systems, are to be in accordance with ~~**Annex 18.1.1**~~**Chapters 1**, **2** and **3, Part X** in addition to those specified in **-1** and **-2** above and throughout the rest of this chapter for design, construction, commissioning, maintenance, etc.

~~**4** The requirement in **-3** above is not applicable to equipment mentioned below:~~
~~(1) navigating equipment specified in the **Rules for Safety Equipment**,~~
~~(2) radio installations specified in the **Rules for Radio Installations**,~~
~~(3) stability instruments, and~~
~~(4) loading computers.~~

18.1.2 Terminology*

Sub-paragraphs (10) to (13) have been deleted, and Sub-paragraph (14) has been renumbered to Sub-paragraph (10).

Terms used in this Chapter are defined as follows:
((1) to (9) are omitted.)
~~(10) A system is defined as a combination of interacting programmable devices and/or sub-systems organized to achieve one or more specified purposes.~~
~~(11) A computer based system is defined as a system which provides control, alarm, monitoring, safety or internal communication functions and depends upon software for the proper achievement of these functions.~~
~~(12) A sub-system is defined as an identifiable part of a system, which may perform a specific function or set of functions.~~

~~(13) A programmable device is defined as a physical component where software is installed.~~

(~~14~~10) A safety system is defined as a system which operates automatically, in order to prevent damage to machinery and equipment in cases where serious impediments to functioning should occur during their operation so that one of the following actions will take place:

(a) Starting of stand-by machinery or equipment

(b) Reduction of output of machinery or equipment

(c) Shutting off fuel or power supplies, thereby stopping the machinery or equipment

Paragraph 18.1.3 has been amended as follows.

18.1.3 Drawings and Data

Drawings and data to be submitted are generally as follows. ~~In cases where the Society deems it to be necessary, the submission of drawings and data other than those specified below may be requested.~~

(1) Drawings and data for approval

((a) to (e) are omitted.)

(f) ~~Drawings and data listed in **1.2(1), Annex 18.1.1** for computer based systems specified in **18.1.1-3.** With respect to computer based systems which have been already approved by the Society in accordance with **Chapter 8, Part 7 of the Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use**, only drawings and data on parts that differ from ship to ship need to be submitted.~~ Other drawings and data deemed necessary by the Society.

(2) Drawings and data for reference

~~Drawings and data listed in **1.2(2), Annex 18.1.1** for computer based systems specified in **18.1.1-3.** With respect to computer based systems which have been already approved by the Society in accordance with **Chapter 8, Part 7 of the Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use**, only drawings and data on parts that differ from ship to ship need to be submitted; this, however, excludes those specified in **1.2(2)(a)** of the Annex.~~ Other drawings and data deemed necessary by the Society.

18.3 Automatic and Remote Control of Main Propulsion Machinery or Controllable Pitch Propellers

18.3.3 Bridge Control Devices*

Bridge control devices are to comply with the following **(1)** through **(4)** as well as requirements in **18.3.2**.

((1) and (2) are omitted.)

Sub-paragraphs (3) and (4) have been amended as follows.

(3) Bridge control devices are to be provided with visual and audible alarms which give the officer in charge of the navigational watch enough time to assess navigational circumstances in an emergency before the safety systems of main propulsion machinery specified in **18.1.2(~~14~~10) (b)** or **(c)** go into effect, except in cases in which total failure of main propulsion machinery will occur within a short period of time.

(4) Bridge control devices are to be provided with the override arrangement specified in **18.2.6-3** for the following safety systems of main propulsion machinery:

(a) Safety systems which perform as specified in **18.1.2(~~14~~10)(b)**

(b) Safety systems which perform as specified in **18.1.2(~~14~~10)(c)**, except in cases in which

total failure of main propulsion machinery will occur within a short period of time.

Annex 18.1.1 has been deleted.

~~**Annex 18.1.1 COMPUTER BASED SYSTEMS**~~

~~**(Omitted)**~~

EFFECTIVE DATE AND APPLICATION (Amendment 2-7)

1. The effective date of the amendments is 1 July 2024.

2. Notwithstanding the amendments to the Rules, the current requirements apply to ships for which the date of contract for construction* is before the effective date.

* "contract for construction" is defined in the latest version of IACS Procedural Requirement (PR) No.29.

IACS PR No.29 (Rev.0, July 2009)

1. The date of "contract for construction" of a vessel is the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. This date and the construction numbers (i.e. hull numbers) of all the vessels included in the contract are to be declared to the classification society by the party applying for the assignment of class to a newbuilding.

2. The date of "contract for construction" of a series of vessels, including specified optional vessels for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective owner and the shipbuilder.
For the purpose of this Procedural Requirement, vessels built under a single contract for construction are considered a "series of vessels" if they are built to the same approved plans for classification purposes. However, vessels within a series may have design alterations from the original design provided:
(1) such alterations do not affect matters related to classification, or
(2) If the alterations are subject to classification requirements, these alterations are to comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective owner and the shipbuilder or, in the absence of the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to the Society for approval.
The optional vessels will be considered part of the same series of vessels if the option is exercised not later than 1 year after the contract to build the series was signed.

3. If a contract for construction is later amended to include additional vessels or additional options, the date of "contract for construction" for such vessels is the date on which the amendment to the contract, is signed between the prospective owner and the shipbuilder. The amendment to the contract is to be considered as a "new contract" to which **1.** and **2.** above apply.

4. If a contract for construction is amended to change the ship type, the date of "contract for construction" of this modified vessel, or vessels, is the date on which revised contract or new contract is signed between the Owner, or Owners, and the shipbuilder.

Note:
This Procedural Requirement applies from 1 July 2009.

GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

GUIDANCE

Part D Machinery Installations

2023 AMENDMENT NO.2

Notice No.63 22 December 2023

Resolved by Technical Committee on 27 July 2023

Notice No.63 22 December 2023
AMENDMENT TO THE GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

"Guidance for the survey and construction of steel ships" has been partly amended as follows:

Part D MACHINERY INSTALLATIONS

Amendment 2-1

D13 PIPING SYSTEMS

D13.2 Piping

D13.2.5 Bulkhead Valves

Sub-paragraph -5 has been deleted.

~~**5** The wording "where deemed appropriate by the Society" in **13.2.5-2(2), Part D of the Rules** means cases where the Administration has decided on the voluntary early implementation of the amendments in resolution in accordance with *MSC*.8/*Circ*.1.~~

EFFECTIVE DATE AND APPLICATION (Amendment 2-1)

1. The effective date of the amendments is 1 January 2024.

2. Notwithstanding the amendments to the Guidance, the current requirements apply to ships other than ships that fall under the following:
(1) for which the contract for construction is placed on or after the effective date; or
(2) in the absence of a contract for construction, the keels of which are laid or which are at *a similar stage of construction* on or after 1 July 2024; or
(3) the delivery of which is on or after 1 January 2028.
(Note) The term "*a similar stage of construction*" means the stage at which the construction identifiable with a specific ship begins and the assembly of that ship has commenced comprising at least 50 *tonnes* or 1% of the estimated mass of all structural material, whichever is the less.

Amendment 2-2

D13 PIPING SYSTEMS

Title of Section D13.8 has been amended as follows.

D13.8 Sounding ~~Pipes~~Devices

Paragraph D13.8.5 has been amended as follows.

D13.8.5 Water Level Detection and Alarm Systems for Bulk Carriers, etc.

1 With respect to ~~the provisions of~~ **13.8.5-1, Part D of the Rules**, water level detection and alarm systems (hereinafter, referred to as "the systems" in this paragraph) are to be installed on board in accordance with the following:

(1) Detectors, electrical cables and any associated equipment installed in cargo holds are to be protected from any damage caused by either cargo or cargo handling equipment.

(2) The systems are to be installed in locations where they are accessible for survey, maintenance and repair. Any filtration arrangements, if fitted to the detectors, are to be capable of being cleaned before loading.

(3) The installation of the systems is not to inhibit the use of any other sounding devices such as sounding pipes or other water level gauging devices.

2 Water levels specified in **13.8.5-1(1), Part D of the Rules** are to be measured from the top plating and to be detected at as close to the centre line as practicable, or at both the port and starboard sides of the cargo hold. For cargo holds fitted with insulation or close ceilings, water levels may be measured from the upper surface of the insulation or close ceilings in cases where watertightness is verified by tests. For this purpose, the position "at as close to the centre line as practicable" is to be of area within a distance from the centre line of less than or equal to 1 spacing of vertical stiffeners on the watertight bulkhead (or 1 corrugation space as shown in **Fig. D13.8.5-1**). In addition, the water levels specified in **13.8.5-1(2)** and **(3)** are to be detected at the lowest position possible of the relevant compartments.

3 The wording "the systems to have constructions and functions deemed appropriate by the Society" in **13.8.5-1(4), Part D of the Rules** means those systems complying with the following requirements and being of a type approved by the Society in accordance with ~~the provisions of~~ **Chapter 5, Part 7 of the Approval and Type Approval of Materials and Equipment for Marine Use** or those systems approved by an organi~~z~~sation deemed appropriate by the Society in accordance with the Resolution *MSC.*188(79), as amended.

(1) The systems are to have sufficient corrosion resistance with consideration being given to the locations where the systems are to be installed and are to be maintain their functionality under expected service temperatures. In addition, any parts of the systems which may be exposed to cargo or bilge containing cargo, such as detectors, etc., are to be sufficiently able to cope with different conditions such as acidity, alkalinity, dust, etc. with consideration being given to the intended cargoes.

(2) Protection of the enclosures of electrical components for the systems is to satisfy the following **(a)** to **(c)**:

(a) The requirements of IP68 for those installed in spaces, tanks or cargo holds. This includes all adjacent spaces considered to be simultaneously flooded under damage stability calculations of the spaces/tanks/cargo holds required by the provisions of **2.3, Part 1, Part C of the Rules** or the requirements for ships to be assigned reduced freeboard in accordance with **Part V of the Rules**;

(b) The requirements of IP56 for those installed on exposed decks above the spaces/tanks/cargo holds; and

(c) The provisions of **Part H of the Rules** for any of those not specified in **(a)** or **(b)** above.

(3) Electrical installations for the systems installed in the following areas are to be of an intrinsically safe type ~~of *Exib* complying at least with *IEC* 60079-11:2011~~ or safe type of an appropriate apparatus group and temperature class suitable for the cargo carried, and the maximum surface temperature of the installations is not to exceed 85 ºC, except electrical installations installed in ships designed only to carry cargo which are not combustible or explosive atmosphere. In addition, in cases where a ship is designed to carry only limited kinds of cargo, the maximum surface temperature may be appropriately relaxed depending on the kind of cargo. In this case, such limitations relating to cargo are to be documented in booklets for cargo operations. Finally, those electric installations installed at the edges of the following areas are to be approved at the discretion of the Society with due consideration being given to their design with respect to gas-tightness, etc.

(a) Cargo holds

(b) Enclosed spaces adjacent to cargo holds having openings without a gas-tight or watertight door/hatch and the like into a hold

(c) Areas within 3 *m* of any cargo hold mechanical exhaust ventilation outlet

(4) For electrical installations for the systems which are installed in ships intended for carrying dangerous goods, the provisions of **Chapter 19, Part R of the Rules** are to be referred to.

(5) Detectors are to be capable of indicating water level within an accuracy of ±100 *mm*. Time delays are to be so incorporated into alarm systems, in order to prevent spurious alarms due to any sloshing effects associated with ship motion, so that alarms will activate after detecting water level continuously for a standard period of not less than 10 *seconds*. The accuracy of these detectors may be set on the basis of seawater density.

(6) The systems are to be of a continuously self-monitoring type that also monitors any detectors. Audible and visual alarms are to be activated when any faults are detected. In this requirement, the term “fault” refers to problems such as open circuits, short circuits, loss of power supplies and CPU failures. The audible alarms are to be capable of being muted. However, visual alarms are to remain active until the malfunction has been cleared and such alarms are not to be capable of being turned off by hand. In addition, the systems are to be provided with means for testing their respective detectors when holds are empty.

(7) Alarm panels for the systems are to be provided with a switch for the testing of all audible and visual alarms. This switch is to return to the off position automatically when not being operated.

(8) The systems are to be supplied with electrical power from two independent sources. Any failure of ~~the primary~~ two electrical power supply~~y~~ies is to be indicated by an alarm on the navigation bridge. In cases where secondary electrical power is supplied by dedicated batteries, such batteries are to be in accordance with the following **(a)** to **(c)**:

(a) Batteries are to have a capacity for a period of at least 18 *hours* and they are to be continuously charged;

(b) Batteries are to be arranged and located in accordance with **3.3.5, Part H of the Rules**, and may be integrated into the system; and

(c) Any failures of the battery systems, including battery charging systems specified in above **(a)**, are to be indicated by an alarm on the navigation bridge.

4 With respect to the provisions of **13.8.5-2, Part D of the Rules**, those audible alarms specified in **13.8.5-1(1)(b)**, **(2)** and **(3), Part D of the Rules** need not be capable of being distinguished from. Visual alarms are to remain visible until the condition activating the alarm has returned below the level of the relevant detector and not to be capable of being turned off by hand.

5 With respect to the provisions of **13.8.5-2, Part D of the Rules**, one sensor capable of detecting both of the preset water levels specified in **13.8.5-1(1)(a)** and **(b), Part D of the Rules** may be allowed.

6 The wording "override devices that are deemed appropriate by the Society" in **13.8.5-3, Part D of the Rules** means those complying with the following requirements:

(1) Alarms for tanks/cargo holds are to be capable of being independently turned off;

(2) Visual override indications are to be given to the navigation bridge throughout any deactivation of water level detectors for tanks/cargo holds;

(3) Such override devices are to be arranged so that alarm systems are automatically reactivated upon completion of any de-ballasting; and

(4) In cases where the override functions for water level detection and alarm systems are required to be specifically customi~~z~~s~~e~~d for each ship, override functions for spaces other than ballast tanks or cargo holds carrying ballast water are to be modified so that they cannot be activated when they are being installed on a ship. The above modification and any subsequent modifications are to be confirmed by the Surveyor. A warning plate which prohibits personnel from overriding such alarms is not an acceptable alternative to the above modification.

7 Manuals specified in **13.8.5-4, Part D of the Rules** are to contain the following information and operational instructions:

(1) Descriptions of the equipment in the system together with listings of procedures for checking that, as far as practicable, each item of equipment is working properly during any stage of ship operation.

(2) Evidence that the system has been approved in accordance with ~~the provisions of~~ **Chapter 5, Part 7 of the Approval and Type Approval of Materials and Equipment for Marine Use** or the Resolution *MSC*.188(79), as amended.

(3) Line diagrams of the system showing equipment positions

(4) Instructions for operator training, setting, securing, protecting and testing.

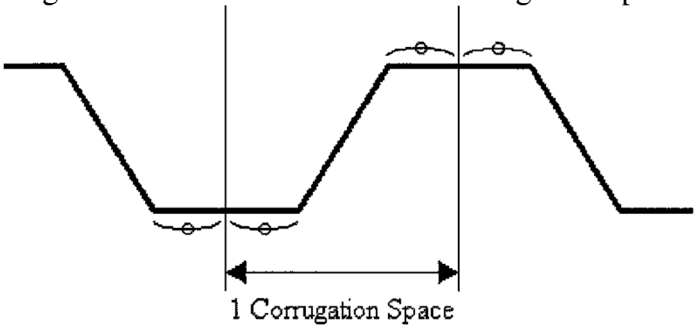
(5) Information regarding the types of cargo that guarantees performance. (In cases where electrical installations are required to be of an intrinsically safe, certificates verifying this are to be included.)

(6) Temperature range for which the equipment is suitable.

(~~6~~7) Procedures to be followed in the event equipment in the system is not functioning properly.

(~~7~~8) Maintenance requirements for the system.

Fig. D13.8.5-1 Definition of 1 Corrugation Space



Paragraph D13.8.7 has been added as follows.

D13.8.7 Water Level Detection and Alarm Systems for Multiple Hold Cargo Ships

1 The water level detection and alarm systems required by **13.8.7-1, Part D of the Rules** are to be in accordance with **D13.8.5**.

2 The wording "override devices that are deemed appropriate by the Society" in **13.8.7-3, Part D of the Rules** means those complying with **D13.8.5-6**.

3 The bilge alarms systems used as water level detection and alarm systems in accordance with **13.8.7-4, Part D of the Rules** are to comply with **D13.8.5**.

4 For the bilge wells which are applicable to **19.3.5-1, Part R of the Rules**, the following requirements **(1)** and **(2)** are to be complied with.

(1) Where the cargo hold bilge well is sealed, suitable alternative detectors are to be provided.

(2) Where the cargo hold bilge well is used, the bilge well is not to be sealed so that the bilge alarm system can detect the water level.

5 In applying **13.8.7-5, Part D of the Rules**, manuals documenting operating and maintenance procedures for bilge alarm systems used as water level detection and alarm systems are to contain the following information and operational instructions in addition to that required by **D13.8.5-7**:

(1) Manuals for switching to the alternative arrangements (if fitted), and

(2) List of cargoes for which alternative provisions are to be used

EFFECTIVE DATE AND APPLICATION (Amendment 2-2)

1. The effective date of the amendments is 1 January 2024.

2. Notwithstanding the amendments to the Guidance, the current requirements apply to water level detection and alarm systems installed on ships other than ones that fall under the following. The amended requirements, however, do apply to replacement water level detection and alarm systems installed on such ships after their delivery.

(1) for which the contract for construction is placed on or after the effective date; or

(2) in the absence of a contract for construction, the keels of which are laid or which are at *a similar stage of construction* on or after 1 July 2024; or

(3) the delivery of which is on or after 1 January 2028.

(Note) The term "*a similar stage of construction*" means the stage at which the construction identifiable with a specific ship begins and the assembly of that ship has commenced comprising at least 50 *tonnes* or 1% of the estimated mass of all structural material, whichever is the less.

Amendment 2-3

D18 AUTOMATIC AND REMOTE CONTROL

Section D18.5 has been added as follows.

D18.5 Automatic and Remote Control of Electric Generating Sets

D18.5.1 General

In cases where **2.4.5-1, Part D of the Rules** is to be applied in accordance with **18.5.1-6, PartD of the Rules**, the lubricating oil outlet temperature monitoring devices for main and crankpin bearings which are of type approved by the Society are included in the "equivalent devices" specified in **D2.4.5-1**.

EFFECTIVE DATE AND APPLICATION (Amendment 2-3)

1. The effective date of the amendments is 1 January 2024.

2. Notwithstanding the amendments to the Guidance, the current requirements apply to ships the keels of which were laid or which were at *a similar stage of construction* before the effective date.
(Note) The term "*a similar stage of construction*" means the stage at which the construction identifiable with a specific ship begins and the assembly of that ship has commenced comprising at least 50 *tonnes* or 1%* of the estimated mass of all structural material, whichever is the less.
* For high speed craft, "1%" is to be read as "3%".

Amendment 2-4

D18 AUTOMATIC AND REMOTE CONTROL

D18.1 General

D18.1.2 has been deleted.

~~**D18.1.2 Terminology**~~

~~The computer-based system referred to in **18.1.2(11), Part D of the Rules** includes a system which contains programmable controllers such as sequencers.~~

EFFECTIVE DATE AND APPLICATION (Amendment 2-4)

1. The effective date of the amendments is 1 July 2024.

2. Notwithstanding the amendments to the Guidance, the current requirements apply to ships for which the date of contract for construction* is before the effective date.

* "contract for construction" is defined in the latest version of IACS Procedural Requirement (PR) No.29.

IACS PR No.29 (Rev.0, July 2009)

1. The date of "contract for construction" of a vessel is the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. This date and the construction numbers (i.e. hull numbers) of all the vessels included in the contract are to be declared to the classification society by the party applying for the assignment of class to a newbuilding.

2. The date of "contract for construction" of a series of vessels, including specified optional vessels for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective owner and the shipbuilder.

For the purpose of this Procedural Requirement, vessels built under a single contract for construction are considered a "series of vessels" if they are built to the same approved plans for classification purposes. However, vessels within a series may have design alterations from the original design provided:

(1) such alterations do not affect matters related to classification, or

(2) If the alterations are subject to classification requirements, these alterations are to comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective owner and the shipbuilder or, in the absence of the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to the Society for approval.

The optional vessels will be considered part of the same series of vessels if the option is exercised not later than 1 year after the contract to build the series was signed.

3. If a contract for construction is later amended to include additional vessels or additional options, the date of "contract for construction" for such vessels is the date on which the amendment to the contract, is signed between the prospective owner and the shipbuilder. The amendment to the contract is to be considered as a "new contract" to which **1.** and **2.** above apply.

4. If a contract for construction is amended to change the ship type, the date of "contract for construction" of this modified vessel, or vessels, is the date on which revised contract or new contract is signed between the Owner, or Owners, and the shipbuilder.

Note:
This Procedural Requirement applies from 1 July 2009.