RULES
FOR THE CLASSIFICATION OF SHIPS

Part 1 – GENERAL REQUIREMENTS
July 2021

CROATIAN REGISTER OF SHIPPING

Hrvatska (Croatia) • 21000 Split • Marasovića 67 • P.O.B. 187
Tel.: (...) 385 (0)21 40 81 11
Fax.: (...) 385 (0)21 35 81 59
E-mail: tech.coord@crs.hr
web site: www.crs.hr

By the decision of the General Committee of Croatian Register of Shipping,

RULES FOR THE CLASSIFICATION OF SHIPS
Part 1 – GENERAL REQUIREMENTS

have been adopted on 28th June 2021 and shall enter into force on 1st July 2021

REVIEW OF AMENDMENTS IN RELATION TO PREVIOUS EDITION OF THE RULES

RULES FOR THE CLASSIFICATION OF SHIPS

Part 1 - GENERAL REQUIREMENTS

Chapter 2 – Survey during construction and initial survey

All major changes in respect to Rules for the classification of ships, Part 1 – General requirements, Chapter 2 – Survey during construction and initial survey, edition July 2020, including Corrigenda No. 1, throughout the text are shaded (if any).

Items not being indicated as corrected have not been changed.

The grammar and print errors have been corrected throughout the Rules and are not subject to above indication of changes.

The subject Chapter of this part of the Rules includes the requirements of the following international Organisations:

International Maritime Organization (IMO):

Resolutions: MEPC.269(68) 2015 Guidelines for the development of the inventory of hazardous materials

Circulars: MSC/Circ.1142/MEPC/Circ.425 Marking the ship's plans, manuals, and other documents with the IMO identification number
MSC/Circ.1135 As-built construction drawings to be maintained on board the ship and shore
MSC.1/Circ.1379 Unified interpretation of SOLAS Regulation II-1/3-5
MSC.1/Circ.1426/Rev.1 Unified interpretation of SOLAS Regulation II-1/3-5 and MSC.1/Circ.1379
MSC.1/Circ.1374 Information on prohibiting the use of asbestos on board ships

International Association of Classification Societies (IACS):

Unified Requirements (UR):
S14 (rev. 6, Sep 2016), Z23 (rev. 7, Oct 2020), Z28 (Oct 2020)

Procedural Requirements (PR):
PR1A (rev. 7, May 2019, corr. 1, Dec 2020), PR1B (rev. 6, Nov 2020), PR1D (rev. 2, May 2019)

Unified Interpretations (UI):
LL77 (Dec 2011), SC226 (rev. 1, Dec 2012), SC249 (rev. 1, Feb 2013)

Recommendations (UI):
Rec. 47 (rev. 8, Oct 2017), Rec. 72 (rev. 3, Dec 2018), Rec. 78 (Sep 2002), Rec. 91 (rev. 3, April 2019)

Chapter 2 SURVEY DURING CONSTRUCTION AND INITIAL SURVEY

Contents:

1 SURVEY DURING CONSTRUCTION

1.1 GENERAL REQUIREMENTS

1.1.1 This Section of this Chapter of the Rules prescribes requirements for the survey during construction for the purpose of classification of newbuildings, directly comprising the following:

.1 Approval of technical documentation of the ship.
.2 Survey at the premises of the manufacturer during the manufacture of the materials, machinery, installations, and equipment to be installed onboard ship.
.3 Survey during construction of the ship at the premises of the shipyard, as stated in 1.3.
.4 Survey during sea trials and final tests.
.5 Issue of the Certificate of class upon satisfactory completion of the survey.

This Section of the Rules is applicable to all ships or floating units, irrespective of their size or navigation area when being built under the survey of the *Register* for the purpose of classification.

Notwithstanding the above, the *Register* reserves the right to deviate from these requirements in justified cases where the survey during construction is desired for ships not intended to be engaged on international voyages. As a general rule, such deviations will not be accepted in respect of structural strength, intact stability, machinery installations, and electrical equipment covered by the classification.

Compliance with class related requirements does not relieve the interested party from complying with any statutory requirement demanded by the Flag State Administration.

Prior commencing any activities related to construction, it is necessary to submit the "Request for Survey During Construction" to the Head Office of the *Register*.

This Section of this Chapter of the Rules shall also apply to shipyard subcontractors, when performing fabrication works which are falling under the scope of the classification survey as defined in the following paragraphs.

The Rules that will be applied for class assignment to newconstruction are those being at force at the date of "contract for construction". For further details regarding the date of "contract of construction", refer to the *Rules for the classification of ships, Chapter 1 - General information, 5.14*.

For vessels with rule length less than 24 meters, the *Rules for the classification of ships, Part 34 - Rules for the classification of vessels of less than 24 meters in length* should apply.

1.1.2 Activities which are foreseen to be undertaken in a view of:

.1 major modifications or conversions (see the *Rules for the classification of ships, Chapter 1 - General information*, 2.22), or
.2 significant repairs, or
.3 modifications or alternations of the equipment, or
.4 change of navigation area, or
.5 change in the number of passengers,

directly comprises activities required for newbuildings, as specified in 1.1.1, to the extent as deemed necessary and reasonable by the *Register*, considering each specific case separately.

Conversion of existing vessel to a passenger ship

1.1.3 Where an existing vessel, irrespective of the date of built and its navigation area, is converted into passenger ship, requirements as for new passenger ships are to apply.

Technical documentation

1.1.4 The list of technical documentation, which shall be submitted for information or approval, must be previously agreed with the *Register* for each individual ship, prior commencing submission of such technical documentation.

1.1.5 The list of technical documentation which shall be submitted to the *Register* for information is stated in 1.2.1 (and where specifically stated otherwise), while the list of technical documentation, which shall be submitted for approval, is given in 1.2.2 to 1.2.18.

The following documentation shall be submitted:

.1 Drawings, plans, and specifications as required by the relevant parts of the Rules.
.2 Corresponding technical descriptions, calculations, and data, including material specifications.
.3 Outline specification of the ship.

The extent of the technical documentation for ships having special design features shall be determined for each such ship in agreement with the *Register*.

Notwithstanding above, the *Register* reserves the right to request such additional documentation as it deems necessary.

1.1.6 The technical documentation shall be submitted to the *Register*, for information or approval, duly in advance of starting the construction, or exceptionally, duly in advance prior to commencement of particular phase of the construction of the ship, which shall be specially arranged with the *Register*.

All information which may influence the judgement and decisions made by the *Register* during the process of approval shall be made available to the *Register*. It is the responsibility of the shipbuilder to ensure that such information is brought to the attention of the *Register* in timely manner.

For ships to be engaged on international voyages, the technical documentation shall be submitted in English (mandate).

The technical documentation may be submitted to the *Register* either electronically, or as a paper copy.

If the technical documentation is to be approved electronically, the *Register* shall prepare specific instructions for submission and approval of technical documentation for each project.

If the technical documentation is to be submitted in a paper copy, it shall be submitted to the *Register* for information or approval in triplicate, unless otherwise required or agreed.

1.1.7 The technical documentation shall be prepared in accordance with common good shipbuilding practice and shall be elaborated and completed with all necessary data to enable verification that the design of the ship complies with the relevant requirements of the Rules.

In case of conflicting information, the submitted documentation will be considered in the following order for precedence: Design data, Plans, Design and Calculation.

1.1.8 The technical documentation on which the survey is based, must at all times to reflect the actual conditions. Revisions of documentation are therefore to be submitted to the *Register* to the extent such revisions may influence decisions or statements made by the *Register*.

Revisions of already approved documentation are to be submitted to the *Register* for approval prior to being realised. Such documentation shall be specially marked to identify revisions made.

1.1.9 Where applicable, approval of the technical documentation shall be confirmed by the seal of the *Register*. Conditions and restrictions, deriving from plan approval and being relevant for a specific document, may be indicated on the document itself and/or on the pertinent appraisal letter.

The approval does not cover the parts and construction details, contained in the approved technical documentation, which are not covered by the Rules.

1.1.10 If subsequent information indicates that the design solutions are against the requirements of the Rules, the *Register* may revoke approval of the technical documentation at any time.

1.1.11 It is the responsibility of the shipyard to ensure that drawings used for procurement, construction, and other works (shop drawings) are consistent with the technical documentation approved by the *Register*.

1.1.12 The *Register* may, at its discretion and subject to such conditions and reviews as the *Register* considers appropriate, accept plans and documents approved by another Recognized classification society (classification society subject to verification of compliance with IACS QSCS) on the basis of that society's classification rules, in accordance with the principle of equivalence of the rules and other works in accordance with the approved plans and documents, i.e. the *Register* may consider accepting alternatives to its Rules, provided that the Register accept that classification rules of that society are deemed to be equivalent.

1.1.13 The technical documentation (plans, manuals and other documents) which is required to be carried on board ships on international voyages constructed on or after 1st July 2005, according to IMO MSC/Circ.1142/MEPC/Circ.425 (Marking the ship's plans, manuals and other documents with the IMO identification number) should be marked with IMO ship identification number [1)] in clearly legible and unambiguous manner. The originator of such technical documentation should ensure that the IMO ship identification number is marked on it prior to submission for approval to the *Register*.

1.1.14 As required by IMO MSC/Circ.1135 (*As-built construction drawings to be maintained on board the ship and shore*) on completion of survey during construction, as required by 1.1.13, the following technical documentation with IMO identification number entered shall be maintained on board the ship and ashore:

.1 General arrangement plan.
.2 Capacity plan.
.3 Stability file and hydrostatic curves.
.4 Loading Manual, where required.
.5 Midship section, with dimensions of main structural elements entered.
.6 Scantling plan.
.7 Decks.
.8 Shell expansion.
.9 Transverse bulkheads.
.10 Rudder and rudder stock.
.11 Cargo hatch covers, where applicable.
.12 Bilge, ballast, and cargo piping diagrams.

Field survey at the premises of the shipyard

1.1.15 During construction, the Surveyor should have safe access to all works which directly or indirectly affect the classification survey. In that regard the shipyard shall provide the necessary facilities and a safe working environment for the safe execution of the survey. This includes, but is not limited to, provision of suitable and safe means of access, i.e. scaffolding, working platforms and associated equipment, illumination, ventilation, temporary barriers, guardrails or other equivalent arrangements to prevent falling, and the posting of warnings about potential hazards from falling objects from the work areas. Th safety measures and arrangements to be applied should be agreed between the shipyard and the *Register* in advance, prior commencement of survey.

NOTE: For additional requirements relating to safety of Surveyors the following may be also considered (as far as applicable): IACS Recommendation 91 - "Guidelines for acceptance / approval of alternative means of access", IACS Recommendation 78 - "Safe use of portable ladders for close-up survey", IACS Recommendation 72 - "Confined space safe practice", EU Directive 2001/45/EC, amending Council Directive 89/655/EEC concerning the minimum safety and health requirements for the use of work equipment by workers at work.

It is the duty of the shipyard to duly notify and arrange with the local Branch office of the *Register* on the surveys and testing to be performed when each phase during construction to be inspected by the *Register* is completed.

Upon such notice, the Surveyor shall inspect the work performed to determine whether the requirements of the Rules have been met.

The scope of the survey will be determined by the *Register* based on elements such as experience feedback, patrolling and spot checks. The survey may consist of a combination of visual inspections, witnessing during tests and measurements and review of records.

For hull surveys of ships falling under the provisions of IACS UR Z23 - "Hull survey of newconstruction" specific survey requirements are to be applied. For this purpose, the shipyard is to comply with the criteria given in UR Z23 and provide documentation stated therein. Shipyard subcontractors must also comply with IACS UR Z23.
IACS UR Z23

[1)] IMO Ship Identification Scheme adopted by IMO Res. A.1078(28) has been made mandatory through SOLAS, Reg. XI-1/3

For requirements related to survey during construction of hull, building in of machinery, installations and equipment see 1.3 also.

For requirements related to testing during construction see 1.4 also.

If applicable, Cable Transit Seal Systems Register must be reviewed to confirm that it includes a list of watertight cable transits, applicable cable transit information and sections to maintain in-service maintenance and survey records.
IACS UR Z28

Testing program

1.1.16 During construction of the ship, the shipyard shall develop a Testing Program (functional testing program) to the satisfaction of the *Register*. This Program shall include testing during harbour and sea trials.

This Program shall specify systems, arrangements and equipment which are to be tested together with the test procedures. These tests must provide evidence of satisfactory operation and performance in accordance with the Rules.

In order to verify compliance with the Rules, the *Register* reserves the right to require additional tests.

Materials and products

1.1.17 For the purpose of survey during construction, all materials, machinery, auxiliary installations, equipment, etc., covered by the classification and intended to be installed on board ship are to be new and, where applicable, are to be surveyed during production at the premises of the manufacturer, which in certain cases also requires approval of the technical documentation.

1.1.18 Second-hand materials, machinery, auxiliary installation, equipment, etc., may be used subject to approval of the *Register*, for each particular case, but only limited to class related items, on the assumption that such second-hand items comply with the applicable Rules requirements for newbuildings, including statutory requirements where relevant, and provided that the Owner has given written approval.

Defects and damages originated during construction and their repairs

1.1.19 The *Register* may, at any time, reject items found to be defective or contrary to rule requirements or require supplementary inspections and tests and/or modifications, notwithstanding any previous certificates issued.

1.1.20 All repairs require the prior approval of the *Register*. When the limits of tolerance for defects are specified in the Rules concerned or by the manufacturer, they shall be taken into account in repairs.

1.1.21 It responsibility of the shipyard to notify the Register of any defects noted during the construction of the ship and/or of any item that does not comply with the applicable requirements or is unsatisfactory in any case. Proposals for remedial action intended to be adopted to rectify such defects or unsatisfactory items shall be submitted to the *Register* and, if accepted, carried out to the satisfaction of the Surveyor.

1.1.22 Guidance to general welding repair work is given in IACS Recommendation No. 47 - "Shipbuilding and Repair Quality Standard", SARQS, Part A.

Other requirements

1.1.23 As a prerequisite for construction of ships with hull made from reinforced plastics suitability of the builder (workshop) for performance of such works shall be certified by the *Register* through relevant builder (workshop) approval.

1.1.24 Welding on steel or aluminium structures shall be performed by approved welders using approved welding consumables and according to approved welding procedures (see the *Rules for the classification of ships, Part 26 - Welding, Section 1*).

1.1.25 For the requirements related to survey during construction of ships made of wood, aluminium alloys or reinforced plastics with rule length above 24 meters, see the *Rules for technical supervision of ships made of wood, aluminium alloys and reinforced plastics, Part A, Chapter 2* and *Part B, Chapter 1, Chapter 2, Chapter 3, Chapter 4* and *Chapter 5*.

1.1.26 For the requirements related to survey during construction of fishing vessels see the *Rules for statutory certification of fishing vessels, Part A, Chapter 2* and *Part B, Chapter 3, Chapter 4*, and *Chapter 5*.

Date of initial classification for newbuildings

1.1.27 As a rule, for newbuildings the date of initial classification coincides with the date of build.

Ships built under dual class agreement with other Recognized classification society

1.1.28 If the survey during construction is being performed on the ship dually classed with other Recognized classification society (classification society subject to verification of compliance with IACS QSCS) the following should apply:

.1 Each society (the *Register* and the other class Society) acts on behalf of the other society in accordance with the trilateral agreement adopted by the two societies and the shipyard. This agreement shall clearly define modalities such as submission of plans, rules to be applied, harmonizing and resolution of plan approval comments between societies.

.2 Each society is to perform review and approval of plans as appropriate in accordance with the trilateral agreement.

.3 Each society is to perform the survey during fabrication, construction and testing of the vessel in accordance with the trilateral agreement, and/or the bilateral agreement adopted by the two societies, if any.

.4 Each society is to share information and records related to new construction such as plan approval including following up and closing of comments imposed, surveys, inspection, witnesses and tests, etc., to perform the surveys and verify compliance with the relevant requirements.

.5 Each society is to issue a certificate of classification for the vessel upon satisfactory completion of new construction survey process.

IACS UR PR1B, Section C

Implementation of SOLAS II-1, Regulation 3-5 and MSC.1/Circ.1379 [2]

1.1.29 Prohibition of the installation of asbestos (SOLAS Ch. II-1, Reg. 3-5): From 1st January 2011, for all ships, new installation of materials which contain asbestos shall be prohibited.

IMO MSC.1/Circ.1379 (*Unified interpretation of SOLAS Regulation II-1/3-5*)) [3]: From 1st January 2011, for all ships, new installation of materials which contain asbestos shall be prohibited. In the context of this regulation, new installation of materials containing asbestos means any new physical installation on board. Any material purchased prior to 1st January 2011 being kept in the ship's store or in the shipyard for a ship under construction, should not be permitted to be installed after 1st January 2011 as a working part [4].

Interpretation

NOTE: For additional clarification, the following interpretation of MSC.1/Circ.1379 should be applied:

1. Verification that "new installation of materials which contain asbestos" under SOLAS, Reg. II-1/3-5 requires the *Register* to review asbestos-free declarations and supporting documentation, for the structure, machinery, electrical installations and equipment covered by the SOLAS Convention, which shall be provided to the *Register*, by repair yards, and equipment manufacturers taking into account Appendix 8 of the 2015 Guidelines for the development of the inventory of hazardous materials (IMO Res. MEPC.269(68)) for:
   - new construction (keel laid, or at a similar stage of construction, on or after 1st July 2012);
   - conversions (contract date for the conversion or, in the absence of a contract, the date on which the work identifiable with the specific conversion begins) on or after 1st July 2012.
2. The phrase "new installation of materials containing asbestos" in MSC.1/Circ.1379:
   - means that material used (i.e., repaired, replaced, maintained or added) as a working part of the ship as per "indicative list" of products which is installed on or after 1st July 2012 is required to be documented with an asbestos-free declaration. The *Register* will, in consultation with the Company's nominated person responsible to control asbestos containing material onboard, as per the Safety Management System in accordance with IMO MSC/Circ.1045 (*Guidance for maintenance and monitoring of on-board materials containing asbestos*), audit this documentation during annual safety construction and safety equipment surveys; and
   - does not preclude the stowage of material which contains asbestos onboard (e.g., spare parts existing on board as of 1st July 2012).
3. The phrase "should not be permitted to be installed after 1 January 2011 as a working part" in IMO MSC.1/Circ.1379 means that replacement, maintenance or addition of materials used for the structure, machinery, electrical installations and equipment covered by the SOLAS Convention which contain asbestos is prohibited
4. The "indicative list" of products that are presumed that might contain asbestos is given in IMO Res. MEPC.269(68), Appendix 5, paragraph 2.2.3.2, as listed below:

Structure and/or equipment	Component
Propeller shafting	Packing with low pressure hydraulic piping flange Packing with casing Clutch Brake lining Synthetic stern tubes
Diesel engine	Packing with piping flange Lagging material for fuel pipe Lagging material for exhaust pipe Lagging material turbocharger
Turbine engine	Lagging material for casing Packing with flange of piping and valve for steam line, exhaust line and drain line Lagging material for piping and valve of steam line, exhaust line and drain line
Boiler	Insulation in combustion chamber Packing for casing door Lagging material for exhaust pipe Gasket for manhole Gasket for hand hole Gas shield packing for soot blower and other hole Packing with flange of piping and valve for steam line, exhaust line, fuel line and drain line Lagging material for piping and valve of steam line, exhaust line, fuel line and drain line
Exhaust gas economizer	Packing for casing door Packing with manhole Packing with hand hole Gas shield packing for soot blower Packing with flange of piping and valve for steam line, exhaust line, fuel line and drain line Lagging material for piping and valve of steam line, exhaust line, fuel line and drain line
Incinerator	Packing for casing door Packing with manhole Packing with hand hole Lagging material for exhaust pipe
Auxiliary machinery (pump, compressor, oil purifier, crane)	Packing for casing door and valve Gland packing Brake lining
Heat exchanger	Packing with casing Gland packing for valve Lagging material and insulation
Valve	Gland packing with valve, sheet packing with piping flange Gasket with flange of high pressure and/or high temperature
Pipe, duct	Lagging material and insulation
Tank (fuel tank, hot water, tank, condenser), other equipment (fuel strainer, lubricant oil strainer)	Lagging material and insulation
Electric equipment	Insulation material

[2] For more requirements regarding prohibition of the installation of asbestos, as well as regarding requirements related to ship recycling refer to the *Rules for technical supervision of sea-going ships, Part 32 – Ship recycling*

[3] Provisions of MSC.1/Circ.1426/Rev.1 *Unified interpretation of SOLAS Regulation II-1/3-5 and MSC.1/Circ.1379* should be taken into account also

[4] With regard to action to be taken in case of contraventions of the SOLAS Convention regulation II-1/3-5 refer to IMO MSC.1/Circ.1374 (*Information on prohibiting the use of asbestos on board ships*)

Structure and/or equipment	Component
Airborne asbestos	Wall, ceiling
Ceiling, floor, and wall in accommodation area	Ceiling, floor, wall
Fire door	Packing, construction, and insulation of the fire door
Inert gas system	Packing for casing, etc.
Air-conditioning system	Sheet packing, lagging material for piping and flexible joint
Miscellaneous	Ropes Thermal insulating materials Fire shields/fire proofing Space/duct insulation Electrical cable materials Brake linings Floor tiles/deck underlay Steam/water/vent flange gaskets Adhesives/mastics/fillers Sound damping Moulded plastic products Sealing putty Shaft/valve packing Electrical bulkhead penetration packing Circuit breaker arc chutes Pipe hanger inserts Weld shop protectors/burn covers Fire-fighting blankets/clothing/equipment Concrete ballast

IACS UI SC249

Application of Load Line Requirements to Conversions of Single-hull Oil Tankers to Double-hull Oil Tankers or Bulk Carriers

1.1.30 In case of conversions of single-hull oil tankers to double-hull oil tankers or bulk carriers and falling under provision of the International Convention on Load Lines, 1966, as amended, and when the *Register* acts as Recognized organization on behalf of the Flag State Administration, provisions of IACS UI SC 77 are to be applied.

Application of SOLAS Regulations to Conversions of Single-hull Oil Tankers to Double-hull Oil Tankers or Bulk Carriers

1.1.31 In case of conversions of single-hull oil tankers to double-hull oil tankers or bulk carriers and falling under provision of the SOLAS, and when the *Register* acts as Recognized organization on behalf of the Flag State Administration, provisions of IACS UI SC 226 are to be applied.

Delivery date

1.1.32 With regard to the application of statutory requirements and according to IMO MSC-MEPC.5/Circ.8 "delivery date" means the completion date (day, month and year) of the survey on which the certificate is based (i.e. the initial survey before the ship is put into service and certificate issued for the first time) as entered on the relevant statutory certificates.[5)]

1.2 TECHNICAL DOCUMENTATION

Below given list provides general definitions of technical documentation categories and types based on the understanding of the *Register* [6)].

Specific requirements for documentation submission may be additionally agreed for particular project.

1.2.1 General documentation (OD):

.1 Outline specification of a ship.
.2 General arrangement.
.3 Capacity plan.
.4 Plan of ship's lines (including offset table).
.5 Docking plan.

1.2.2 Hull (TR):

.1 Midship section, including typical sections and general specifications.
.2 Longitudinal section.
.3 Shell expansion.
.4 Decks.
.5 Cargo hatchways.
.6 Double bottom.
.7 Watertight/oiltight bulkheads.
.8 Pillars and girders.
.9 Structural strengthening.
.10 Ship's end structures with posts.
.11 Propeller shaft struts and bossings.
.12 Engine and thrust bearing seatings.
.13 Superstructures and deckhouses.
.14 Side, bow, and stern doors.
.15 Arrangements on bottom plating for In-water survey (if **IWS** character of class is requested). For the purpose of facilitating the performance of the In-water surveys the following plans are to be submitted and are to indicate the location and/or the general arrangement of:
- all shell openings,
- the stem,
- rudder and fittings,
- the sternpost,
- the propeller, including the means used for identifying each blade,
- anodes, including securing arrangements,
- bilge keels,
- welded seams and butts,
- marking with type, position, size, paint, tank abbreviation table.

.16 Attachment of masts, posts, and cranes to deck structure, including support structure.
.17 Bilge keels (material grades, welded connections, and detail design).
.18 Welding and welds non-destructive test plan.
.19 Corrosion control and protection, ballast tanks and cargo spaces (scheme for the selection, application, and maintenance of the

[5)] Provisions of IMO Circular Letter No.4204/Add.7 (Coronavirus (COVID-19) – Guidance concerning unforeseen delays in the delivery of ships) and IMO MSC.1/Circ.1637 (Unified interpretation of SOLAS Regulation II-1/3-10 concerning the term "unforeseen delay in delivery of ships" during the coronavirus (COVID-19) pandemic), are to be taken into account, also

[6)] It shall be noted that submitted document may cover more than one of the listed requirements, and that single requirement may be covered by more than one submitted document

corrosion prevention system for seawater ballast tanks).

.20 Manuals and plans (preliminary and final), as follows, as far as applicable:
- a) Loading Manual (typical loading and discharging sequences).
- b) Loading Manual for grain loading.
- c) Loading Manual related to ballast water exchange and Ballast Water Management Plan (BWMP).
- d) Damage Control Plan.
- e) Damage Control Booklet.
- f) Cargo Securing Manual.
- g) Ship structure access manual.

.21 Functional testing program.

.22 Internal forces components calculation (bending moments, shear forces, etc.) for still water.

.23 Geometrical properties calculation of ship's transverse sections (moments of inertia, etc.).

.24 In case of direct calculations:
- a) a description of structural modelling,
- b) a summary of analysis parameters including properties and boundary conditions,
- c) details of the loading conditions and the means of applying loads.

.25 Arrangements of permanent and movable means of access to structure to enable close-up examination of the structure in a safe and practical way (only for ships comprising the requirements from SOLAS 74, Reg. II-1/3-6, as amended with IMO Res. MSC.151(78)). Requirements of IACS UI SC191 (Application of amended SOLAS Reg. II-1/3-6 (Res. MSC.151(78)) and revised Technical provisions for means of access for inspections (Res. MSC.158(78))) should be taken into account also.

.26 Coating Technical File, for ships subject to compliance with the IMO Performance Standard for Protective Coatings (PSPC) as a class requirement under the IACS Common Structural Rules.

.27 For ships, except for those defined in SOLAS I/3, Ship Construction File (SCF) shall be prepared by the shipyard and shall be available on-board prior delivery.

NOTE: Oil tankers of 150 meters in length and above and bulk carriers of 150 meters in length and above, constructed with single deck, topside tanks and hopper side tanks in cargo spaces, excluding ore carriers and combination carriers and for which:
- building contract has been placed on or after 1st July 2016,
- in the absence of building contract, the keels of which are laid, or which are at similar stage of construction on or after 1st July 2017, or
- the delivery of which is on or after 1st July 2020,

are to comply with IMO standard "Goal-based ship construction standard for bulk carriers and oil tankers (GBS)". Also, with the amendments of SOLAS (MSC.290(87)), new Chapter II-1, Reg. 3-10 has been added making compliance with GBS requirements mandatory.

As a part of this Regulation requirement for keeping Ship Construction File (SCF) on board and ashore has become mandatory also.

For ships contracted for construction on or after 1st July 2021, Ship Construction File (SCF) should also include a Cable Transit Seal Systems Register, to be prepared by the shipbuilder for watertight cable transits. Cable Transit Seal Systems Register can be in either a hard copy or digitized media. It is to include a marking / identification system, documentation referencing manufacturer manual(s) for each type of cable transit installed, the Type Approval certification for each type of transit system, applicable installation drawings, and a recording of each installed transit documenting the as built condition after final inspection in the shipyard. This is to include sections to record any inspection, modification, repair, and maintenance.

For the information to be included in the Ship Construction File refer to IMO MSC.1/Circ.1343. The Ship Construction File shall be updated whenever any modification of the documentation included occurs.

The Ship Construction File should be available to the *Register* and to the Flag State Administration throughout ship's life, while during regular Annual, Intermediate and Renewal surveys management conditions of the plans and documents contained therein should be verified by the *Register*.

1.2.3 Hull equipment (OT):

.1 Calculation of equipment number.

.2 Steering gear system (including rudder, stock, tiller, bearings, and nozzle).

.3 Anchoring and mooring handling arrangements.

.4 Towing gear, including emergency towing gear (for oil and chemical tankers with not less than 20,000 tons deadweight, according to SOLAS, Reg. II-1/3-4).

.5 Signal masts.

.6 Openings and closing arrangements for shell, decks, and bulkheads (scuttles, watertight doors, hold, and tank hatch covers).

.7 Scheme of means to different compartments, decks, etc., with indicated emergency exits and escape ways.

1.2.4 Stability (PL):

.1 Inclining test report.

.2 Trim and stability book.

.3 Damage stability calculation (if **SD** class notation is requested).

1.2.5 Machinery installation (ST):

.1 General arrangement of engines, boilers, and installations in machinery spaces, including specification.

.2 Plan of seatings and arrangements of holding down bolts for boilers, engines, thrust block, pressure vessels, generators, and other important auxiliary engines.

.3 Propeller shaft oil gland.

.4 Shafting alignment calculation.

.5 Plan of sternpost tubes with details.

.6 Plan of shafts (propeller shaft, intermediate shaft, thrust shaft).

.7 Plan of shaft coupling.

.8 Plan of supporting and thrust bearing.

.9 Calculation of shaft and couplings.

.10 Calculation of loading and shaft bearing (not subject to approval).

.11 Calculation of pulling in of the ship's propeller and coupling.

.12 Propeller plans (not subject to approval).

.13 Torsional vibration calculations for the dynamic systems formed by internal

combustion engines, generators, and auxiliary engines (of power exceeding 1500 [kW]), flexible couplings, gearing, shafting and propeller where applicable including all branches. For turbine and electric drives, the *Register* will specially consider the necessity of calculation submission in each particular case.

.14 General plan of shaft lines.

.15 Propeller blade calculation and attachment of blade to the propeller boss.

.16 Controllable pitch propeller main element plan (hydraulic cylinder, rod, piston, guide, etc.) and scheme of governing piping.

.17 Drawing of special type propelling machinery (nozzle propellers, side thruster, etc.).

.18 Documentation for assignment of **IGS** additional character of class:
- schematic diagram of inert gas system, including water supply and discharge piping,

and as applicable plans for:
- inert gas generating plant,
- sectional view through gas cooling and cleaning device,
- sectional view through non-return valves,
- sectional view through pressure-vacuum breaking device,
- piping arrangement for inert gas distribution and tank ventilation,
- documentation related to instrumentation and automation (including computer-based control and monitoring),
- instruction manual (covering operational safety requirements and guidelines to be followed in the event of failure of inert gas system).

.19 Documentation for assignment of **COW** additional character of class:
- schematic diagram of crude oil washing system, including dimensions and materials,
- schematic diagram of the stripping and drainage arrangement,
- shadow diagrams showing the tank areas covered by direct impingement from the washing machines (not required for tanks or cargo holds without internal structure),
- documentation showing number, location, make and type of washing machines with nozzle diameters,
- drawings showing installation and supporting arrangement for the washing machines,
- drawings showing the anchoring of piping for crude oil washing,
- drawings showing exact position and arrangement of dipping and gas sampling locations,
- operation and equipment manual,
- documentation related to instrumentation and automation (including computer-based control and monitoring).

1.2.6 Piping (ST):

.1 Bilge ballast system.

.2 Ballast system.

.3 Scheme of piping for heel and trim levelling.

.4 Scheme of cargo piping, stripping piping and installations for gas freeing of cargo tanks.

.5 Scheme of sounding pipes, vents, and overflow pipes.

.6 Exhaust gas system.

.7 Ventilation system in machinery spaces and cargo holds.

.8 Oil fuel piping system.

.9 Lubricating oil system.

.10 Engine cooling (fresh and seawater) system.

.11 Compressed air system.

.12 Feed water and condensate system.

.13 Steam piping system.

.14 Scheme of blowing off boiler piping and other installations.

.15 Hydraulic and pneumatic control piping system.

.16 Fresh and drinking water piping system.

.17 Sanitary piping and discharges system.

.18 Ship side valves and fittings (suction and discharge valves or cocks, blow-down valves or cocks and gratings).

.19 Scheme of remote control on quick closing valves.

.20 Wastewater treatment system.

.21 Crude oil washing system (equipment, piping, fittings).

.22 Arrangement of inert gas piping system together with details of inert gas generating plant including all control and monitoring devices.

1.2.7 Refrigerating plant (ST):

.1 Thermal and energetic balance of the refrigerating plant.

.2 General arrangement of refrigerating plant and specification.

.3 Description of ventilation and emergency ventilation in refrigerating machinery compartment, and number of air changes.

.4 Primary refrigerant gas and liquid circuit diagrams, brine circuit diagrams with particulars of piping, and arrangement of thermostate refrigerant control, manual control, or thermostatically operated refrigerant control valves.

.5 Plan of air coolers.

.6 General arrangement of the equipment in refrigerating machinery compartment.

.7 General arrangement of the equipment in insulated chambers (brine or direct expansion grids, construction, and attachment).

.8 General arrangement of insulated chambers with detailed specification of insulation materials, and materials of attachment and linings on all surfaces.
.9 Scheme and description of a temperature remote control/measuring station, and arrangement of thermometers in chambers.
.10 Plan of safety devices and alarm system.
.11 Air cooler defrosting arrangements.
.12 Description of the scheme of remote or automatic control.

1.2.8 Electrical equipment (EL):
.1 General arrangement plan of major electrical equipment (main and emergency generators, main and emergency switchboards, emergency service motors and batteries).
.2 Generators - type of prime movers, rated power ([kVA] and [kW]), transient and subtransient reactance (for total power of all generators greater than 500 [kW] and for generators powered by the main propulsion system e.g. shaft generators, construction details including fittings).
.3 Power converters - type, rating [kVA] and voltage (primary/secondary).
.4 General arrangement of electrical equipment and installations in hazardous zones and spaces including details of type and equipment, type of protection, temperature class, certifying authority and certificate number.
.5 Calculation of short circuit currents at main and emergency switchboard (if total power of all generators is greater than 500 [kW]) including symmetrical component and peak value of short circuit current.
.6 Power consumption (load balance) for normal operating loads on the system estimated for the different operating conditions expected (service at sea, in harbour, while manoeuvring, emergency situations, etc.).
.7 Single line diagram of all power distribution boards, which is to include:
a) arrangement and rating of consumers,
b) connected load ([kW] or [A]),
c) type and size of cables,
d) make, type and rating of circuit breakers and fuses,
e) for automatic circuit breakers switch on/breaking power and relay initial setting value.
.8 For main and emergency switchboards and large motor control centers (MCC equal or greater than 100 [kW]) the following particulars are to be submitted:
a) arrangement drawings with panel front view,
b) diagrams of all control circuits, type and size of cables and make, type, size for all equipment,
c) bus-bars details including cross section and insulation material of bus-bars support,
d) make, type, rating of fuse and switchgear including breaking/making capacity for all circuit breakers used,
e) fuse and switchgear release characteristics regarding the selective action of the protective devices,
f) calculation of mechanical stress on busbars due to short circuit current if the calculated short circuit current is greater than 50 [kA] (r.m.s.).
.9 Schematic diagrams of following systems and equipment:
a) starters for essential motors,
b) starters for thrusters,
c) static converters (SCR-units) for essential equipment).
.10 Documentation of distribution board for refrigerating equipment.
.11 General arrangement of main cable track.
.12 Main lighting - cable diagram.
.13 Emergency lighting - cable diagram.
.14 Documentation of electrical propulsion system (if fitted).
.15 Signal and navigation lights - cable diagram.
.16 Internal communication and signalling system.
.17 Fire detection and alarm system.
.18 Diagram of cable routes.
.19 For passenger ships - general arrangement plan of the ship showing the vertical fire zones and location of equipment and cable routes of:
a) emergency lighting,
b) fire detection, alarm, and extinction system,
c) public address system,
d) general alarm,
e) watertight doors,
f) system for emergency stop of fuel oil pumps and fans.
.20 Location and technical characteristics of batteries.
.21 For ships contracted for construction on or after 1 July 2021 and to which IACS UR Z23 apply, a Cable Transit Seal Systems Register shall be provided by the shipbuilder for all watertight cable transits fitted to the vessel. Cable Transit Seal Systems Register can be in either a hard copy or digitized media. It is to include a marking / identification system, documentation referencing manufacturer manual(s) for each type of cable transit installed, the Type Approval certification for each type of transit system, applicable installation drawings, and a recording of each installed transit documenting the as built condition after final inspection in the shipyard. It is to include sections to record any inspection, modification, repair, and maintenance.
For manned vessels, the Cable Transit Seal Systems Register shall be held onboard of the vessel. For unmanned vessels, if a

suitable storage location does not exist onboard, the Cable Transit Seal Systems Register may be held ashore, with the Cable Transit Seal Systems Register to be readily available for the attending surveyor.

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1.2.9 Automation (EL):

.1 List of systems (control, alarm, safety) including component maker and type.

.2 List of monitored, control, and alarm points.

.3 Arrangement scheme of systems and components.

.4 Location and details of control panels and consoles.

.5 Essential block diagrams for control, alarm, and safety system of the following:

a) main propelling machinery including essential auxiliaries,
b) bilge and ballast systems,
c) oily water separators,
d) electric generating plant,
e) boilers and incinerators,
f) air compressors,
g) cargo pumping systems for tankers,
h) cargo and ballast pumps in hazardous areas,
i) controllable pitch propeller and side thrusters,
j) inert gas generators,
k) steering gear,
l) oil fuel transfer and storage systems (purifiers and oil heaters),
m) any other automated system (e.g. lifts, evaporatory and distilling systems, etc.).

.6 Details of the overall alarm system linking the main control station, subsidiary control stations, the bridge and accommodation area.

.7 Flow charts for programmable electronic systems including configuration details and system requirement specification.

.8 Test schedules which should include methods of testing and test facilities provided.

1.2.10 Fire protection (PZ):

.1 General arrangement plan showing the main fire zones, escape stairways and the fire compartmentation bulkheads and decks within the main fire zones, including details of construction of the fire protection bulkheads, decks, fire doors and the particulars of any surface laminates employed.

.2 General arrangement plan showing disposition of all the firefighting equipment including the fire main, the fixed fire extinguishing systems in the cargo holds, on deck and in the machinery spaces, the disposition of the portable and non-portable extinguishers and the types used and the position and details of the firemen's outfits.

.3 Plan showing the layout and construction of the fire main, including the main and emergency fire pumps, isolating valves, pipe sizes and materials, the international shore connections, and the cross connections to any other system.

.4 Plan showing details of each fixed fire-fighting system, including calculations for the quantities of the media used and the proposed rates of application.

.5 Ventilation plans showing the ducts and any dampers in them, and the position of the controls for the stopping the system.

.6 Plan showing the location and arrangement of the emergency stop for the oil fuel unit pumps and for closing the valves on the pipes from oil fuel tanks.

.7 Plans showing sprinkler and/or detection system, fire alarm system and remote control for the fire doors as and if applicable.

1.2.11 Carriage of chemicals:

For additional documentation see the *Rules for the classification of ships, Part 27 - Chemical tankers*.

1.2.12 Floating docks:

The following documentation for docks of caisson type, as well for docks of the pontoon type should be submitted:

.1 General arrangement plan, showing the arrangement of compartments and tanks.

.2 Drawings of longitudinal and transverse sections, showing all scantlings and the position of longitudinal and transverse girders, and of watertight bulkheads.

.3 Drawings of the wing walls with top deck and safety deck, bottom caisson, or non-contiguous pontoons.

.4 Drawings of the structural elements of pontoon decks which transfer the forces pontoon - wing wall-pontoon in way of the pontoon gaps.

.4 Admissible loads and deflections according to the dock Operating Instructions.

.5 Pumping diagram showing the differences in pressure between the inside water and the outside water over the total docking procedure.

.6 Strength calculations for the various longitudinal and transverse load conditions as well as proof of local strength.

.7 Plans of machinery and electrical installations.

.8 Plans of piping systems and of fire protection and extinguishing appliances.

.9 calculations showing the stability of the dock when supporting a ship.

1.2.13 Documentation for assignment of **FIR** additional character of class:

.1 Schematic diagram of the fixed self-protection water spraying system.

.2 Structural fire protection plan of exterior boundaries of the ship.

.3 Schematic diagram of water fire extinguishing system for fighting of external fires.

In case of ships equipped with foam fire extinguishing system for fighting external fires, in addition to above stated the following shall be submitted, also, but only in case of fitting of fixed low expansion foam fire extinguishing system.

.4 Schematic diagram of foam fire extinguishing system for fighting of external fire.

1.2.14 Documentation for assignment of **PC xx** additional character of class refer to the *Rules for the classification of ships*, *Part 29 – Polar Class Ships and Ice Class Ships*.

1.2.15 Documentation for assignment of **PMON** additional character of class refer to the *Rules for the classification of ships*, *Part 7 – Machinery installation*.

1.2.16 Documentation for assignment of **PW-CA** additional character of class:

.1 Arrangement, design, and equipment specification for accommodation spaces (general design, sleeping accommodation, sanitary spaces, public spaces, mess rooms, sanitary spaces, domestic spaces, medical spaces).

.2 General arrangement of fixed and removable rails, handrails and lifelines including specification and design details.

.3 General arrangement of stairways, platforms and ladders including specification and design details.

.4 Disposition of ladders and gangways.

.5 Thermal and acoustic insulation plan (including calculations and design details).

.6 General arrangement of ventilation, air conditioning and heating (including calculations and design details).

.7 Illumination (lighting) level (design details and testing results).

.8 Noise prevention (design details and testing results).

.9 Vibration prevention (design details and testing results).

1.2.17 Documentation for assignment of **BAT** additional character of class:

.1 General plan of the vessel.

.2 Battery system arrangement.

.3 Electrical power system description, including number of power sources, configuration of lithium batteries and charging facilities.

.4 Detailed description of lithium battery design, including cell chemistry, cell voltage, system voltage, number of batteries, type approval/test certificates and manufacturer data.

.5 Functional description of BMS and EMS, shutdown functions, automation functions internal or external, etc.

.6 Electrical block and wiring diagrams.

.7 Short-circuit calculation.

.8 Electrical load balance, including various operational modes, power consumption and charging.

.9 Testing program that covers vessel's functional tests of battery installation, including safety tests.

.10 Software description used for alarm, monitoring and control functions.

.11 Operation manual and maintenance manual.

.12 Battery system firefighting procedure.

.13 Risk assessment which covers internal and external safety risks.

.14 Arrangement plan of the battery installation space with equipment layout.

.15 Fire detection system.

.16 Gas detection system.

.17 Ventilation system.

.18 Fixed fire extinguishing system.

.19 Hazardous areas.

1.2.18 For the purpose of assignment of class notation **Tanker for oil**, with the following descriptive class note **Asphalt carrier intended for the carriage of asphalt in independent tanks (xxx °C)**, the following general requirements are to be considered with regard to assessment of the structure:

.1 Hull and independent cargo tank structure, including thermal analysis.

.2 Direct strength analysis, including the following structural integrity analysis:

a) Cargo hold analysis of the hull girder within the cargo hold region considering combined effects of global and local loads for the yield and ultimate strength/buckling failure modes (assessed using a coarse mesh finite element analysis). This analysis is mandatory for ships having rule length exceeding 90 meters.

b) Independent cargo tank analysis including the support structures considering the dynamic cargo pressures, thermal loads, hull girder deflection, as applicable.

c) Global fine mesh model of the cargo tank, with its two adjacent holds and tanks (fore and aft). The model is to include the hold, the cargo tank, and the supports.

The assessment of a tank may be waived when the tank is similar enough to an already checked cargo tank.

d) Local fine mesh analysis of the critical locations within hull and independent cargo tank primary structure.

.3 Fatigue assessment of the design of the cargo holds and the independent cargo tanks, being mandatory for ships having rule length exceeding 90 meters.

1.3 SURVEY DURING CONSTRUCTION OF HULL, BUILDING IN OF MACHINERY, INSTALLATIONS AND EQUIPMENT

1.3.1 This survey shall verify:

.1 That the construction and scantlings of the ship complies with the requirements of the Rules and approved plans and that the required materials are used.

.2 That the materials, components, and equipment, intended for the installation on the ship, have been supervised during construction in accordance with the Rules, and that they have appropriate certificates.

.3 That satisfactory functional testing has been carried out to the extent and in the manner prescribed by the approved Testing Program and the requirements of the Rules.

.4 That the work carried out (including fabrication tolerances) complies with the applicable Rules, standards, and good shipbuilding practice. IACS Recommendation No. 47 - "Shipbuilding and Repair Quality Standard", SARQS should be taken as an example of an acceptable standard (refer to 1.3.2 also).

.5 That the Class Certificate, record books, operating manuals and other instructions and documentation specified in the Rules, relevant to the Class Certificate, have been placed on board the ship.

1.3.2 Shipbuilding quality standards for the hull structure during new construction are to be reviewed and agreed during the kick-off meeting.

Structural fabrication shall be carried out in accordance with IACS Recommendation No. 47 - "Shipbuilding and Repair Quality Standard", SARQS, or a Recognized Fabrication Standard (RFS) which has been accepted by the *Register* prior to the commencement of fabrication/construction. The work shall be carried out in accordance with the Rules and under survey of the *Register*.

1.3.2.1 For ships contracted for construction on or after 1 July 2021 and to which provisions of IACS UR Z23 apply, the *Register* may accept an RFS as an alternative to IACS Recommendation No. 47 provided that 1.3.2.1 or 1.3.2.2 is complied with as applicable.

Where a RFS is well established and has well documented history (3 or more years prior to the new vessel contract) of successful application to similar designs as the new vessel and that history is for the same Shipyard as the new vessel. Then the Shipyard is to create a summary document referencing the RFS to be used in construction and highlighting any limitations to usage of the selected RFS. This summary document shall be included with the "record of kick-off meeting" for the vessel.

The summary document is also to be included in the SCF, (for Tankers and Bulk Carriers subject to SOLAS Chapter II-1, Part A-1, Regulation 3-10 per Appendix 2, Table A Tier II Item 11), as applicable.

1.3.2.2 Where a RFS is new or revised or otherwise not as per 1.3.2.1 the following steps are to be carried out:

(a) The tolerances and fabrications standards of the RFS are to be compared with those of Recommendation No. 47. Any that are less stringent than those of Recommendation No. 47 are to be identified.

(b) The tolerances and fabrication standards of the RFS identified in 1.3.2.2(a) are to be assessed to determine the acceptability for use and/or any restrictions for usage for the subject (or proposed) design. Details of how the acceptability for use and/or restrictions are to be recorded, and,

(c) A summary document including the outcomes of 1.3.2.2(a) and 1.3.2.2(b) shall be compiled. This document is to also include a reference to the RFS, details of the tolerance and fabrication standards not analysed as part of 1.3.2.2(b) and any limitations to the usage of the RFS.

The summary document shall be included with the "record of the kick-off meeting" of the vessel. The summary document is also to be included in the SCF, (for Tankers and Bulk Carriers subject to SOLAS Chapter II-1, Part A-1, Regulation 3-10 per Appendix 2, Table A Tier II Item 11), as applicable.

IACS UR Z23

1.3.3 If subsequent information gives objective evidence that the works performed are not in compliance with requirements stated in 1.3.1, the *Register* reserves the right to revoke survey during construction.

1.4 REQUIREMENTS FOR TESTING DURING CONSTRUCTION

1.4.1 Testing procedures of watertight compartments

1.4.1.1 Procedures for tank testing and testing of boundaries are to confirm the watertightness of tanks and watertight boundaries, the structural adequacy of tanks and weathertightness of structure / shipboard outfitting. Subject testing should be performed on:

.1 New ships prior delivery, and

.2 Structure involved in, or affected by, major conversions or repairs (repair affecting structural integrity) on existing ships.

1.4.1.2 For detailed requirements on the application and testing procedures refer to the *Rules for the classification of ships, Part 2 - Hull*, Sections 11.6, 11.7 and 11.8, or IACS UR S14 - "Testing procedures of watertight compartments", depending on the type of the ship:

.1 SOLAS ships (including CSR Bulk carriers and CSR Tankers);

.2 Non-SOLAS ships, ships exempted from SOLAS, Ch. II-1, Reg. 11 and ships performing testing deemed equivalent to the requirements of SOLAS, Ch. II-1, Reg. 11 by the Flag State Administration.

IACS UR S14

1.4.2 Anchor windlass testing

1.4.2.1 Each anchor windlass shall be tested under normal working conditions to demonstrate satisfactory operation.

Each required anchor handling unit shall be tested for braking, clutch functioning, power lowering, hoisting, and proper riding of the chain through hawse pipe, over the chain wheel, through the chain pipe, and stowing in the chain locker. Also, it shall be demonstrated that the windlass is capable of lifting each anchor with 55 meters (2 lengths) length of chain, starting from the moment when 82.5 meters (3 lengths) length of chain is submerged and hanging free (minimal winding up velocity is not to be less than 9 [m/min]). If the available water depth is insufficient, the proposed test method will be specially considered.

1.4.3 Testing of machinery installation

1.4.3.1 Requirements for testing during construction related to machinery installations are stated in the *Rules, Part 9 - Machines* and *Part 7 - Machinery Installation*.

1.4.4 Testing of steering arrangements

1.4.4.1 Requirements for survey during manufacture and testing including sea trials testing are stated in the *Rules for the classification of ships, Part 9 - Machines*.

1.4.5 Testing of boilers, heat exchangers and pressure vessels

1.4.5.1 Requirements for testing during construction related to boilers, heat exchangers and pressure vessels are stated in the *Rules for the classification of ships*, *Part 10 - Boilers, Heat Exchangers and Pressure Vessels*.

1.4.6 Testing of piping

1.4.6.1 Requirements for testing during construction related to piping are stated in the *Rules for the classification of ships, Part 8 - Piping*.

1.4.7 Testing of welded joints

1.4.7.1 Requirements for testing of welded joints are stated in the *Rules for the classification of ships, Part 26 - Welding*.

1.4.8 Metallic materials

1.4.8.1 Requirements for materials and their testing are stated in the *Rules for the classification of ships, Part 25 - Metallic Materials*.

1.4.9 Non-metallic materials

1.4.9.1 Requirements for non-materials and their testing are stated in the *Rules for the classification of ships, Part 24 - Non-metallic Materials*.

2 INITIAL CLASS ENTRY SURVEY OF EXISTING SHIPS - ADMISSION TO CLASS

2.1 GENERAL

2.1.1 This Section of this Chapter of the Rules is applicable to all existing ships or floating units of whatever type, self-propelled or not, irrespective of the age or navigation area, and not being built under supervision of the *Register* if applying to be admitted to *Register's* class for the first time.

For that purpose, the *Register* is to perform an Initial class entry survey to verify whether the ship is eligible to be classed on the basis of the Rules.

2.1.2 Initial class entry survey is a complete inspection of a ship before it is put into service, comprising inspection of all the items relating to the Certificate of class (and class notations) in order to ensure that the relevant requirements are complied with, and that these items are satisfactory for the service and navigation area for which the ship is intended.

2.1.3 Initial class entry survey should consist of:

.1 An examination of the ship's particulars related to the structure, machinery and equipment installed on the ship to verify compliance with the requirements of the Rules, relevant to the Certificate of class and class notations.

.2 An inspection of the structure, machinery and equipment to ensure that they have been properly maintained and in satisfactory condition and are fit for the service for which the ship is intended, and that there have been no unauthorised changes.

.3 A check that the Certificate of class, record books, operating manuals and other instructions and the documentation specified in the requirements of the Rules, relevant to the Certificate of class and class notations have been placed on board the ship.

2.1.4 Request for the classification of the ship not constructed under the survey of the *Register* shall be addressed to Head Office of the *Register* in writing. It shall be accompanied with the ship particulars and information on the previous class status and period of class, as well as about any conditions of class imposed by the classification society from which the class is being transferred.

2.1.5 When the Owner (or the Company) applies for admission to class, the *Register* will process the application depending on whether the ship is:

.1 Classed with the Recognized classification society (classification society subject to verification of compliance with IACS QSCS) (refer to 2.3), or

.2 Not classed with the Recognized classification society (classification society subject to verification of compliance with IACS QSCS), or not in full compliance with all applicable and relevant IACS Resolutions (refer to 2.2).

2.1.6 As a rule, ships not constructed under the survey or not being classed by the Recognized classification society (classification society subject to verification of compliance with IACS QSCS) will not be admitted for classification if their hull is made of reinforced plastics. Notwithstanding before stated, in exceptional cases for vessels with length less than 24 meters, and not constructed under the survey or not being classed by the Recognized classification society, the *Register* may accept admission to class of such vessels providing they are reviewed for the compliance with the requirements of the *Rules for the classification of ships, Part 34 - Rules for the classification of vessels of less than 24 meters in length*.

2.2 SHIPS NOT SUBJECT TO IACS PR1A OR PR1B

Surveys

2.2.1 In case of existing ships over 100 GT of whatever type, age, self-propelled or not, restricted or unrestricted service and not being subject to provisions of IACS PR1A ("Procedure for transfer of class") or PR1B ("Procedure for Adding, Maintaining or Withdrawing Double or Dual Class"), requirements of IACS PR1D ("Procedure for Class Entry of Ships not subject to PR1A or PR1B") will be applied.

Whenever the *Register* is requested by an Owner to accept an existing vessel into class, the *Register* shall immediately notify the Owner in writing on relevant requirements stipulated by IACS PR1D with an Initial class entry survey to be carried out as follows:

.1 Renewal survey of hull, including thickness measurement.

.2 Renewal survey of machinery installation.

.3 Dry-docking survey.

.4 Tailshaft survey(s).

.5 Boiler survey(s) and survey(s) of pressure vessels.

The *Register* may also request further examinations, tests, and measurements, including, but not limited to material testing, non-destructive testing, hydraulic and hydrostatic tests, and sea-trials.

Where the vessel, during any portion of the five year period prior to the request for the classification being received, been previously classed by the Recognized classification society (classification society subject to verification of compliance with IACS 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:

.1 For vessels previously classed with the Recognized classification society (classification society subject to verification of compliance with IACS QSCS) - all overdue surveys and overdue conditions of class, or

.2 For vessels previously classed with a classification society subject to verification of compliance with IACS QSCS - surveys should be the same as those required by 2.3.

IACS PR1D

2.2.2 Additionally to 2.2.1, the survey shall be carried onboard for assessment of compliance with the submitted plans, including trials and/or functional testing when and if deemed necessary. All surveys which are to be carried out, are to include workmanship, material, and scantling survey.

Dispensation to the scope of surveys to be carried out on board ship for the purpose of assessment of compliance of the ship with submitted drawings and workmanship, material and scantling survey, may be given to ships classed with a society being a Recognized Organization according to EU Regulation 391/2009 and EC Directive 2009/15/EC and in cases when the ship has been previously classed with the Recognized classification society (classification society subject to verification of compliance with IACS QSCS).

2.2.3 Where appropriate within reasonable limits, for ships having GT ≤ 100 and not engaged in international voyages, a proven service record of satisfactory performance during a period of adequate length may be used as a criterion of equivalence (as a rule this period of adequate length should in no case be less than five years). Special consideration will be given to ships of recent construction.

Documentation to be submitted

2.2.4 As a rule, the following plans are to be submitted to the *Register* to be checked for compliance with the applicable Rules of the *Register*:

.1 Main plans
- a) general arrangement,
- b) capacity plan,
- c) hydrostatic curves,
- d) loading manual, where required,
- e) documentation related to stability (trim and stability book and damage stability calculation, if applicable).

.2 Steel plans
- f) midship section,
- g) ship's body lines with offset tables,
- h) scantling plan,
- i) decks,
- j) shell expansion,
- k) transverse bulkheads,
- l) rudder and rudder stock,
- m) hatch covers,
- n) stern frame.

.3 Machinery (as applicable)
- a) machinery arrangement,
- b) intermediate, thrust and screw shafts,
- c) propeller,
- d) main engines, propulsion gears and clutch systems (or manufacturer make, model and rating information),
- e) for steam turbine vessels, main boilers, superheaters, and economisers (or manufacturer make, model and rating information) and steam piping,
- f) bilge and ballast piping diagram,
- g) steering gear systems piping, and arrangements and steering gear manufacturer make and model information.

.4 Torsional vibration calculations:
- a) for ships less than 2 (two) years old torsional vibration calculations are to be submitted.

.5 Additional documentation for ships with ice class notation:
- a) plans for flexible couplings and/or torque limiting shafting devices in the propulsion line shafting (or manufacturer make, model and rating information).

.6 Additional documentation for oil tankers:
- a) pumping arrangement at the forward and after ends and drainage of cofferdams and pump rooms.

.7 Additional documentation for ships with unattended machinery space:
- a) instrument and alarm list,
- b) fire alarm system,
- c) list of automatic safety functions (e.g. slowdowns, shutdowns, etc.),
- d) function testing plan.

Submittal and plan appraisal [7] by the *Register* with satisfactory results is considered as a prerequisite for issuing an Interim or full-term Certificate of class.

In cases where the vessel has been previously classed with the Recognized classification society (classification society subject to verification of compliance with IACS QSCS), the submission of plans may be specially considered subject to confirmation of no alterations / modifications to the vessel.

In cases where the vessel has been previously classed by the Recognized classification society (classification society subject to verification of compliance with IACS QSCS), extent of plan appraisal may be specially considered subject to confirmation of no alteration/modification to the vessel.

Where issues remain outstanding, the *Register* may impose a condition of class for a limited period in accordance with IACS PR35 ("Procedure for Imposing and Clearing Conditions of Class").

However, having made a good faith effort to obtain the information, if it proves not practicable to acquire certain documents, equivalent/alternative technical data should be provided to the *Register* prior issuing full term Certificate of class.

Additional information may be necessary according to the requirements of the Flag State Administration.

Alternative technical data may be accepted by the *Register* in lieu of specific items of the listed documentation not being available at the time of the transfer.
IACS PR1D

2.2.5 The *Register* reserves the right to ask for additional documentation which considers necessary in each particular case. For installations or equipment covered by specific service and/or class notation, the *Register* will determine the scope of additional documentation to be submitted.

2.2.6 In addition to 2.2.5 the *Register* may base its judgement upon documentation such as certificates issued or accepted by the former classification society, if any, and

[7] Plan appraisal means the process of plan and document review and/or approval as required by the applicable Rules of the *Register*

statutory certificates issued by the Flag State Administration, or by a Recognized organization on its behalf.

2.2.7 The *Register* is not to issue an Interim Certificate of class, or other documents enabling the ship to trade under its classification:

.1 Until all required surveys are satisfactorily completed.

.2 Until the appraisal of the plans listed in 2.2.4 as required by the *Register* to verify compliance with the Rules, has been carried out.

.3 Before giving the opportunity to the Flag State Administration to provide any further instructions within three (3) working days (in compliance with the requirements of Art. 10.5 of the Regulation (EC) No. 391/2009, as amended).

IACS PR1D

2.3 SHIPS CLASSED WITH THE RECOGNIZED CLASSIFICATION SOCIETY OR WITH A SOCIETY WHICH IS SUBJECT TO VERIFICATION OF COMPLIANCE WITH IACS QSCS

Surveys

2.3.1 For vessels, classed with the Recognized classification society (classification society subject to verification of compliance with IACS QSCS), and having GT > 100 of whatever type, self-propelled or not, having restricted navigation area or not, when transferring a class, the requirements of IACS Transfer of Class (TOC), according to IACS PR1A "Procedure for transfer of class" will be applied.

Whenever the *Register* is requested by an Owner to accept an existing vessel into class, the *Register* shall immediately notify the Owner in writing on relevant requirements stipulated by IACS PR1A.

2.3.2 According to 2.3.1, and notwithstanding the records indicating that all surveys are up-to-date, the *Register* is to held an Initial class entry survey [8], the extent of which shall be based on the age of the vessel [9] and on the losing classification society's class status.

The *Register* is not to issue an Interim Certificate of class, or other documents enabling the vessel to trade:

1. Until all overdue surveys and all overdue conditions of class previously issued against the subject vessel as specified to the Owner by the losing society [10], have been completed and rectified by:
   a) the gaining society, for vessels less than 15 years of age;
   b) the losing society, for vessels 15 years of age and above; and
2. Until all relevant surveys have been satisfactorily completed. However, when facilities are not available in the first port of survey, an Interim Certificate of class may be issued to allow the vessel to undertake a direct voyage to a port where facilities are available to complete required surveys. In such cases the surveys specified in 2.3.2.1 and 2.3.2.2 are to be carried out to the maximum extent practicable at the first port of survey, but in no case less than the scope of annual hull survey and machinery surveys as required in 2.3.2.2.
3. Before giving the opportunity to the Flag State Administration to provide any further instructions within three (3) working days (in compliance with the requirements of Art. 10.5 of the Regulation (EC) No. 391/2009, as amended).

The validity of the Interim Certificate of class and the subsequent full term Certificate of class is subject to any outstanding conditions of class previously issued against the vessel being completed by the due date and as specified by the losing classification society.

Any outstanding conditions of class with their due dates shall be clearly stated on the Interim Certificate of class (or in an attachment to the Interim Certificate of class); and/or in class survey record available on board; and ship survey status when the full term Certificate of classis issued.

2.3.2.1 **Hull class entry survey** shall be held in an extent as follows:

a) For ships of age less than 5 (five) years the survey shall be held at the extent of Annual survey.
b) For ships between 5 (five) and 10 (ten) years of age the survey is to include an Annual survey and inspection of a representative number of ballast spaces.
c) For ships of 10 (ten) years of age and above, but less than 20 (twenty) years of age, the survey will include an Annual survey and inspection of age, the survey will include an Annual survey and inspection of a representative number of ballast spaces and cargo spaces, except for:
   For gas carriers, in lieu of internal inspection of cargo spaces, the following applies [11]:
   - inspection of surrounding ballast tank(s) and void spaces, including external inspection of independent

[8] Class entry surveys may be, but are not required to be, credited as periodical surveys for maintenance of classification. Conditions of class due for compliance at a specified periodical survey for maintenance of classification need not to be carried out/complied with at a class entry survey, unless class entry survey is credited as the specified periodical survey for maintenance of classification or the condition of class is overdue.

[9] To be calculated from the date of delivery to the "Date Request for Class was Received" in Form G, Part A – Survey Status Request

[10] "Losing society" means the classification society from which class is being transferred. In case of vessels classed by more than one Society, "losing society" means all classification societies from which class is being transferred

[11] Informative reference only, as the *Register* does not provide classification for liquefied gas carriers

cargo tank(s) and associated supporting systems as far as possible,
- review of cargo logbooks and operational records to verify the correct functioning of the cargo containment system.

For chemical carriers of 10 years of age and above but less than 15 years of age, in lieu of an internal inspection of cargo tanks without internal stiffening and framing, inspections of surrounding ballast tank(s) and void spaces and deck structure, are to be applied.

d) For ships with affixed ESP notation, (vessels subjected to IACS UR Z10.1, Z10.2, Z10.3, Z10.4 or Z10.5) which are 15 (fifteen) years of age but less than 20 (twenty) years of age, a full Renewal or Intermediate survey shall be carried out, whichever is due next.

e) For all ships, which are 20 (twenty) years of age and above, a full Renewal survey shall be carried out [12)].

f) In lieu of the requirements in items a) through e), the following apply for site specific purpose built floating and/or storage vessels:
- for vessels of age less than 5 years, the survey is to have the scope of an Annual survey,
- for vessels of age between 5 and 10 years, the survey is to include an Annual survey and inspection of twenty percent of ballast spaces,
- for vessels of age between 10 and 20 years, the survey is to include an Annual survey and inspection of twenty percent of ballast spaces and twenty percent of cargo spaces,
- for vessels over 20 years of age, the survey is to have the scope of a Renewal survey.

g) For site specific floating production or storage vessels which have been converted from other vessels, the survey is to take the form of an Annual survey and also include inspection of twenty percent of ballast spaces and twenty percent of cargo spaces until 20 years have elapsed since conversion. After 20 years the survey is to have the scope of renewal survey.

h) In the context of applying of 2.3.2.1 d) and 2.3.2.1 e), if a dry-docking survey is not due at the time of transfer, consideration can be given to carrying out an underwater examination in lieu of dry docking.

i) in the context of applying items e) and f), as applicable, the anchors and anchor chain cables ranging and gauging for vessels over 15 years of age is not required to be carried out as part of the class entry survey unless the class entry survey is being credited as a periodical survey for maintenance of class. If the class entry survey shall be credited as a periodical survey for maintenance of class, consideration may be given by the *Register* to the acceptance of the anchors and anchor chain cables ranging and gauging carried out by the losing society provided they were carried out within the applicable survey window of the periodical survey in question.

j) In the context of applying items 2.3.2.1 a) to 2.3.2.1 h), as applicable:
- If the class entry survey shall be credited as a periodical survey for maintenance of class consideration may be given by the *Register* to the acceptance of thickness measurements taken by the losing society provided they were carried out within the applicable survey window of the periodical survey in question.
- If the class entry survey is not to be credited as a periodical survey for maintenance of class, consideration may be given by the *Register* to the acceptance of thickness measurements taken by the losing society provided they were carried out within 15 months prior to completion of class entry survey when it is in the scope of a Renewal survey, or within 18 months prior to completion of class entry survey when it is in the scope of an Intermediate Survey.

In both cases, the thickness measurements are to be reviewed by the *Register* for compliance with the applicable survey requirements, and confirmatory gauging are to be taken to the satisfaction of the *Register*.

k) In the context of applying 2.3.2.1 c) to 2.3.2.1 h), as applicable, tank testing for vessels over 15 years of age is not required to be carried out as part of the class entry survey unless the class entry survey is being credited as a periodical survey for maintenance of class. If the class entry survey shall be credited as a periodical survey for maintenance of class, consideration may be given by the gaining society to the acceptance of the tank testing carried out by the losing society provided they were carried out within the applicable survey window of the periodical survey in question.

[12)] The requirement under item e) is also applicable to vessels having their hull under continuous survey

l) In the context of applying 2.3.2.1 a) to 2.3.2.1 h), as applicable, compliance with IACS URs that require compliance at the forth coming due periodical surveys (such as IACS UR S26 and UR S27) are not required to be carried out/completed as part of the class entry survey unless the class entry survey is credited as a periodical survey for maintenance of class.

2.3.2.2 **Machinery class entry survey** shall be held as a general examination of all essential machinery, and is to include:

a) Examination under working conditions of oil fuel burning equipment, boilers, economisers, and steam/steam generators. The adjustment of safety valves of this equipment shall be verified by checking the records on the ship.
b) All pressure vessels.
c) Insulation resistance, generator circuit breakers, preference tripping relays and generator prime mover governors are to be tested and paralleling and load sharing to be proved.
d) In all cases, navigating lights and indicators are to be examined and their working and alternative sources of power verified.
e) Bilge pumps, emergency fire pumps and remote controls for oil valves, oil fuel pumps, lubricating oil pumps and forced draught fans are to be examined under working conditions.
f) Recirculating and ice clearing arrangements, if any.
g) The main and all auxiliary machinery necessary for operation of the ship at sea together with essential controls and steering gear shall be tested under working conditions. Alternative means of steering are to be tested. A short sea trial shall be held at the Surveyors discretion if the ship has been laid up for a long period.
h) Initial start arrangements are to be verified.
i) In case of oil tankers, the cargo oil system and electrical installation in way of hazardous spaces are to be checked for compliance with the Rules requirements. Where intrinsically safe equipment is installed, the Surveyors are to satisfy themselves that such equipment has been approved by a recognized authority. The safety devices, alarms and essential instruments of the inert gas system are to be verified and the plant generally examined to ensure that it does not constitute a hazard to the ship.

NOTE: For the transfer of class or adding class at ship's delivery items c) and i) may be verified by reviewing ship's record.

2.3.3 For ships with expired or extended certificate of class issued by the Recognized classification society (classification society subject to verification of compliance with IACS QSCS), the inspection of the structure, machinery and equipment including tests when necessary, shall be carried out in extent as prescribed for the Renewal survey.

2.3.4 In case of Initial class entry survey for the purpose of **adding dual class** to a ship already classed with the Recognized classification society (classification society subject to verification of compliance with IACS QSCS), specific procedure as stipulated by IACS PR1B, Section A applies.

In case of **adding dual class** to a vessel classed with the Recognized classification society (classification society subject to verification of compliance with IACS QSCS) at vessel's **delivery** [13], specific procedure as stipulated by IACS PR1B, Section B applies.

2.3.5 For **transfer of class at delivery**, specific procedure as stipulated by IACS PR1A, para. A.3 applies.

The *Register* is not to issue an Interim Certificate of class, or other documents enabling the vessel to trade:

.1 Until all relevant surveys specified in 2.3.2.1 and 2.3.2.2 have been satisfactorily completed; and
.2 Before giving the opportunity to the Flag State Administration to provide any further instructions within three (3) working days (in compliance with the requirements of Art. 10.5 of the Regulation (EC) No. 391/2009, as amended).

Documentation to be submitted

2.3.7 Before full term Certificate of class is issued, the Owner is to submit to the *Register* the following documentation:

.1 Documentation related to hull:
Main plans
a) general arrangement,
b) capacity plan,
c) hydrostatic curves,
d) loading manual, where required,
e) documentation related to stability (trim and stability book and damage stability calculation, if applicable).
Steel plans
f) midship section,
g) ship's body lines with offset tables,
h) scantling plan,
i) decks,
j) shell expansion,
k) transverse bulkheads,
l) rudder and rudder stock,
m) hatch covers,

[13] At vessel's delivery means that the new construction survey process is completed, the first Certificate of Class is delivered, and the vessel has not departed from the yard

n) for CSR vessels. plans showing, for each structural element, bot as built and renewal thicknesses and any thicknesses for "voluntary addition".

.2 Documentation related to machinery:
a) machinery arrangement,
b) intermediate, thrust and screw shafts,
c) propeller,
d) main engines, propulsion gears and clutch systems (or manufacturer make, model and rating information),
e) for steam turbine vessels, main boilers, superheaters, and economisers (or manufacturer make, model and rating information) and steam piping,
f) bilge and ballast piping diagram,
g) steering gear systems piping, and arrangements and steering gear manufacturer make and model information.

.3 Torsional vibration calculations:
a) for ships less than 2 (two) years old torsional vibration calculations are to be submitted.

.4 Additional documentation for ships with ice class notation:
a) plans for flexible couplings and/or torque limiting shafting devices in the propulsion line shafting (or manufacturer make, model and rating information).

.5 Additional documentation for oil tankers:
a) pumping arrangement at the forward and after ends and drainage of cofferdams and pump rooms,
b) general arrangements of cargo piping in tanks and on decks,
c) plan of hazardous areas.

.6 Additional documentation for ships with unattended machinery space:
a) instrument and alarm list,
b) fire alarm system,
c) list of automatic safety functions (e.g. slowdowns, shutdowns, etc.),
d) function testing plan.

.7 Additional documentation required for approval of alternative design and arrangements:
a) Document(s) of approval of alternative design, if any.

NOTE: Additional information may be necessary according to the requirements of the Flag State Administration.

2.3.8 Alternative technical data may be accepted by the *Register* in lieu of specific items of the listed documentation not being available at the time of the transfer.
IACS PR1A

2.4 SHIPS OF LESS THAN 100 GROSS TONNAGE

2.4.1 For ships of less than 100 gross tonnage, special consideration will be given to the scope of class entry survey and documentation to be supplied.

2.5 DATE OF INITIAL CLASSIFICATION FOR EXISTING SHIPS

2.5.1 Upon completion of Initial class entry survey the assigned period of class is never to exceed 5 (five) years. The five-year period is granted only upon satisfactory outcome of class entry survey with the scope of a Renewal survey.

Therefore, as a principle, in case of existing ships the date of completion of Initial class entry survey shall be considered as a date of initial classification with the *Register*.

2.5.2 Notwithstanding stated in 2.5.1, if a ship was previously classed with the Recognized classification society (classification society subject to verification of compliance with IACS QSCS), the assigned period of class is never to go beyond the due date of the Renewal survey assigned by the losing society. However, this does not apply to ships with expired or extended certificate of class.

2.5.3 In addition to provisions stated in 2.5.2, and in case of a ship previously classed with the Recognized classification society (classification society subject to verification of compliance with IACS QSCS), and:

.1 if the Initial class entry survey has been completed under provisions of IACS PR1A, and
.2 if such survey has been completed in the scope of Renewal survey, and
.3 if such survey has been completed within 3 (three) months before the Renewal survey expiry date imposed by the losing society, and
.4 if such survey is credited for class Renewal survey,

the next period of class will start from Renewal survey expiry date imposed by the losing society. For surveys completed more than 3 (three) months before Renewal survey expiry date imposed by the losing society, the period of class will start from the completion date of Initial class entry survey.

2.5.4 For ships which were not previously classed with the Recognized classification society (classification society subject to verification of compliance with IACS QSCS), the assigned period of class will be counted from the date of completion of Initial class entry survey.