CCS Rule Change Notice For:

RULES FOR CLASSIFICATION OF SEA-GOING STEEL SHIPS

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Beijing

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PART ONE

Brief Introduction

1. Incorporation of URZ7 (Rev.28 May 2019), URZ7.1 (Rev.15 June 2019), URZ7.2 (Rev.8 May 2019), URZ10.1 (Rev.24 May 2019), URZ10.2 (Rev.36 May 2019), URZ10.3 (Rev.19 May 2019), URZ10.4 (Rev.16 May 2019), URZ10.5 (Rev.19 May 2019), URZ20 (Rev.2 May 2019), PR1C(Rev.6 May 2019), PR1D(Rev.2 May 2019), PR3(Rev.2 May 2019), on replacing"Conditions of Class or Recommendations" with "Conditions of Class", will be implemented from July 1, 2020.

2. Incorporation of URW35 (New June 2019) on the requirements for NDT suppliers, will be implemented from July 1, 2020.

3. Incorporation of UR Z17 (Rev.14 Mar 2019) on the requirements for firms engaged in maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear, will be implemented from Jan. 1, 2020.

4. Adding new class notation “Bow Loading System”.

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Section 9 ASSIGNMENT, MAINTENANCE, SUSPENSION, CANCELLATION AND REINSTATEMENT OF CLASS

2.9.2 Suspension and cancel of class

2.9.2.1 Suspension of class

(3) Under the following circumstances, the class will be subject to a suspension procedure, unless the ship is attended by the Surveyor for completion of the overdue surveys:

① when any outstanding ~~recommendation or~~ condition of class imposed by CCS is not fulfilled by a specified due date (the Owner will be notified of the date), and no extension is granted by CCS;

(4) Under the following circumstances, the class will be subject to automatic suspension and the classification certificate is subject to invalidation:

③ when a special survey has not been completed within the period of time specified by CCS (the Owner will be notified that the 5-year class certificate becomes invalid) and no extension is granted by CCS, unless the ship has been under attendance for completion of the special survey prior to resuming trading, by the due date.

a. Under "exceptional circumstances", CCS may grant an extension not exceeding 3 months to allow for completion of the special survey, provided that the ship is attended and the attending Surveyor so recommends upon satisfactory survey to the following extent:

(b) re-check of outstanding ~~recommendations/~~conditions of class;

(d) where the docking survey is due prior to the expiry date of the extension, an underwater examination is to be carried out by an approved diving company. Such underwater examination may be dispensed with in the case of extension of docking survey not exceeding 36 months provided the ship is without any outstanding ~~recommendation/~~condition of class regarding underwater parts.

(5) If, due to circumstances reasonably beyond the owner's or CCS control, the ship is not in a port where the overdue surveys can be completed at the expiry of the periods allowed above, CCS may allow the ship to sail, in class, directly to a discharge port, and if necessary, hence, in ballast, to a port at which the survey will be completed, at request of the owner and provided that:

② the due and/or overdue surveys and examination of ~~outstanding recommendations/class~~ conditions of class are carried out by CCS at the next port of call when there is an unforeseen inability of CCS to attend the ship at the present port;

(10) When a ship is intended for a single voyage from laid-up position to a repair yard or another place of lay-up with any periodical survey overdue, the ship's class suspension may be held in abeyance and consideration may be given to allow the ship to proceed on a single direct ballast voyage from the site of lay up to ~~the~~ a repair yard or another place of lay-up, upon agreement with the flag Administration, provided CCS finds the ship in satisfactory condition after surveys, the extent of which are to be based on surveys overdue and duration of lay-up. A short term Class Certificate with conditions for the intended voyage may be issued. This does not apply to ships whose class was already suspended prior to being laid-up.

2.9.2.2 Cancel of class

(1) The class of a ship will be cancelled in any one of the following cases:

③ a ship's class will be canceled immediately when the ship proceeds to sea without having completed ~~recommendations or~~ conditions of class which were required to be dealt with before leaving port;

④ when class has been suspended for a period of six (6) months due to overdue annual, intermediate, special surveys or other surveys after construction as required by the Rules and/or overdue ~~outstanding recommendations/~~conditions of class.

2.9.3 Reinstatement of class

2.9.3.1 The class of a ship may be reinstated in any one of the following cases:

(3) class will be reinstated upon verification that due or overdue ~~outstanding recommendations~~ ~~have~~ condition of calss has been satisfactorily dealt with. However, the ship is disclassed from the date of suspension until the date class is reinstated.

① This revision is to be implemented on or after 1 July 2020.

Section 12 AVAILABILITY AND CONFIDENTIALITY OF INFORMATION

2.12.2 Disclosure of information

2.12.2.2 CCS will not disclose any information obtained for classification of the ship to any other party not specified in the contract and Tables 2.12.2.2(1) and 2.12.2.2(2), except in the following cases:

Information Available to Parties Concerned[①] Table 2.12.2.2(1)

Information in question	Information available to:				
	Owners	Flag State	Port State	Insurance Company*	Shipyards
1. CCS standing documents					
Rules & Guidelines (class and statutory requirements)	1	1	1	1	1
Instructions to Surveyors		1			
Quality Manual	1	1	1	1	1
Register Book	1	1	1	1	1
2. Ship related information					
A. New buildings					
Approved drawings	6	1			7
Formal approval letters	1				7
Certificates of important equipment	2				7
B. Ships in operation					
Class services					
—Date(month and year) of all class surveys	7	1	1	1	
—Expiry date of class certificates	7	7**	1	1	
—Certificates/Reports	7	1	6	5	
—Overdue surveys	7	7**	1	1	
—Text of conditions of class~~/recommendations~~	7	1	1	5	
—Text of overdue conditions of class~~/recommendations~~	7	1	1	1	
—Executive hull summary	7	3	3	3	
Statutory services					
—Due dates of statutory surveys	7	7**	1	1	
—Expiry date of statutory certificates	7	7**	1	1	
—Registered statutory ~~recommendations~~ condition	7	7**	1	5***	
—Overdue statutory ~~recommendations~~ condition	7	7**	1	1***	
3. Other information					
Correspondence file with Yard and/or Owner	6	6		5&6	
Audit of CCS QA System	4	4	4	4	
Class transfer reporting	7	7	7	7	
Class withdrawal information	7	7	7	7	

Notes:
* = Insurance Company means P&I Clubs and Hull Underwriters;
** = if stated in Agreement;
*** = unless prevented by the agreement with the flag State.
1. Available upon request.
2. At delivery of the ship by Shipyard.
3. Available under visit on board.
4. Result of audit available on request.
5. When accepted by Owners – or through special clause in insurance contract.
6. When accepted by Owner (Master) or Shipyard as applicable.
7. Automatically available.

Information Available to Parties Concerned[②] Table 2.12.2.2(2)

Information in question	Information available to:				
	Owners	Flag State	Port State	Insurance Company*	Shipyards
1. CCS standing documents					
Rules and Guidelines (class and statutory requirements)	1	1	1	1	1

[①] It is applicable to all types of ships with the exception of oil tankers and bulk Carriers subject to SOLAS Regulation II-1/3-10 (Goal-based ship construction standards for bulk carriers and oil tankers).

[②] It is applicable to oil tankers and bulk carriers subject to SOLAS Regulation II-1/3-10 (Goal-based ship construction standards for bulk carriers and oil tankers).

Information in question	Information available to:				
	Owners	Flag State	Port State	Insurance Company*	Shipyards
Instructions to Surveyors		1			
Quality Manual	1	1	1	1	1
Register Book	1	1	1	1	1
2. Ship related information					
A. New buildings					
Approved drawings	1	1			7
Formal approval letters	1	1			7
Certificates of important equipment	2	1			7
SCF	2	8			7
Formal review letters in relation with SCF	2	2			7
B. Ships in operation					
Class services					
—Date (month and year) of all class surveys	7	1	1	1	
—Expiry date of class certificate	7	7**	1	1	
—Certificates/Reports	7	1	6	5	
—Overdue surveys	7	7**	1	1	
—Text of conditions of class~~/recommendations~~	7	1	1	5	
—Text of overdue conditions of class~~/recommendations~~	7	1	1	1	
—Executive hull summary	7	3	3	3	
Statutory services					
—Due dates of statutory surveys	7	7**	1	1	
—Expiry date of statutory certificates	7	7**	1	1	
—Registered statutory ~~recommendations~~ condition	7	7**	1	5***	
—Overdue statutory ~~recommendations~~ condition	7	7**	1	1***	
3. Other information					
Correspondence file with Yard and/or Owner	1	1		5&6	
Updated modifications to SCF	7****	8			
Audit of CCS QA System	4	4	4	4	
Class transfer reporting	7	7	7	7	
Class withdrawal information	7	7	7	7	

Notes:
* = Insurance Company means P&I Clubs and Hull Underwriters;
** = If stated in Agreement;
*** = Unless prevented by the agreement with the flag State;
**** = By Owner or Shipyard.
1. Will be available upon request.
2. At delivery of the ship by Shipyard.
3. Available under visit on board.
4. Result of audit available on request.
5. When accepted by Owners − or through special clause in insurance contract.
6. When accepted by Owner (Master) or Shipyard as applicable.
7. Automatically available.
8. Available through Owner upon request.

Appendix 1 LIST OF CLASS NOTATIONS FOR SEA-GOING SHIPS

Special Equipment and System Notations **Table G**

Class notation	Description		Technical requirements
Bow Loading System	Bow loading system	For oil tankers fitted with bow loading system, this notation may be added	Ch.27,Pt.8 of the Rules

CHAPTER 5 SURVEYS AFTER CONSTRUCTION

Section 1 GENERAL PROVISIONS①

5.1.5 Definitions

5.1.5.1 For the purpose of this Chapter, the following definitions apply to all ships:

① This revision is to be implemented on or after 1 July 2020.

(8) A **prompt and thorough repair** is a permanent repair completed at the time of survey to the satisfaction of the Surveyor, therein removing the need for the imposition of any associated condition of classification~~, or recommendation~~.

5.1.6 Preparations for survey

5.1.6.2 Access to structures

(2) For survey of all ships in cargo holds and ~~seawater~~ ballast tanks, and for close-up survey of general cargo ships, oil tankers, chemical tankers, and the hull structure, other than cargo hold shell frames, of bulk carriers, one or more of the following means for access, acceptable to the Surveyor, is to be provided:

5.1.10 Repairs

5.1.10.1 Any damage in association with wastage over the allowable limits (including buckling, grooving, detachment or fracture), or extensive areas of wastage over the allowable limits, which affects or, in the opinion of the Surveyor, will affect the ship's structural, watertight or weathertight integrity, is to be promptly and thoroughly repaired (see 5.1.5.1(9)).

(5) Where the damage found on structure mentioned in paragraph 5.1.10.1(1) is isolated and of a localised nature which does not affect the ship's structural integrity, consideration may be given by the Surveyor to allow an appropriate temporary repair to restore watertight or weathertight integrity and impose a ~~Recommendation/C~~condition of ~~C~~class as required, with a specific time limit.

Section 4 HULL AND EQUIPMENT SURVEYS

5.4.2 Annual surveys

5.4.2.2 Scope of the survey for all ships

(6) Fire-fighting equipment

① examining the fire pumps, fire mains, hydrants, hoses and nozzles and the international shore connection and checking that each fire pump, including the emergency fire pump, can by operated separately so that two jets of water are produced simultaneously from different hydrants at any part of the ship whilst the required pressure is maintained in the fire main;

② for ships designed to carry containers on or above the weather deck, as applicable, examining the water mist lance, and as appropriate, the mobile water monitors and all necessary hoses, fittings and required fixing hardware;

~~②~~③ checking the provision and randomly examining the condition of the portable and non-portable fire extinguishers;

~~③~~④ confirming that the firefighters' outfits including its self-contained compressed air breathing apparatus and emergency escape breathing devices (EEBDs) are complete and in good condition, that the cylinders, including the spare cylinders, of any required self-contained breathing apparatus are suitably charged, and that on board means of recharging breathing apparatus cylinders used during drills or a suitable number of spare cylinders to replace those used are provided, and provision of two-way portable radiotelephone apparatus of an explosion-proof type or intrinsically safe;

~~④~~⑤ checking the operational readiness and maintenance of fire-fighting systems;

~~⑤~~⑥ examining the fixed fire-fighting system for the machinery, cargo, vehicle, special category and ro-ro spaces, as appropriate, and confirming that its means of operation are clearly marked;

~~⑥~~⑦ examining the fire extinguishing and special arrangements in the machinery spaces and confirming, as far as practicable and as appropriate, the operation of the remote means of control provided for the opening and closing of the skylights, the release of smoke, the closure of ventilation openings of the space enclosing the funnel, the closure of power-operated and other doors, the stopping of ventilation and boiler space forced and induced draft fans and the stopping of oil fuel and other pumps that discharge flammable liquids;

~~⑦~~⑧ checking that fixed carbon dioxide fire-extinguishing systems for the protection of machinery spaces and cargo pump-rooms, where applicable, are provided with two separate controls, one for opening of the gas piping and one for discharging the gas from the storage container, each of them located in a release box clearly identified for the particular space; checking also that the release devices of carbon dioxide fire-extinguishing systems are operated in the required order, i.e. the gas

piping is opened before the gas is discharged from the storage container;

~~⑧~~⑨ examining, as far as possible, and testing, as feasible, any fire detection and alarm system and sample extraction smoke detection system;

~~⑨~~⑩ checking the provision of a fire-extinguishing system for spaces containing paint and/or flammable liquids and deep-fat cooking equipment in accommodation and service spaces;

~~⑩~~⑪ examining the helicopter facilities;

~~⑪~~⑫ examining the arrangements for remote closing of valves for oil fuel, lubricating oil and other flammable oils and confirming, as far as practicable and as appropriate, the operation of the remote means of closing the valves on the tanks that contain oil fuel, lubricating oil and other flammable oils; examination of flame screens on vents to all bunker tanks;

~~⑫~~⑬ examining and testing of the general emergency alarm system;

~~⑬~~⑭ examining the fire protection arrangements in cargo, vehicle and ro-ro spaces, including the fire safety arrangements for vehicle carriers carrying motor vehicles with compressed ydrogen or natural gas in their tanks for their own propulsion as cargo, as applicable, and confirming, as far as practicable and as appropriate, the operation of the means for closing the various openings;

⑮ examining and testing the portable gas detectors suitable for the detection of the gas fuel, for vehicle carriers carrying motor vehicles with compressed hydrogen or natural gas in their tanks for their own propulsion as cargo;

~~⑭~~⑯ examining, where applicable, the alternative design and arrangements for fire safety and arrangements, in accordance with the test, inspection and maintenance requirements, if any, specified in the approved documentation;

~~⑮~~⑰ examining, where appropriate, the special arrangements for carrying dangerous goods, including checking of the electrical equipment and wiring, the ventilation, the provision of protective clothing and portable appliances, and the testing of water supply, bilge pumping and any water spray system.

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5.4.3 Intermediate surveys①

5.4.3.2 Survey items for all ships

(3) ~~Spaces used for salt water~~ ballast tanks:

① Ships between 5 and 10 years of age:

A general, internal examination of representative ballast tanks is to be carried out. Where a full hard protective coating in POOR condition or any other defect is found, where soft or semi-hard coating has been applied, or where there is no full hard protective coating, the examination is to be extended to other ~~ballast spaces~~ ballast tanks of the same type.

② Ships over 10 years of age:

A general, internal examination of all s~~paces used for water ballast~~ ballast tanks is to be carried out.

④ For ballast tanks, excluding double bottom tanks, where a full hard protective coating is found in POOR condition and it is not renewed, where soft or semi-hard coating has been applied, or where there is no full hard protective coating, the ~~spaces~~ tanks in question are to be internally examined at annual intervals.

⑤ When such conditions as stated in ④ above are found in ~~salt water ballast double bottom tanks~~ double bottom ballast tanks, the spaces in question may be internally examined at annual intervals.

Section 5 ADDITIONAL REQUIREMENTS FOR HULL AND EQUIPMENT SURVEYS OF GENERAL DRY CARGO SHIPS②

① This revision is to be implemented on or after 1 July 2020.

② For surveys, assessment and repair of hull structure, refer to IACS Rec.55 "General Dry Cargo Ships - Guidelines for Surveys, Assessment and Repair of Hull Structure", This revision is to be implemented on or after 1 July 2020.

5.5.1 General requirements

5.5.1.1 Application

(1) Unless provided otherwise, the requirements of this Section apply to all self-propelled general dry cargo ships of 500 gt and above carrying solid cargoes other than[①]:

⑨ general dry cargo ships of double side-skin construction, with double side-skin extending for the ~~entire~~ length of the cargo area, and for the ~~entire~~ height of the cargo hold to the upper deck[②].

5.5.3 Intermediate surveys

5.5.3.2 Ships 5 to 10 years of age

(1) Ballast tanks

① For ~~tanks used for water ballast~~ ballast tanks, an overall survey of representative tanks selected by the Surveyor is to be carried out. If such overall survey reveals no visible structural defects, the examination may be limited to a verification that the corrosion prevention system remains efficient.

5.5.3.3 Ships 10 to 15 years of age

(1) Ballast tanks

① For ~~tanks used for water ballas~~t ballast tanks, an overall survey of all tanks is to be carried out. If such overall survey reveals no visible structural defects, the examination may be limited to a verification that the corrosion prevention system remains efficient.

5.5.4 Special surveys

5.5.4.1 General requirements

(2) All cargo holds, ~~water~~ ballast tanks, including double bottom tanks, pipe tunnels, cofferdams and void spaces bounding cargo holds, decks and outer hull are to be examined, and if necessary, this examination is to be supplemented by thickness measurement and testing as required in 5.5.4.5 and 5.5.4.6, to ensure that the structural integrity remains effective.

The internal examination of other tanks is to be in accordance with 5.4.4.2(2) of this Chapter. The aim of the examination is to discover substantial corrosion, significant deformation, fractures, damages or other structural deterioration, that may be present.

(5) A survey in dry dock is to be a part of the special survey. The overall and close-up surveys and thickness measurements, as applicable, of the lower portions[③] of the cargo holds and ~~water~~ ballast tanks are to be carried out in accordance with the applicable requirements for special surveys, if not already performed.

5.5.4.2 Tank protection

(1) Where provided, the condition of corrosion prevention system of ballast tanks is to be examined. For ballast tanks, excluding double bottom tanks, where a full hard protective coating is found in POOR condition and it is not renewed, where soft or semi-hard coating has been applied, or where a full hard protective coating was not applied from the time of construction, the tanks in question are to be examined at annual intervals. Thickness measurements are to be carried out as deemed necessary by the Surveyor.

(2) When such breakdown of full hard protective coating is found in double bottom ballast tanks and it is not renewed, where a soft or semi-hard coating has been applied, or where a full hard protective coating was not applied from the time of construction, the tanks in question may be examined at annual intervals. When considered necessary by the Surveyor, or where extensive corrosion exists, thickness measurements are to be carried out.

(3) Where the hard protective coating in ~~spaces~~ tanks is found to be in a GOOD condition, the extent of close-up surveys and thickness measurements may be specially considered.

5.5.4.4 Extent of overall and close-up survey

Minimum Requirements for Close-up Surveys at Hull Special Surveys of General Dry Cargo Ships
Table 5.5.4.4(2)

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① The requirements of paragraphs 5.5.2.6 and 5.5.4.8 also apply to those cargo ships, which, although belonging to the ship types that are excluded from the application of this Section, are fitted with a single cargo hold.

② Special consideration may also be given to ships that are of double side-skin construction but with single skin in way of several frame spaces e.g. in way of a cargo hold entrance or in way of forebody hull form at the forward end of the foremost cargo hold.

③ Lower portions of the cargo holds and ballast tanks are considered to be the parts below light ballast water line.

Special Survey No.1 Age ≤ 5	Special Survey No.2 5 < Age ≤ 10	Special Survey No.3 10 < Age ≤ 15	Special Survey No.4 and Subsequent Age > 15
(A) Selected shell frames in one forward and one aft cargo hold and associated 'tween-deck spaces. (B) One selected cargo hold transverse bulkhead. (D) All cargo hold hatch covers and coamings (plating and stiffeners)	(A) Selected shell frames in all cargo holds and 'tween-deck spaces. (B) One transverse bulkhead in each cargo hold. (B) Forward and aft transverse bulkhead in one side ballast tank, including stiffening system. (C) One transverse web with associated plating and framing in two representative water ballast tanks of each type (i.e. topside, hopper side, side tank or double bottom tank) (D) All cargo hold hatch covers and coamings (plating and stiffeners). (E) Selected areas of all deck plating and underdeck structure inside line of hatch openings between cargo hold hatches. (F) Selected areas of inner bottom plating	(A) All shell frames in the forward lower cargo hold and 25% frames in each of the remaining cargo holds and 'tween-deck spaces including upper and lower end attachments and adjacent shell plating. (B) All cargo hold transverse bulkheads. (B) All transverse bulkheads in ballast tanks, including stiffening system. (C) All transverse webs with associated plating and framing in each ~~water ballast tanks~~ ballast tanks. (D) All cargo hold hatch covers and coamings (plating and stiffeners). (E) All deck plating and underdeck structure inside line of hatch openings between cargo hold hatches. (F) All areas of inner bottom plating	(A) All shell frames in all cargo holds and 'tween-deck spaces including upper and lower end attachments and adjacent shell plating. Areas (B) – (F) as for Special Survey No.3

Notes: (A) Cargo hold transverse frames.
(B) Cargo hold transverse bulkhead plating, stiffeners and girders.
(C) Transverse web frame or watertight transverse bulkhead in ~~water~~ ballast tanks.

5.5.4.6 Extent of tank testing
(1) All boundaries of ~~water~~ ballast tanks and deep tanks used for water ballast within the cargo length area are to be pressure tested. For fuel oil tanks, the representative tanks are to be pressure tested.

Section 6 ADDITIONAL REQUIREMENTS FOR HULL AND EQUIPMENT SURVEYS OF OIL TANKERS

5.6.2 Annual surveys
5.6.2.7 Examining, for oil tankers of 150 m in length and above, where appropriate, the ship's structure in accordance with the Ship Construction File, taking into account identified areas that need special attention, and verifying that the Ship Construction File is updated, where applicable[①].

Section 9 SURVEYS OF MACHINERY

5.9.2 Annual surveys
5.9.2.3 Survey items for all ships
(10) Confirming, as far as practicable, that no changes have been made in the structural fire protection, examining any manual and automatic fire doors and proving their operation, testing the fire damper of ventilation ducts and the means of closing the main inlets and outlets of all ventilation systems and testing the means of stopping power ventilation systems from outside the space served.

5.9.2.5 Additional survey requirements for ships having inert gas system notation (IGS)
(1) For ships having an inert gas system (IGS), an examination and/or test of the following items is to be carried out to confirm that the system is in a good working condition:

① visual examination of all piping and venting pipes on decks and discharges in the shell plating in

[①] Refer to annexB to the International Code on the Enhanced Programme of Inspections during Surveys of Bulk Carriers and Oil Tankers, 2011(Resolution A.1049(27)),as amended.

cargo areas to confirm that there is no any sign of gas or effluent leakage;

② confirming the proper operation of both inert gas blowers;

③ confirming the proper operation of the scrubber-room ventilation system;

④ checking the deck water seal for automatic filling and draining;

⑤ where a double block and bleed valve is installed, checking the automatic operations of the block and the bleed valves upon loss of power

⑥ where two shut-off valves in series with a venting valve in between are used as non-return devices, checking the automatic operation of the venting valve, and the alarm for faulty operation of the valves

~~⑤~~⑦ examining the operation of all remotely operated or automatically controlled valves and, in particular, the flue gas isolating valves;

~~⑥~~⑧ observing a test of the interlocking feature of soot blowers;

~~⑦~~⑨ observing that the gas pressure regulating valve automatically closes when the inert gas blowers are secured;

⑩ checking the means for separating the cargo tank not being inerted fromthe inert gas main;

⑪ checking the alarms of the two oxygen sensors positioned in the spaceor spaces containing the inert gas system;

~~⑧~~⑫ checking/testing, as far as practicable, the following alarms and safety devices of the inert gas system using simulated conditions where necessary:

a. high oxygen content of gas in the inert gas main;

b. low gas pressure in the inert gas main;

c. low pressure in the supply to the deck water seal;

d. high temperature of gas in the inert gas main;

e. low water pressure or low water-flow rate;

f. accuracy of portable and fixed oxygen-measuring equipment by means of calibration gas;

g. high water level in the scrubber;

h. failure of the inert gas blowers;

i. failure of the power supply to the automatic control system for the gas regulating valve and to the instrumentation of continuous indication and permanent recording of pressure and oxygen content in the inert gas main;

j. high pressure of gas in the inert gas main;

~~⑨~~⑬ checking the proper operation of the inert gas system.

5.9.2.8 Examining, where applicable, the alternative design and arrangements for machinery or electrical installations, low-flashpoint fuel storage and distribution systems, or fire safety, in accordance with the test, inspection and maintenance requirements, if any, specified in the approved documentation.

Section 14 INITIAL CLASSIFICATION SURVEYS OF SHIPS CONSTRUCTED NOT UNDER THE SUPERVISION OF CCS①

5.14.3 Initial classification surveys of ships after construction

5.14.3.2 Initial classification surveys of ships which have been surveyed by other Societies

(3) The plans of such ships are in general to be submitted as required for ships under construction in CCS rules. Where it is difficult to submit plans related to quality control during construction, methods are to be provided for assessment and verification of related structures or equipment. Where such methods are assessed by CCS as acceptable and verified during classification surveys, exemption from submission of related plans may be granted; In cases where the vessel has been previously classed by the Society, the

① This revision is to be implemented on or after 1 July 2020.

submission of plans and the extent of plan appraisal may be specially considered subject to confirmation of no alteration/modification to the vessel. In any case, it is to be ensured that at least the plans, calculations and other technical documents listed in 5.14.3.1(1)① are submitted to CCS for approval.

(4) The surveys are to be based on the requirements for special surveys in CCS rules for ships of the same type and age and include dry-dock survey, and surveys of propeller shafts and tube shafts, boilers and as applicable, inert gas systems. In addition, the following items are to be included:

① hull thickness measurements according to the minimum requirements for thickness measurements at the 4th special survey;

② any further survey required by CCS according to inspection of the condition of the ship and review of its service and repair history, including non-destructive testing of important welds of hull structures to a certain proportion and increasing the extent of testing as appropriate;

③ examination of records of surveys, tests and measurements of the ship during construction, including materials used, means of construction and testing, standards and extent of non-destructive testing of hull welds, records of mooring test and sea trial, and certificates of marine products, together with necessary verification during survey;

④ verification of related structures or equipment using the methods accepted in (3) above.

⑤ Where the vessel has, during any portion of the five years prior to the request for classification being received, been previously classed by the Society or a Society subject to verification of compliance with QSCS and has not been subject to alteration or modification since class was withdrawn, the survey requirements may be specially considered but are not to be less than the following:

a. for vessels previously classed with the Society – all overdue surveys and overdue conditions of class, or

b. for vessels previously classed with a Society subject to verification of compliance with QSCS – surveys the same as those required by 5.14.3.1.(1)④.

Section 16 ADDITIONAL REQUIREMENTS FOR HULL AND EQUIPMENT SURVEYS OF LIQUEFIED GAS CARRIERS①

5.16.4 Special surveys

5.16.4.3 Tank protection

(1) Where applicable, the condition of corrosion prevention system of ballast tanks is to be examined. For ~~tanks used for water ballast~~ballast tanks, excluding double bottom tanks, where one of the following conditions exists, the tanks in question are to be examined at annual intervals and thickness measurements are to be carried out as deemed necessary by the Surveyor:

5.16.4.6 Extent of tank testing

(1) All boundaries of ~~water ballast tanks~~ ballast tanks and deep tanks used for water ballast within the cargo area are to be pressure tested. For fuel oil tanks, the representative tanks are to be pressure tested.

Appendix 8
PROCEDURAL REQUIREMENTS FOR SERVICE SUPPLIERS

4. Application

4.1 This procedure applies to the approval of the following categories of service suppliers:

4.1.1 Statutory services

(7) Firms engaged in ~~the servicing and maintenance~~ maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances~~, on-load release gear and davit-launched liferaft automatic release hooks~~ and release gear.

Annex 1
Special Requirements for Various Categories of Service Suppliers

13. ~~Firms engaged in the servicing and maintenance of lifeboats, launching appliances, on-load release gear and davit-launched liferaft automatic release hooks~~ Firms engaged in maintenance,

① This revision is to be implemented on or after 1 July 2020.

thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear

13.1 Extent of engagement – ~~Servicing and maintenance of lifeboats, launching appliances, on-load release gear and davit-launched liferaft automatic release hooks~~ Maintenance, thorough examination, operational testing, overhaul and repair of:

.1 lifeboats (including free-fall lifeboats), rescue boats and fast rescue boats; and

.2 launching appliances and on-load and off-load release gear for lifeboats (including primary and secondary means of launching appliances for free-fall lifeboats), rescue boats, fast rescue boats and davit-launched liferafts.

13.2 Extent of approval

13.2.1 The contents of this procedure apply equally to manufacturers or ship's operator when they are acting as service suppliers.

13.2.2 Any service supplier engaged in ~~the thorough examination, operational testing, repair and overhaul of lifeboats, launching appliances, on-load release gear and davit-launched liferaft automatic release hooks~~ maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear carried out in accordance with SOLAS regulation III/20 ~~should~~shall be ~~qualified~~ approved for ~~in~~ these operations for each make and type of equipment for which they provide the service~~, and provide manufacturers documentary evidence that they have been so authorized or they are certified in accordance with an established system for training and authorization~~ in accordance with IMO Resolution MSC.402(96)/Corr.1 (annex, section 7). ~~MSC.1/Circ.1277, as amended~~.

Such approval shall include, as a minimum:

- employment and documentation of personnel certified in accordance with a recognized national, international or industry standard as applicable, or an equipment manufacturer's established certification program. In either case, the certification program shall be based on the paragraph 13.3 for each make and type of equipment for which service is to be provided; and,
- compliance with provisions of paragraphs 13.4, 13.5 and 13.6.

13.2.3 In cases where an equipment manufacturer is no longer in business or no longer provides technical support, service suppliers may be ~~authorized~~ approved for the equipment on the basis of prior ~~authorization~~ approval for the equipment and/or long term experience and demonstrated expertise as an authorized service provider.

13.3 ~~Qualifications and training~~ Certification of personnel

~~Service suppliers should be trained and qualified in the operations for which they are authorized, for each make and type of equipment for which they provide the service. Such training and qualification should include, as a minimum:~~

~~13.3.1 Employment and documentation of personnel certified in accordance with a recognized national, international or industry standard as applicable, or an equipment manufacturer's established certification program. In either case, the certification program should be based on the guidelines in the appendix for each make and type of equipment for which service is to be provided.~~

13.3.1 Personnel for the work specified in 13.1 shall be certified by the manufacturer or the Service Supplier for each make and type of the equipment to be worked on. Approved Service Supplier is allowed to certify its own personnel (i.e. employed by the same service supplier) only.

13.3.2 The education ~~and training~~ for initial certification of personnel should be documented and address, as a minimum:

— causes of lifeboat and rescue boat accidents;

— relevant rules and regulations, including International Conventions;

— design and construction of lifeboats(including free-fall lifeboats), rescue boats and fast rescue boats, including ~~on-load~~ on load release gear and launching appliances;

— education and practical training in the procedures specified in section 6 of annex ~~1 of~~ to IMO Resolution MSC.402(96)/Corr.1 ~~MSC.1/Circ.1206/Rev.1~~ for which certification is sought;

— detailed procedures for thorough examination, operational testing, repair and overhaul of lifeboats(including free-fall lifeboats), rescue boats and fast rescue boats, launching appliances and ~~on-load~~ on load release gear, as applicable; ~~and~~

— procedures for issuing a report of service and statement of fitness for purpose based on IMO Resolution MSC.402(96)/Corr.1~~MSC.1/Circ.1206/Rev.1~~ (annex ~~1~~, paragraph ~~15~~5.3); and

— Work, health and safety issues while conducting activities on board.

13.3.3 The ~~education and~~ training for the personnel ~~should~~ shall include practical technical training on thorough examination, operational testing, maintenance, repair and overhaul techniques ~~actual inspection and maintenance~~ using the equipment ~~(lifeboats, launching appliances and/or on-load release gear)~~ for which the personnel are to be certified. The technical training ~~should~~ shall include disassembly, reassembly,

correct operation and adjustment of the equipment. Classroom training ~~should~~ shall be supplemented by field experience in the operations for which certification is sought, under the supervision of a~~n experienced senior~~ certified person.

13.3.4 ~~At the time of initial certification and at each renewal of certification, the service supplier is to provide documentation to verify personnel's satisfactory completion of a competency assessment using the equipment for which the personnel are certified.~~ Prior to issuance of personnel certification, a competency assessment shall be satisfactorily completed, using the equipment for which the personnel are to be certified.

13.3.5 Upon completion of training and competency assessment, a certificate shall be issued defining the level of qualification and the scope of the certification (i.e. makes and types of equipment and specifically state which activities (annual thorough examination and operational tests; 5-year thorough examination, overhaul; overload operational tests; repairs) are covered by the certification). The expiry date shall clearly be written on the certificate and shall be three years from the date of issue. The validity of any certificate shall be suspended in the event of any shortfall in performance and only revalidated after a further competency assessment.

13.3.5~~6~~ ~~The service supplier is to require refresher training as appropriate to renew the certification.~~ A competency assessment shall be conducted to renew the certification. In cases where refresher training is found necessary a further assessment shall be carried out after completion.

13.4 Reference Documents − The service supplier is to have access to the following documents:

— IMO resolution MSC.402(96)/Corr.1~~MSC.1/Circ.1206/Rev.1, as amended, Measures to Prevent Accidents with Lifeboats~~ Requirements for Maintenance, Thorough Examination, Operational Testing, Overhaul and Repair of Lifeboats and Rescue Boats, Launching Appliances and Release Gear;

~~— IMO MSC.1/Circ.1277, as amended, Interim Recommendation on Conditions for Authorization of Service Providers for Lifeboats, Launching Appliances and On-Load Release Gear;~~

— IMO resolution A.689(17), recommendation on testing of life-saving appliances and, for life-saving appliances installed on board on or after 1 July 1999,

— IMO resolution MSC.81(70), as amended, revised recommendation on testing of life-saving appliances;

~~— for servicing and repair work involving disassembly or adjustment of on-load release mechanisms, availability of the equipment manufacturer's specifications and instructions~~ Manufacturer's instructions (including updates, amendments and safety notices) for repair work involving disassembly or adjustment of on-load release mechanisms and davit winches;

— type approval certificate showing any conditions that may be appropriate during the servicing and/or maintenance of lifeboats, launching appliances and on-load release gear.

13.5 Equipment and facilities − The service supplier is to have ~~access to~~ the following:

— sufficient tools, and in particular any specialized tools specified in the equipment manufacturer's instructions, including portable tools as needed for work to be carried out on board ship;

— access to ~~sufficient materials, spare~~ appropriate parts and accessories as specified by the equipment manufacturer for maintenance and repair ~~repairing lifeboats, launching appliances and on-load release gear, as applicable~~;

— for servicing and repair work involving disassembly or adjustment of on-load release mechanisms, availability of genuine replacement parts as specified or supplied by the equipment manufacturer.

13.6 Reporting − The report ~~should~~ shall conform to the requirements of IMO Resolution MSC.402(96)/Corr.1~~MSC.1/Circ.1206/Rev.1~~ (annex ~~1~~, paragraph ~~15~~5.3). When repairs, thorough examinations and annual servicing are completed, a statement confirming that the lifeboat arrangements remain fit for purpose should be promptly issued by the service supplier that conducted the work. A copy of valid documents of certification and authorization as appropriate shall be included with the statement.

Appendix 11[①]
ESP SURVEY REPORTING PRINCIPLES

As a principle, for ships which are subject to the enhanced survey programme (ESP) of Appendix 2, Chapter 2 of this PART, the Surveyor is to include the following content in his report for survey of hull structure and piping systems, as relevant for the survey.

1. General

1.1 A survey report is to be generated in the following cases:

① This revision is to be implemented on or after 1 July 2020.

(4) when condition of class ~~(recommendation)~~ has been imposed or deleted.

1.2 The purpose of reporting is to provide:

(2) documentation of surveys carried out with findings, repairs carried out and condition of class ~~(recommendation)~~ imposed or deleted;

4. Actions taken with respect to findings

4.3 For repairs not completed at the time of survey, condition of class ~~(recommendation)~~ is to be imposed with a specific time limit for the repairs. In order to provide correct and proper information to the Surveyor attending for survey of the repairs, condition of class ~~(recommendation)~~ is to be sufficiently detailed with identification of each item to be repaired. For identification of extensive repairs, reference may be given to the survey report.

Report 1
EXECUTIVE HULL SUMMARY

A) General particulars:	– Refer to previous page
B) Report review:	– Where and how survey was done
C) Close-up survey:	– Extent (which tanks)
D) Cargo & ballast piping system	– Examined
	– Operationally tested
E) Thickness measurements:	– Reference to thickness measurement report
	– Summary of where measured
	– Separate form indicating the tanks/areas with substantial corrosion, and corresponding
	* Thickness diminution
	* Corrosion pattern
F) Tank protection	Separate form indicating:
	– Location of coating
	– If coating condition less than "GOOD" is given, extended annual surveys are to be introduced. This is to be noted in part H) of the Executive Hull Summary.
G) Repairs:	– Identification of tanks/areas
H) Condition of class~~/recommendations~~:	
I) Memoranda:	– Acceptable defects
	– Any points of attention for future surveys, e.g. for suspect areas
	– Extended annual/intermediate survey due to coating breakdown
J) Evaluation results of the ship's longitudinal strength (for oil tankers of 130 m in length and upwards and of over 10 years of age)	
K) Conclusion	– Statement on evaluation/verification of survey report

Report 2
EXECUTIVE HULL SUMMARY

A) General particulars:	–	Refer to previous page
B) Report review:	–	Where and how survey was done
C) Close-up survey:	–	Extent (which tanks)
D) Thickness measurements:	–	Reference to thickness measurement report
	–	Summary of where measured
	–	Separate form indicating the tanks/areas with substantial corrosion, and corresponding
	*	Thickness diminution
	*	Corrosion pattern
E) Tank Protection	Separate form indicating:	
	–	Location of coating
	–	If coating condition "POOR" is given, extended annual surveys are to be introduced. This is to be noted in part G) of the Executive Hull Summary.
F) Repairs:	–	Identification of tanks/areas
G) Condition of class~~/recommendations~~:		
H) Memoranda:	–	Acceptable defects
	–	Any points of attention for future surveys, e.g. for suspect areas
	–	Extended annual/intermediate survey due to coating breakdown
I) Conclusion	–	Statement on evaluation/verification of survey report

Appendix 23 REQUIREMENTS FOR NDT SUPPLIERS①

1 General

1.1 Scope

Firms providing NDT (Non-Destructive Testing) services on ship and offshore structures/components subject to classification, need to fulfil the requirements set out in this UR. In this document, such firms will be referred to as the Supplier.

1.2 Objective

The objective of this UR is to ensure that the Supplier is using appropriate procedures, has qualified and certified personnel and has implemented written procedures for training, experience, education, examination, certification, performance, application, control, verification and reporting of NDT. In addition, the Supplier shall furnish appropriate equipment and facilities commensurate with providing a professional service.

1.3 Terms and definitions

The following terms and definitions apply for this document.

NDT	Non-destructive testing. Comprising, but not limited to the methods and techniques MT, PT, RT, RT-D, VT, UT, PAUT, TOFD, ET and/or ACFM
Supplier	Independent NDT company or NDT department/section that forms a part of a company providing NDT services on ship and/or offshore components/structures.
Society	The Classification Society
MT	Magnetic Particle Testing
PT	Penetrant Testing
RT	Radiographic Testing
RT-D	Digital Radiography (Several techniques within the method RT, e.g. Computed Radiography or Direct Radiography).
UT	Ultrasonic Testing
PAUT	Phased Array Ultrasonic Testing (Technique within the method UT).
TOFD	Time of Flight Diffraction (Technique within the method UT).
ET	Electromagnetic Testing (i.e. Eddy Current Testing and/or Alternating Current Field Measurements [ACFM])
VT	Visual Testing
Industrial sector	Section of industry or technology where specialised NDT practices are used, requiring specific product-related knowledge, skill, equipment and/or training.

1.4 References

The following referenced documents are to be used for the application of this document as appropriate. For undated references, the latest edition of the referenced document (including any amendments) applies.

(1) ISO 9712:2012; Non-destructive testing - Qualification and certification of NDT personnel

(2) ISO/IEC 17020:2012; Conformity assessment – Requirements for the operation of various types of bodies performing inspection

(3) ISO/IEC 17024:2012; Conformity assessment – General requirements for bodies operating certification of persons

(4) ISO 9001:2015; Quality Management Systems – Requirements

Other national adoptions of the standards listed above are accepted as compliant and hence are accepted for use together with this document.

2 Requirements for Supplier

① This revision is to be implemented on or after 1 July 2020.

The Supplier shall document, as required in 2.2 to 2.9, that it has the competence and control needed to perform the specified services.

2.1 Requirements for documents

The following documents shall be available for the Society upon request:

(1) an outline of Supplier's organisation and management structure, including any subsidiaries

(2) information on the structure of the Supplier's Quality Management System

(3) quality manual and documented procedures covering the requirements given in item 2.2

(4) for companies with in-house certification of persons scheme; a written practice developed in accordance with a recognised standard or recommended practice (i.e. ASNT's SNT-TC-1A, 2016, ANSI/ASNT CP-189, 2016 or similar).

(5) operational work procedures for each NDT method including selection of the NDT technique.

(6) training- and follow-up programmes for NDT operators including practical training on various ship and offshore products

(7) procedure for supervisor's authorisation of NDT operators

(8) experience of the Supplier in the specific service area,

(9) a list of documented training and experience for NDT operators within the relevant service area, including qualifications and third party certification per ISO 9712:2012 based certification schemes.

(10) description of equipment(s) used for the services performed by the Supplier

(11) a guide for NDT operators to use equipment mentioned above

(12) record formats for recording results of the services referred to in item 2.9

(13) information on other activities which may present a Conflict of interest

(14) record of customer claims and corrective actions

(15) any legal proceedings against the company in the past/currently in the courts of law

2.2 Quality management system

2.2.1 The Supplier shall have a documented quality management system, covering at least:

(1) work procedures for all tasks and operations, including the various NDT methods and NDT techniques for which the Supplier is involved.

(2) preparation, issuance, maintenance and control of documents

(3) maintenance and calibration of the equipment

(4) training programs for the NDT operators and the supervisors

(5) maintenance of records for NDT operators' and the supervisors' training, qualification and certification

(6) certification of NDT operators including re-validation and recertification

(7) procedure for test of operators' visual acuity

(8) supervision and verification of operation to ensure compliance with the NDT procedures

(9) quality management of subsidiaries

(10) job preparation

(11) order reference system where each engagement is traceable to when, who and where the test was carried out.

(12) recording and reporting of information, including retention time of records

(13) code of conduct for the Supplier's activities; especially the NDT activities

(14) periodic review of work process procedures

(15) corrective and preventive action

(16) feedback and continuous improvement

(17) internal audits

(18) the provision of accessibility to required codes, standards and procedures to assist NDT operators.

2.2.2 A documented quality system complying with the most current version of ISO/IEC 17020:2012 and including the above would be considered acceptable. The Supplier should satisfy the requirements of Type A or Type B inspection body, as described in ISO/IEC 17020:2012.

2.3 Qualification and certification of NDT personnel

2.3.1 The Supplier is responsible for the qualification and preferably 3rd party certification of its supervisors and operators to a recognised certification scheme based on ISO 9712:2012.

2.3.2 Personnel qualification to an employer based qualification scheme as e.g. SNT-TC-1A, 2016 or ANSI/ASNT CP-189, 2016 may be accepted if the Supplier's written practice is reviewed and found acceptable by the Society. The Supplier's written practice shall as a minimum, except for the impartiality requirements of a certification body and/or authorised body, comply with ISO 9712:2012.

2.3.3 The supervisors' and operators' certificates and competence shall comprise all industrial sectors and techniques being applied by the Supplier.

2.3.4 Level 3 personnel shall be certified by an accredited certification body.

2.4 Supervisor

2.4.1 The Supplier shall have a supervisor or supervisors, responsible for the appropriate execution of NDT operations and for the professional standard of the operators and their equipment, including the professional administration of the working procedures. The supplier shall employ, on a full-time basis, at least one supervisor independently certified to Level 3 in the method(s) concerned as per the requirements of item 2.4.2 It is not permissible to appoint Level 3 personnel; they must be certified by an accredited certification body. It is recognised that a Supplier may not directly employ a Level 3 in all the stated methods practiced. In such cases, it is permissible to employ an external, independently certified, Level 3 in those methods not held by the full-time Level 3(s) of the Supplier.

2.4.3 The supervisor shall be directly involved in review and acceptance of NDT Procedures, NDT reports, calibration of NDT equipment and tools. The supervisor shall on behalf of the Supplier re-evaluate the qualification of the operators annually.

2.5 Operators

2.5.1 The operator carrying out the NDT and interpreting indications, shall as a minimum, be qualified and certified to Level 2 in the NDT method(s) concerned and as described in item 2.3. However, operators only undertaking the gathering of data using any NDT method and not performing data interpretation or data analysis may be qualified and certified as appropriate, at level 1.

2.5.2 The operator shall have adequate knowledge of materials, weld, structures or components, NDT equipment and limitations that are sufficient to apply the relevant NDT method for each application appropriately.

2.6 Equipment

2.6.1 The Supplier shall maintain records of the NDT equipment used and detail information related to maintenance, calibration and verification activities. If the Supplier hires equipment, such equipment shall have updated calibration records, and the operators shall be familiar with the specific equipment type prior to using it. Under any circumstance, the Supplier shall possess sufficient equipment to carry out the services being a part of the NDT scope required by the Society.

2.6.2 Where the equipment is of unique nature, the NDT operators shall be trained by competent personnel in the operation and use of the equipment before carrying out NDT using this equipment.

2.7 Work instructions and procedures

The Supplier shall produce written procedures for the NDT being applied. These procedures are to be written, verified or approved by the Supplier's Level 3. Procedures shall define all relevant information relating to the inspection including defect evaluation against acceptance criteria in accordance with the Society Rules. All NDT procedures and instructions shall be properly documented in such a way that the performed testing can be easily retraced and/or repeated at a later stage. All NDT procedures are to be acceptable to the Society.

2.8 Sub-contractors

2.8.1 The Supplier shall give information of agreements and arrangements if any part(s) of the services provided are subcontracted. The Supplier, in the following-up of subcontracts shall give emphasis to the quality management system of the subcontractor.

2.8.2 Subcontractors shall meet the same requirements placed on Suppliers for any NDT performed.

2.9 Reporting

2.9.1 All NDT shall be properly documented in such a way that the performed testing and examination can be easily retraced and/or repeated at a later stage. The reports shall identify the defects present in the tested area, and a conclusive statement as to whether the material, weld, component or structure satisfies the acceptance criteria or not.

2.9.2 The report shall include a reference to the applicable standard, NDT procedure and acceptance criteria applied in the applicable NDT method/technique. In general, the acceptance criteria shall comply with the Society Rules.

CCS Rule Change Notice For:

RULES FOR CLASSIFICATION OF SEA-GOING STEEL SHIPS

PART TWO

CONTENTS

CHAPTER 1 GENERAL

Section 1 GENERAL PROVISIONS

1.1.1 Application

1.1.1.1 This PART applies to sea-going steel ships of all welded construction.

1.1.1.2 In addition, the hull is to comply with the applicable requirements in PART ONE of the Rules.

1.1.1.3 CSR oil tankers and bulk carriers are to satisfy the requirements of PART NINE of the Rules.

1.1.2 Definitions①

1.1.2.1 Length of ship L (in m), i.e. the Rule length, is the distance measured on the ~~summer load~~ waterline at the scantling draught from the forward side of the stem to the aft side of the rudder post, or to the centre of the rudder stock if there is no rudder post. L is not to be less than 96%, and need not be greater than 97%, of the extreme length on the ~~summer load~~ waterline at the scantling draught. In ships with unusual stern and bow arrangement, the length L is to be specially considered.

For pontoon hulls, L is the distance on the ~~summer load~~ waterline at the scantling draught from the forward side of the fore end plate to the aft side of the aft end plate.

For ships without rudder stocks (such as ships provided with azimuth thrusters), L is 97% of the extreme length on the ~~summer load~~ waterline at the scantling draught.

1.1.2.2 Breadth of ship B (in m), is the ~~horizontal distance measured over the main frames at the widest part of the ship~~ greatest moulded breadth measured amidships at the scantling draught.

1.1.2.3 Moulded depth D (in m), is the vertical distance measured at the middle of the length L from top of keel to top of the deck beam at side on the uppermost continuous deck. When a rounded gunwale is arranged, the moulded depth is to be measured to the point of intersection of the continued moulded lines of the deck and side shell plating.

1.1.2.4 Draught d (in m), i.e. the scantling draught, is the vertical distance measured at the middle of the length L from top of keel to the ~~summer load~~ waterline at the scantling draught. Scantling draught, at which the strength requirements for the scantlings of the ship are met and represents the full load condition. The scantling draught is to be not less than that corresponding to the assigned freeboard.

1.1.2.5 Block coefficient C_b is the moulded block coefficient corresponding to the waterline at the scanting draught, to be determined by the following formula:

$$C_b = \frac{\nabla}{LBd}$$

where: ∇ — moulded displacement, in m³, at scantling draught d;

L, B, d — see 1.1.2.1, 1.1.2.2 and 1.1.2.4 of this Section.

① Changes introduced in this revision are to be uniformly implemented from 1 July 2020.

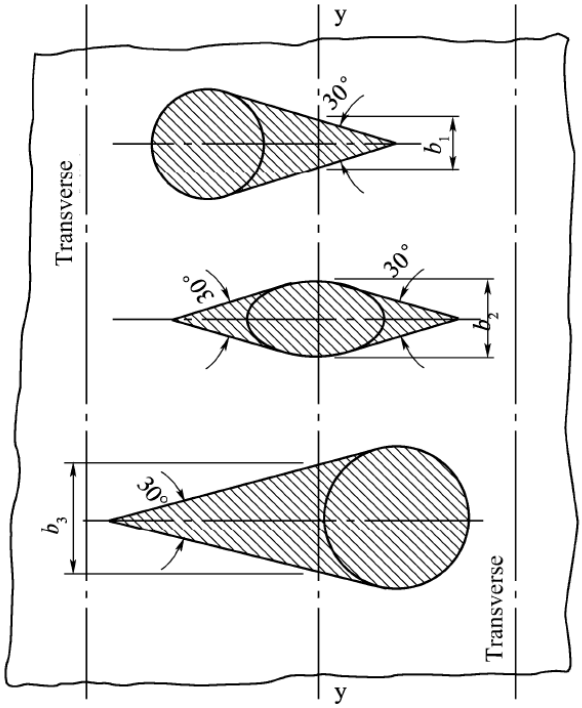
2.2.4.6 Deck openings having a length in the fore-and-aft direction exceeding 2.5 m or a breadth exceeding 1.2 m or 0.04*B* (whichever is the lesser) or scallops where scallop-welding is applied are to be deducted from the sectional areas used in the calculation of the hull girder section modulus.

2.2.4.7 Smaller openings (including manholes, lightening holes, single scallops in way of seams, etc.) smaller than those stated in 2.2.4.6 above need not be deducted from the sectional areas used in the calculation of the hull girder section modulus, provided that the sum b_c of their breadths or shadow area breadths (The shadow area will be obtained by drawing two tangent lines with an opening angle of 30°, as shown in Figure 2.2.4.7) in one transverse section complies with the following or that the section modulus at deck or bottom is not reduced by more than 3%:

$$b_c \le 0.06\left(B_1 - \sum b\right)$$

where: B_1 — breadth of ship at section considered, in m;

Σb — sum of breadths of deductible openings at section considered in accordance with 2.2.4.6 of this Section, in m.



Sum of breadths of small openings at *y-y* section is to be $b_c = b_1 + b_2 + b_3$

Figure 2.2.4.7

Section 20 HATCHWAYS AND HATCH COVERS

2.20.2 Weathertight steel hatch covers

2.20.2.1 General requirements

(1) These requirements apply to all ships, other than bulk carriers, self-unloading bulk carriers, ore carriers and combination carriers as defined in Appendix 2, Chapter 2 of PART ONE of the Rules, and are for all cargo hatch covers and coamings on exposed decks.

CHAPTER 8 BULK CARRIERS

Section 1 GENERAL PROVISIONS

8.1.1 Application

8.1.1.6 The requirements of 8.11.5 of this Chapter are not applicable to self-unloading bulk carriers.

Section 8 OVERALL LONGITUDINAL STRENGTH IN FLOODED CONDITION①

8.8.3 Flooding conditions

8.8.3.1 ~~Any cargo hold is assumed to be flooded up to the equilibrium waterline.~~ Each cargo hold is to be considered individually flooded up to the equilibrium waterline. This application is to be applied to self-unloading bulk carriers (SUBC) where the unloading system maintains the watertightness during seagoing operations. In SUBCs with unloading systems that do not maintain watertightness, the longitudinal strength in the flooded conditions are to be considered using the extent to which the flooding may occur.

Section 9 STRENGTH OF CORRUGATED TRANSVERSE WATERTIGHT BULKHEADS IN HOLD-FLOODED CONDITIONS②

8.9.2 Load model

8.9.2.1 General requirements

The loads to be considered as acting on the bulkheads are those given by the combination of the cargo loads with those induced by the flooding of one hold adjacent to the bulkhead under examination. In any case, the pressure due to the flooding water alone is to be considered. This application is to be applied to self-unloading bulk carriers (SUBC) where the unloading system maintains the watertightness during seagoing operations. In SUBCs with unloading systems that do not maintain watertightness, the combination loads acting on the bulkheads in the flooded conditions are to be considered using the extent to which the flooding may occur.

① Changes introduced in this revision are to be uniformly implemented from 1 July 2020.
② Changes introduced in this revision are to be uniformly implemented from 1 July 2020.

CCS Rule Change Notice For:

RULES FOR CLASSIFICATION OF SEA-GOING STEEL SHIPS

PART THREE

Brief Introduction

1、M59 was deleted by IACS, and the appendix 1 of charpter 9 was deleted accordingly, and the appendix 9 was revised to appendix 1.

2、The revised requirements of M72 Rev.2 were introduced.. This revision is to be uniformly implemented on or after 1 January 2020.

CONTENTS

CHAPTER 9 DIESEL ENGINES

Section 1 GENERAL PROVISIONS

9.1.9 Gas fuel engines

9.1.9.1 In addition to the relevant provisions of this Chapter, gas fuel engines are to comply with the applicable requirements of ~~Appendix 1 and~~ Appendix ~~9~~1[①] of this Chapter, CCS Rules for Natural Gas Fuelled Ships and CCS Guidelines for Design and Installation of Gas Fuel Engine Systems of Liquefied Gas Carriers.

Section 2 INSPECTION, TEST AND CERTIFICATION OF DIESEL ENGINE PARTS[②]

9.2.1 General requirements

9.2.1.6 The manufacturer is not exempted from responsibility for any relevant tests and inspections of those parts for which documentation is not explicitly requested by CCS. The ~~M~~manufacturing ~~works~~ process and equipment is to be set up and maintained ~~equipped~~ in such a way that all materials and components can be consistently produced to the required standard. This includes production and assembly lines, machining units, special tools and devices, assembly and testing rigs as well as all lifting and transportation devices.

9.2.2 Inspection, test and certification

Summary of inspection, test and certification of diesel engine parts Table 9.2.2.1

Item	Parts[5)]	Material properties [1)]	Non-destructive examination [2)]	Hydraulic testing	Dimensional inspection (including surface condition)	Visual inspection (surveyor)	Applicable to engines
1	Welded bedplate	CC+M	UT+MT/PT			VT(fit-up and post-welding)	All
2	Bearing transverse girders (cast steel)	CC+M	UT+MT/PT			VT	All
3	Welded frame box	CC+M	UT+MT/PT			VT(fit-up and post-welding)	All
4	Cylinder block (cast iron)			X[4)]			~~CH~~ >400 kW/cyl
5	Welded cylinder frames	CC+M	UT+MT/PT			VT(fit-up and post-welding)	CH
6	Engine block (grey cast iron)			X[4)]			>400 kW/cyl
7	Engine block (nodular graphite cast iron)	M		X[4)]			>400 kW/cyl
8	Cylinder liner	CC+M		X[4)]			D>300mm
9	Cylinder head (cast iron)			X			D>300mm
10	Cylinder head (cast steel)	CC+M	UT+MT/PT	X		VT	D>300mm
11	Forged cylinder head	CC+M	UT+MT/PT	X		VT	D>300mm
12	Piston crown (cast	CC+M	UT+MT/PT			VT	D>400mm

① (1) Appendix ~~9~~ 1applies to gas fuel engines for which the date of an application for type approval certification is dated on or after 1 July 2019.

(2) The “date of an application for type approval” is the date of documents accepted by CCS as request for type approval certification of a new engine type or of an engine type that has undergone substantive modifications in respect of the one previously type approved, or for renewal of an expired type approval certificate.

(3) Engines with an existing type approval on 1 July 2019 are not required to be re-type approved until the current Type Approval becomes invalid. For the purpose of certification of these engines, the current type approval and related submitted documentation will be accepted.

② This revision is to be uniformly implemented to engines with an application for certification dated on or after 1 January 2020

Item	Parts[5)]	Material properties [1)]	Non-destructive examination [2)]	Hydraulic testing	Dimensional inspection (including surface condition)	Visual inspection (surveyor)	Applicable to engines
	steel)						
13	Forged piston crown	CC+M	UT+MT/PT			VT	D>400mm
14	Crankshaft: made in one piece	CC+M	UT+MT/PT		X	VT (random, of fillets and oil bores)	All
15	Semi-built Crankshaft(Crank throw, forged main journal and journals with flange)	~~See below~~ CC+M	~~See below~~ UT+MT/PT		~~See below~~ X	~~See below~~ VT (random, of fillets and shrink fittings)	All
	~~Crank throw~~	~~CC+M~~	~~UT+MT/PT~~		~~X~~	~~VT (random, of fillets and shrink fittings)~~	~~All~~
	~~Forged main journal and journals with flange~~	~~CC+M~~	~~UT+MT/PT~~		~~X~~	~~VT (random, of shrink fittings)~~	~~All~~
16	Exhaust gas valve cage			X			CH
17	Piston rod~~, if applicable~~	CC+M	UT+MT/PT ~~(MT/PT again after final machining (grinding))~~			VT (random)	D>400mm CH
18	Cross head	CC+M	UT+MT/PT ~~(MT/PT again after final machining (grinding))~~			VT (random)	CH
19	Connecting rod with cap	CC+M	UT+MT/PT		X	VT (random, of all surfaces, in particular those shot peened)	All
20	Coupling bolts for crankshaft	CC+M	UT+MT/PT		X	VT (random, of interference fit)	All
21	Bolts and studs for main bearings and cylinder heads	CC+M	UT+MT/PT				D>300mm
22	Bolts and studs for connecting rods	CC+M	UT+MT/PT		X (thread making)		D>300mm
23	Tie rod	CC+M	UT+MT/PT		X (thread making)	VT (random)	CH
24	High pressure fuel injection pump body	CC+M		X			All
25	High pressure fuel injection valves (only for not autofretted)			X			All
26	High pressure fuel injection pipes including common fuel rail	CC+M		X for those that are not autofretted			All

Item	Parts[5)]	Material properties [1)]	Non-destructive examination [2)]	Hydraulic testing	Dimensional inspection (including surface condition)	Visual inspection (surveyor)	Applicable to engines
27	High pressure common servo oil system	CC+M		X			All
28	Cooler, both sides [3)]	CC+M		X			D>300mm
29	Accumulator ~~of common rail fuel or servo oil system~~	CC+M		X			All engines with accumulators with a capacity of >0.5 l
30	Piping, pumps, actuators, etc. for hydraulic drive of valves, if applicable	CC+M		X			>800 kW/cyl
31	Engine driven pumps (oil, water, fuel, bilge) other than pumps referred to in item 24 and 30			X			>800 kW/cyl
32	Bearings for main, crosshead, and crankpin	CC	UT (full contact between basic material and bearing metal)		X		>800 kW/cyl

Notes:
(1) Material properties include chemical composition and mechanical properties, and also surface treatment such as surface hardening (hardness, depth and extent), peening and rolling (extent and applied force).
(2) Non-destructive examination means e.g. ultrasonic testing, crack detection by MT or PT.
(3) Charge air coolers need only be tested on the water side.
(4) Hydraulic testing is also required for those parts filled with cooling water and having the function of containing the water which is in contact with the cylinder or cylinder liner.
(5) Material certification requirements for pumps and piping components are dependent on the operating pressure and temperature. The certification requirements are to comply with the requirements of Chapter 3, PART ONE of the Rules.

Section 7 FITTINGS

9.7.5 Vent pipes

9.7.5.1 Ventilation of crankcase, and any arrangement which could produce a flow of external air within the crankcase, are in principle not permitted except for ~~dual~~ gas fuel engines where crankcase ventilation is to be provided in accordance with ~~2.1.2(1), Appendix 1 of this Chapter~~ the applicable requirements of Appendix 1 of this Chapter, CCS Rules for Natural Gas Fuelled Ships and CCS Guidelines for Design and Installation of Gas Fuel Engine Systems of Liquefied Gas Carriers. Vent pipes, where provided, are to be as small as practicable to minimise the inrush of external air after a crankcase explosion .

~~**Appendix 1 CONTROL AND SAFETY SYSTEMS FOR DUAL FUEL DIESEL ENGINES**~~

~~**1.1 Application**~~

~~1.1.1 This Appendix is applicable to dual fuel diesel engines (hereinafter referred to as DFD engines) utilising high pressure methane gas fuel injection. In addition, DFD engines are to meet the relevant requirements of this Chapter.~~

~~**1.2 Operation mode**~~

~~1.2.1 DFD engines are to be of the dual fuel type employing pilot fuel ignition and to be capable of immediate change-over to oil fuel only.~~
~~1.2.2 Only oil fuel is to be used when starting the engine.~~
~~1.2.3 Only oil fuel is, in principle, to be used when the operation of an engine is unstable, and/or during~~

manoeuvring and port operations.

1.2.4 In case of shut-off of the gas fuel supply, the engines are to be capable of continuous operation by oil fuel only.

1.3 Protection of crankcase

1.3.1 Crankcase relief valves are to be fitted in way of each crank throw. The construction and operating pressure of the relief valves are to be determined considering explosions due to gas leaks.

1.3.2 If a trunk piston type engine is used as DFD engine, the crankcase is to be protected by the following measures.

(1) Ventilation is to be provided to prevent the accumulation of leaked gas, the outlet for which is to be led to a safe location in the open through flame arrester.

(2) Gas detecting or equivalent equipment (It is recommended that means for automatic injection of inert gas are to be provided).

(3) Oil mist detector.

1.3.3 If a cross-head type engine is used as DFD, the crankcase is to be protected by oil mist detector or bearing temperature detector.

1.4 Protection for piston underside space of cross-head type engine

1.4.1 Gas detecting or equivalent equipment is to be provided for piston underside space of cross-head type engine.

1.5 Engine Exhaust System

1.5.1 Explosion relief valves or other appropriate protection system against explosion are to be provided in the exhaust, scavenge and air inlet manifolds.

1.5.2 The exhaust gas pipes from DFD engines are not to be connected to the exhaust pipes of other engines or systems.

1.6 Starting air line

1.6.1 Starting air branch pipes to each cylinder are to be provided with effective flame arresters.

1.7 Combustion Monitoring

1.7.1 A failure mode and effect analysis (FMEA) examining all possible faults affecting the combustion process is to be submitted in accordance with 9.1.12.2(23) of this Chapter. Details of required monitoring will be determined based on the outcome of the analysis. However, the following Table 1.7.1 may serve as guidance.

Details of Monitoring **Table 1.7.1**

Faulty condition	Alarm	Aut. shut-off of the interlocked valves①
Function of gas fuel injection valves and pilot oil fuel injection valves	×	×
Exhaust gas temperature at each cylinder outlet and deviation from average	×	×
Cylinder pressure or ignition failure of each cylinder	×	×

Note: ① It is recommended that the gas master valve is also closed.

1.8 Gas fuel supply to engine

1.8.1 Flame arresters are to be provided at the inlet to the gas supply manifold for the engine.

1.8.2 Arrangements are to be made so that the gas supply to the engine can be shut-off manually from starting platform or any other control position.

1.8.3 The arrangement and installation of the gas piping are to provide the necessary flexibility for the gas supply piping to accommodate the oscillating movements of DFD engine, without risk of fatigue failure.

1.8.4 The connecting of gas line and protection pipes or ducts regulated in 1.9.1 of this Appendix to the gas fuel injection valves are to provide complete coverage by the protection pipe or ducts.

1.9 Gas fuel supply piping systems

1.9.1 Gas fuel piping may pass through or extend into machinery spaces or gas-safe spaces other than accommodation spaces, service spaces and control stations provided that they fulfill one of the following.

(1) The system is to comply with the relevant requirements of 16.3.1.1 of CCS Rules for Construction and Equipment of Ships Carrying Liquefied Gases in Bulk, and in addition, with ①, ② and ③ given below:

① The pressure in the space between concentric pipes is monitored continuously. Alarm is to be issued and

automatic valves (hereinafter referred to as "interlocked gas valves") specified in CCS Rules for Construction and Equipment of Ships Carrying Liquefied Gases in Bulk and the master gas fuel valves (hereinafter referred to as "master gas valve") specified in CCS Rules for Construction and Equipment of Ships Carrying Liquefied Gases in Bulk are to be closed before the pressure drops to below the inner pipe pressure (however, an interlocked gas valve connected to vent outlet is to be opened).

② Construction and strength of the outer pipes are to comply with the relevant requirements of CCS Rules for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk.

③ It is to be so arranged that the inside of the gas fuel supply piping system between the master gas valve and the DFD engine is to be automatically purged with inert gas, when the master gas valve is closed.

(2) The system is to comply with the relevant requirements of 16.3.1.2 of CCS Rules for Construction and Equipment of Ships Carrying Liquefied Gases in Bulk, and in addition, with ① through ④ given below:

① Materials, construction and strength of protection pipes or ducts and mechanical ventilation systems are to be sufficiently durable against bursting and rapid expansion of high pressure gas in the event of gas pipe burst.

② The capacity of mechanical ventilating system is to be determined considering the flow rate of gas fuel and construction and arrangement of protective pipes or ducts, as deemed appropriate by the Surveyor.

③ The air intakes of mechanical ventilating systems are to be provided with nonreturn devices effective for gas fuel leaks. However, if a gas detector is fitted at the air intakes, these requirements may be dispensed with.

④ The number of flange joints of protective pipes or ducts is to be minimized. Or

(3) Alternative arrangements to those given in 1.9.1(1) and (2) of this Appendix will be specially considered based upon an equivalent level of safety.

1.9.2 High pressure gas piping system are to be ensured to have sufficient constructive strength by carrying out stress analysis taking into account the stresses due to the weight of the piping system including acceleration load when significant, internal pressure and loads induced by hog and sag of the ships.

1.9.3 All valves and expansion joints used in high pressure gas fuel supply lines are to be of an approved type.

1.9.4 Joints on entire length of the gas fuel supply lines are to be butt-welded joints with full penetration and to be fully radiographed, except where specially approved by CCS.

1.9.5 Pipe joints other than welded joints at the locations specially approved are to comply with the appropriate recognised standards, or those whose structural strength has been verified through tests and analysis as deemed appropriate.

1.9.6 For all butt-welded joints of high pressure gas fuel supply lines, post-weld heat treatment are to be performed depending on the kind of material.

1.10 Shut-off of gas fuel supply

1.10.1 In addition to the causes mentioned in CCS Rules for Construction and Equipment of Ships Carrying Liquefied Gases in Bulk, supply of gas fuel to DFD engines is to be shut off by the interlocked gas valves in case following abnormality occurs.

(1) abnormality specified in 1.7.1 of this Appendix;

(2) DFD engine stops from any cause;

(3) abnormality specified in 1.9.1 (1)① of this Appendix.

1.10.2 In addition to the causes mentioned in CCS Rules for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk, the master gas valve is to be closed in case of any of the following:

(1) oil mist detector or bearing temperature detector specified in 1.3.2(3) and 1.3.3 of this Appendix detects abnormality;

(2) any kind of gas fuel leakage is detected;

(3) abnormality specified in 1.9.1(1)① of this Appendix;

(4) abnormality specified in 1.11.1 of this Appendix.

1.10.3 The master gas valve is recommended to close automatically upon activation of the interlocked gas valves.

1.11 Emergency stop of the DFD engines

1.11.1 DFD engine is to be stopped before the gas concentration detected by the gas detectors specified in CCS Rules for Construction and Equipment of Ships Carrying Liquefied Gases in Bulk reached 60% of lower flammable limit.

~~**1.12 Gas fuel make-up plant and related storage tanks**~~

~~1.12.1 Construction, control and safety system of high pressure gas compressors, pressure vessels and heat exchangers constituting a gas fuel make-up plant are so arranged as to meet the relevant requirements of CCS Rules for Construction and Equipment of Ships Carrying Liquefied Gases in Bulk.~~

~~1.12.2 The possibility for fatigue failure of the high pressure gas piping due to vibration is to be considered.~~

~~1.12.3 The possibility for pulsation of gas fuel supply pressure caused by the high pressure gas compressor is to be considered.~~

Appendix ~~9~~1 SAFETY OF LOW PRESSURE GAS FUEL ENGINES

CCS Rule Change Notice For:

RULES FOR CLASSIFICATION OF SEA-GOING STEEL SHIPS

PART NINE

COMMON STRUCTURAL RULES FOR BULK CARRIERS AND OIL TANKERS

CONTENTS

Part 9-1 GENERAL HULL REQUIREMENTS

Chapter 1 RULE GENERAL PRINCIPLES

Section 2 RULE PRINCIPLES

3 DESIGN BASIS

3.1 General

3.1.6

The Rules are applicable for ships in compliance with the specified design basis. Special consideration is given to deviations from this design basis.

CCS 3.1.6a This PART applies to ships complying with the design basis specified in this Section. For ships which are not designed on this basis, equivalence or substitution is to be granted in accordance with ~~paragraph 2.2.5, Section 2, Chapter 2, PART ONE of the Rules~~ the requirements in CCS Appendix D of PART 9-1.

Section 3 VERIFICATION OF COMPLIANCE

6 EQUIVALENCE PROCEDURES

6.1 Rule applications

6.1.2

Special consideration is to be given to the application of the Rules incorporating design parameters which are outside the design basis as specified in Ch 1, Sec 2, [3], for example, increased fatigue life.

CCS 6.1.2a ~~Where design parameters other than those in 3 DESIGN BASIS, Section 2, Chapter 1 are used (e.g. increased fatigue life), equivalence or substitution is to be granted in accordance with paragraph 2.2.5, Section 2, Chapter 2, PART ONE of the Rules.~~ The procedure for assessing the alternative methods used in hull structural design should be followed in accordance with the requirements in CCS Appendix D of PART 9-1.

CCS Appendix D THE REQUIREMENT FOR ASSESSING ALTERNATIVE METHODS USED IN HULL STRUCTURAL DESIGN OF SHIPS(1)

1 GENERAL

1.1

This Appendix is applied to assessing alternative methods used in the hull structural design as permitted in the applicable resolutions of this PART. The methodology applied in this Appendix is consistent with the CCS Circular No.498 "The Notice on the approval of IMO MSC.1/Circ.1455"(2), while allowing for the use of simplified approaches.

1.2

The basic approach for considering equivalency in this Appendix involves comparing proposed alternative methods to the IACS technical provisions and CCS Rules, Guidelines, such as CCS Rules for Classification of Sea-going Steel Ships, Guidelines for Implementation of Statutory Surveys, etc.

1.3

The responsibility for generating the equivalency request and supporting information required rests with the owner/shipyard/designer.

1.4

Review/approval of any equivalency request as well as the resulting scantlings, materials, etc. should be undertaken by CCS.

2 SCOPE OF AN EQUIVALENCY ASSESSMENT

2.1

The scope of simplified equivalency assessments is expected to be limited to materials selection and structural strength of the hull structure.

2.2

If there is not full and direct compliance to this PART due to innovative designs that are not capable of being directly evaluated with the existing CCS Rules and/or IACS resolutions, then an equivalent safety level can be accepted in accordance with the applicable guidance provided by the CCS Circular No.498.

2.3

More detailed criteria and/or procedure for assessing alternative methods used in the hull structural design may be considered by CCS on case-by-case basis, when more experience and information gained from the evaluation of alternative methods and/or novel designs are provided by owner/shipyard/designer.

2.4

When conducting simplified equivalency assessments, the guidance contained in CCS Circular No.498 should be applied to the extent possible and reported in the documentation associated with the application of alternative methods.

3 DUCUMENTATION

3.1

Documentation provided with an application for alternative methods used in the hull structural design as equivalency should identify the detail of the methods that have been undertaken, the equivalent safety level and the sufficient supporting information to validate assessments as well as the resulting scantlings, materials, etc.

3.2

In case of a ship where alternative methods are applied and an equivalency for the technical resolutions is considered by CCS, this should be noted in the relevant structural drawings and/or appropriate approval documents as required by CCS's procedures. The documentation on the application of alternative methods should be included in the Ship Construction Files (SCF) in accordance with the requirement in CCS Rules for Classification of Sea-going Steel Ships Part 1, Chapter 4, Appendix 1, Annex 2, [3.1.1], (3)[(3)].

Note (1): This Appendix is the transformation of IACS Rec. 165(Nov 2018), "Recommendation for assessing alternative methods used in the hull structural design of ships subject to the Common Structural Rules for Bulk Carriers and Oil Tankers (CSR-BC&OT)".

Note (2): CCS Circular No.498 is the transformation of the International Maritime Organization "the Guidelines for the approval of alternatives and equivalents as provided for in various IMO instruments" (refer to IMO MSC.1/Circ.1455).

Note (3): The requirement is incorporation of IACS Unified Requirement (UR) Z23.