RULES

PUBLICATION 81/P

HULL SURVEYS FOR NEW CONSTRUCTION

July
2021

Publications P (Additional Rule Requirements) issued by Polski Rejestr Statków complete or extend the *Rules* and are mandatory where applicable.

GDAŃSK

Publication No. 81/P – Hull Surveys for New Construction – July 2021, is an extension of the requirements contained in *Part I – Classification Regulations* of *the Rules for the Classification and Construction of Sea-Going Ships*, as well as in all other PRS *Rules*, in which reference to the *Publication* has been made.

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1 SCOPE

1.1 The scope of this *Publication* include the following main activities.

1.1.1 Examination of the parts of the ship covered by classification rules and by applicable statutory regulations for hull construction, to obtain appropriate evidence that they have been built in compliance with the rules and regulations, taking account of the relevant approved drawings.

1.1.2 Appraisal of the manufacturing, construction, control and qualification procedures, including welding consumables, welding procedures, weld connections and assemblies, with indication of relevant approval tests.

1.1.3 Witnessing inspections and tests as required in the classification rules used for ship construction including materials, welding and assembling, specifying the items to be examined and/or tested and how (e.g. by hydrostatic, hose or leak testing, non destructive examination, verification of geometry) and by whom.

1.1.4 Appraisal of material and equipment used for ship construction and their inspection at works is not included in this *Publication*. Details of requirements for hull and machinery steel forgings and castings and for normal and higher strength hull structural steel are given in the *Rules for the Classification and Construction of Sea-going Ships, Part IX – Materials and Welding*. Acceptance of these items is verified through the survey process carried out at the manufacturer's works and the issuing of the appropriate certificates.

1.1.5 In addition to above, for Tankers and Bulk Carriers subject to *SOLAS* Chapter II-1, Part A-1, Regulation 3-10, (Goal-based ship construction standards for bulk carriers and oil tankers), see Appendix II to this Publication.

2 DEFINITIONS

2.1 *The hull structure* is defined as follows**:**

- hull envelope including all internal and external structures,
- superstructures, deckhouses and casings,
- welded foundations, e.g. main engine seatings,
- hatch coamings, bulwarks,
- all penetrations fitted and welded into bulkheads, decks and shell,
- the fittings of all connections to decks, bulkheads and shell, such as ship vent pipes and side valves – all ILLC 1996, as amended, items,
- welded attachments to shell, decks and primary members, e.g. crane pedestals, bitts and bollards, but only as regards their interaction with the hull structure.

2.2 Reference to documents also includes electronic transmission or storage.

2.3 Definitions of survey methods which the Surveyor is directly involved in, such as: random inspection, verification, personal attendance.

2.3.1 P a t r o l – the act of checking on an independent and unscheduled basis that the applicable process, activities and associated documentation of the shipbuilding functions identified in Table I continue to conform to classification and statutory requirements.

2.3.2 R e v i e w – the act of examining documents in order to determine traceability, identification and to confirm that process continues to conform to classification and statutory requirements.

2.3.3 W i t n e s s – attendance at scheduled inspections in accordance with the agreed Inspection and Test Plan to the extent necessary to check compliance with the survey requirements.

3 APPLICATIONS

3.1 This *Publication* covers the survey of all new construction of steel ships intended for classification by PRS listed in *Part I – Classification Regulations* of applicable *Rules* and engaged in international voyages.

3.2 This *Publication* covers all statutory items, relevant to the hull structure and coating, i.e. Load Line and SOLAS Safety Construction.

3.3 This *Publication* does not cover the manufacture of equipment, fittings and appendages regardless whether they are made inside or outside of the shipyard, examples being as follows. Documentation shall be provided to confirm that the below equipment has been accepted by the PRS Surveyor at the manufacturer and verified at the shipyard.
– hatch covers,
– doors and ramps integral with the shell and bulkheads,
– rudders and rudder stocks,
– all forgings and castings integral to the hull.

3.4 This *Publication* applies to the installation into the ship, welding and testing of:
– the items listed in 3.3 above,
– equipment forming part of the watertight and weathertight integrity of the ship.

3.5 This *Publication* applies to the hull structures and coating constructed at any of the following:
– shipbuilder’s facilities,
– sub-contractors at the shipbuilder’s facilities,
– sub-contractors at their own facilities or at other remote locations.

4 QUALIFICATIONS AND MONITORING OF PERSONNEL

Exclusive Surveyors are to confirm through patrol, review and witness as defined in para. 2.3 that the ships are built using approved plans in accordance with the relevant rules and statutory requirements.

5 SURVEY OF THE HULL STRUCTURE

5.1 Table I provides a list of surveyable items for the hull structure and coating covered by this *Publication***,** including:
.1 Description of the shipbuilding functions.
.2 Classification and statutory survey requirements.
.3 Survey method required for classification.
.4 PRS relevant statutory requirement references.

5.2 Documentation to be available for the Surveyor during construction:
– the shipbuilder is to provide the Surveyor access to documentation required by PRS; this includes documentation retained by the shipbuilder or other third parties,
– when the ship documentation "as built" is different from the "design" documentation and alterations may adversely affect structural strength i.e. when scantlings of structural member are decreased, the shape of structural members end-connections is changed, the applied material has lower strength properties, then immediate contact of attending PRS Surveyor with PRS Hull Department is necessary in order to start review of the "as built" drawings,.
– the list of documents approved or reviewed by PRS for the specific new construction are as follows:
  a) plans and supporting documents,
  b) examination and testing plans,
  c) NDE plans,
  d) welding consumable details,
  e) welding procedure specifications,
  f) welding plan or details,
  g) welder’s qualification records,
  h) NDE operators qualification records.

5.3 Documents to be inserted into ship construction file. Refer to paragraph 10 for details.

5.4 A list of specific activities which are relevant to the shipbuilding functions. This list is not exhaustive and can be modified to reflect the construction facilities or specific ship type.

5.5 Evidence is also to be made available, as required, by the shipbuilder, to the Surveyor whilst the construction process proceeds to prove that the material and equipment supplied to the ship has been built or manufactured under survey relevant to the classification Rules and statutory requirements.

6 REVIEW OF THE CONSTRUCTION FACILITY

6.1 PRS is to familiarize themselves with the yard's production facilities, management processes, and safety for consideration in complying with the requirements of Table I, prior to any steelwork or construction taking place in the following circumstances:

– where PRS has none or no recent experience of the construction facilities – typically after a year lapse – or when significant new infrastructure has been added,
– where there has been a significant management or personnel re-structuring having an impact on the ship construction process, or
– where the shipbuilder contracts to construct a vessel of a different type or substantially different in design.

7 NEWBUILDING SURVEY PLANNING

7.1 Prior to commencement of surveys for any newbuilding project, PRS is to discuss with the shipbuilder at a kick-off meeting the items listed in Table I. The purpose of the meeting is to review and to agree how the list of specific activities shown in Table I is to be addressed. The meeting is to take into account the shipbuilders construction facilities and ship type including the list of proposed subcontractors.

A record of the meeting to be made, based upon the contents of the Table I – the Table can be used as the record with comments made into the appropriate column. If PRS has nominated a Surveyor for a specific newbuilding project then the Surveyor is to attend the kick-off meeting.

The builder should agree to undertake ad hoc investigations during construction, as may be requested by PRS, where areas of concern arise and to keep PRS advised of the progress of any investigation. Whenever an investigation is undertaken, the builder is to be requested, in principle, to agree to suspend relevant construction activities if warranted by the severity of the problem.

7.2 The records are to take note of specific published Administration requirements and interpretations of statutory requirements.

7.3 The shipyard shall be requested to advise of any changes to the activities agreed at the kick-off meeting and these are to be documented in the survey plan. E.g. if the shipbuilder chooses to use or change sub-contractors, or to incorporate any modifications necessitated by changes in production or inspection methods, rules and regulations, structural modifications, or in the event where increased inspection requirements are deemed necessary as a result of a substantial non-conformance or otherwise.

7.4 Shipbuilding quality standards for the hull structure during new construction are to be reviewed and agreed during the kick-off meeting. Structural fabrication is to be carried out in accordance Publications (informative) 16/I , "Shipbuilding and Repair Quality Standard", or a Recognized Fabrication Standard (RFS) which has been accepted by the PRS prior to the commencement of fabrication/construction. The work is to be carried out in accordance with the Rules and under survey of PRS.

PRS may accept an RFS as an alternative Publication 16/I, provided that 7.4.1 or 7.4.2 is complied with as applicable.

7.4.1 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 is to 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 App 2, Table A Tier II Item 11), as applicable.

7.4.2 Where a RFS is new or revised or otherwise not as per 7.4.1 the following steps are to be carried out:

(a) The tolerances and fabrications standards of the RFS are to be compared with those of Publication 16/I. Any that are less stringent than those of Publication 16/I are to be identified.

(b) The tolerances and fabrication standards of the RFS identified in **7.4.2** (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 7.4.2(a) and 7.4.2(b) is to 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 7.4.2(b) and any limitations to the usage of the RFS.

The summary document is to 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 App 2, Table A Tier II Item 11), as applicable.

7.5 The kick-off meeting may be attended by other parties (owner, administrations, etc.) subject to agreement by the shipbuilder.

7.6 In the event of series ship production[1], the requirement for a kick off meeting in paragraph 7.1 may be waived for the second and subsequent ships provided that no changes to the specific activities agreed in the kick off meeting for the first ship are introduced. If any changes are introduced, these are to be agreed in a new dedicated meeting and documented in a record of such meeting.

8 EXAMINATION AND TEST PLAN FOR NEWBUILDING ACTIVITIES

8.1 The shipbuilder is to provide plans of the items which are intended to be examined and tested. These plans need not be submitted for approval and examination at the time of the kick-off meeting. They are to include:

- proposals for the examination of completed steelwork – generally referred to as the block plan and are to include details of joining blocks together at the pre-erection and erection stages or at other relevant stages,
- proposals for fit-up examinations where necessary,
- proposals for testing of the structure (leak and hydrostatic) as well as for all watertight and weathertight closing appliances,
- proposals for non-destructive examination,
- any other proposals specific to the ship type or to the statutory requirements.

8.2 The plans and any modifications to them are to be submitted to the PRS Surveyors in sufficient time to allow review before the relevant survey activity commences.

8.3 In addition to above, for Tankers and Bulk Carriers subject to *SOLAS* Chapter II-1, Part A-1, Regulation 3-10 see also Appendix II to this Publication.

9 PROOF OF THE CONSISTENCY OF SURVEYS

9.1 PRS is to be able to provide evidence, e.g. through records, check lists, inspection and test records, etc. that its Surveyors have complied with the requirements of the newbuilding survey planning and duly participated in the relevant activities shown in the shipbuilder's examination and test plans.

[1] Vessels in the series subsequent to the first one (prototype), i.e. sister ships built in the same shipyard.

9.2 In addition, the classification society is to maintain records of deficiencies found during the patrolling activities required in Table 1 and described in paragraph 2.3.1. Records shall include the date when deficiency was found, description of the deficiency and the date the deficiency was cleared.

10 SHIP CONSTRUCTION FILE

The purposes of this paragraph are applicable to all ships except the Tankers and Bulk Carriers subject to *SOLAS* Chapter II-1, Part A-1, Regulation 3-10 for which the paragraph 3 of Appendix II to this Publication is to be applied.

10.1 The shipbuilder is to deliver documents for the *Ship Construction File.* In the event that items have been provided by another party such as the shipowner and where separate arrangements have been made for document delivery which excludes shipbuilder, that party has the responsibility.

The Ship Construction File shall be reviewed for content in accordance with the requirements of paragraph 10.2.

10.2 It is recognised that the purpose of documents held in the *Ship Construction File* on board the ship, is to facilitate inspection (survey) and repair and maintenance, and, therefore, is to include in addition to documents listed in Table I, but not limited to:

- as-built structural drawings including scantling details, material details and, as applicable, wastage allowances, location of butts and seams, cross section details and locations of all partial and full penetration welds, areas identified for close attention and rudders,
- manuals required for classification and statutory requirements, e.g. loading and stability, bow, inner, side, shell and stern doors – operations and maintenance manuals,
- ship structure access manual, as applicable,
- copies of certificates of forgings and castings welded into the hull,
- details of equipment forming the watertight and weathertight integrity of the ship,
- cable transit seal systems register, to be prepared by the shipbuilder for watertight cable transits. The Register can be in either a hard copy or digitized media. For an example of a register see Appendix 3 – Recommendatory Sample – Cable Transit Seal Systems Register. 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.
- tank testing plan including details of the test requirements,
- corrosion protection specifications,
- details for the in-water survey, if applicable, information for divers, clearances measurements instructions etc., information on tank and compartment boundaries,
- docking plan and details of all penetrations normally examined at dry-docking,
- *Coating Technical File*, for ships subject to compliance with IMO *Performance Standard for Protective Coatings (PSPC)* as a class requirement.

Table I
Hull Surveyable Items Activities Table

Refe-rence	Shipbuilding function	Survey requirements for Classification	Survey Method required for Classification	IACS reference	Statutory requirements and relevant reference	Documentation available to PRS surveyor during construction	Documentation for ship construction file	Specific activities	PRS proposals for the project
1	2	3	4	5	6	7	8	9	10
	Shipbuilding quality control function								
1.	Welding								
1.1	Welding consumables	PRS approved separately at the manufacturer	Review approval status and patrol, verify storage, handling and treatment in accordance with manufacturer's requirements	UR W17		Consumable specification and approval status	Not required	Identify consumables against approved list	
								Verify temporary and permanent storage facilities	E.g. kept dry, covered, where applicable heated
								Verify traceability	E.g. random batch number checking
1.2	Welder qualifications	Qualified welders	Review of welder certification and patrol	Rec. 47		Shipyards records with individual's identification	Not required	Verify welder qualification standard, e.g. class or RO approval	
								Verify welder approved for weld position	
								Verify validity of qualification certificate	

1	2	3	4	5	6	7	8	9	10
1.3	Welding – mechanical properties (welding procedures)	All weld joint configurations, positions and materials to be covered by weld procedures approved by PRS or by another classification society recognized by PRS	Review and patrol	UR W28		Approved weld procedure specification and welding plan relevant to the ship project or process	Not required	Verify that procedures are available at relevant workstations	
		PRS witnesses all new weld procedure qualification tests carried out in the shipyard whenever PRS is surveying in the shipyard	Witness					Verify that weld procedures have been approved and cover all weld processes and positions in accordance with PRS or recognized standards and are available for the surveyors reference.	
1.3a	Welding equipment	Correctly calibrated and maintained	Patrol and review			Shipbuilders maintenance and calibration records	Not required	Verify condition of machinery and equipment	
								Verify that machines are calibrated by appropriate staff	
								Verify that calibration is carried out in accordance with manufacturer’s recommendations	
								Verify that calibration is in accordance with maintenance schedule	

1	2	32		5	6	7	8	9	10
1.3b	Welding environment	Satisfactory environment	Patrol	Rec. 47			Not required	Verify welding areas clean, dry, well lit	
								Confirm relevant measures taken for any pre or post heat treatment, drying of surfaces prior to welding	
								Confirm that shielding gases, fluxes are protected	
1.3c	Welding supervision	Sufficient number of skilled supervisors	Review and Patrol	UR W33; Rec.47				Verify that supervision is effective	
1.4	Welding-surface discontinuities	Substantially free from significant indications, satisfactory profile and size	Visual examination surface detection techniques, review of documents and patrol of operator	UR W33; Rec..47		Shipbuilders and recognized standards and Rules as applicable, welding and NDE plans, NDE records, operator's qualifications	Not required	Identify workstations where NDE is carried out, e.g. panel line butt welds, castings into hull structure	
								Verify that NDE is carried out in accordance with approved plans where applicable	
								Verify suitability of NDE methods	
								Verify that operators are suitably qualified particularly where sub-contractors have been employed	
								Verify NDE is carried out according to the acceptable process	
								Review NDE records	

1	2	3	4	5	6	7	8	9	10
1.5	Welding-embedded discontinuities	NDE is to be carried out by qualified operators capable of ensuring that welds are substantially free from significant indications	Radiography and ultrasonic testing, review of documents and patrol of operator, examination of films	UR W33; and 47		Shipbuilders and recognized standards and Rules as applicable, welding and NDE plans, NDE reports, operator qualifications	Not required	Identify workstations where NDE is carried out e.g. panel line butt welds, castings into hull structure.	
								Verify that NDE is carried out in accordance with approved plans, where applicable	
								Verify suitability of NDE methods	
								Verify that operators suitably qualified particularly where sub-contractors have been employeed	
								Verify that records have been completed and in accordance with recognized standards, e.g. IQI and sensitivity recorded	
								Verify that reports and radiographs have been evaluated correctly by the shipbuilder. Systematic review of radiographs carried out by the Surveyor	

1	2	3	4	5	6	7	8	9	10
								Verify that equipment calibration is satisfactory and in accordance with manufacturers and recognized standards requirements	
								Verify that NDT is carried out according to the acceptable process	
2.	Steel preparation and fit up:								
2.1	Surface preparation marking and cutting	Traceability and acceptability of material, check of steel plates & profiles materials type, scantling identification, testing marks	Patrol	Rec. 47		Material certificates, shipbuilder's marking/cutting production documents at the workstage – documents retained at the facility	Not required	Verify that stockyard storage is satisfactory	
								Verify material traceability, e.g. stamping identification against material certification, archiving of records	
								Verify transfer marking after treatment line	
								Verify standard of shotblasting and priming	
								Verify suitability of primer	
								Verify that steel grades can be identified	

1	2	3	4	5	6	7	8	9	10
								Verify that machinery is adjusted to maintain within PRS or manufacturers recommendations	
								Verify accuracy of marking and cutting	
								Verify storage of piece parts	
2.2	Straightening	Approval of straightening methods / procedures against deformation	Patrol and review	Rec. 47		Recognized standards, approved procedures	Not required	Verify that straightening processes are approved for the grade and type of steel, e.g. tmcp, “z” plate	
								Verify that plates and sections are within recognized tolerances	
2.3	Forming	Maintain material properties. Acceptance of forming method against unproper deformations	Patrol	Rec. 47		Shipbuilders procedure for hot forming	Not required	Verify that temperature control is exercised by the operator	
								Verify that suitable methods of temperature control are available when forming special steels and materials	
								Verify that forming processes are acceptable	
2.4	Conformity with alignment/fit up/gap criteria	Check alignment/fit up/gap against reference standards	Patrol	Rec. 47		Shipbuilders and recognised standards and Rules as applicable	Not required	Verify the processes to ensure satisfactory fit up and alignment at all workstations	

1	2	3	4	5	6	7	8	9	10
								Verify that edge preparations are reinstated where lost during fitting operations	
								Verify that remedial procedures are in place to compensate for wide gaps and alignment deviations	
2.5	Conformity for critical areas, when defined, with alignment/fit up or weld configuration	Check alignment/fit up/gap against approved drawings	Witness and review	Rec. 47		Shipbuilders and recognised standards and Rules as applicable, approved plan or standard, builder's records	Approved plans of critical areas if applicable	Verify that the information relevant to the latest approved drawings is available at the workstations	
								Verify the processes to ensure satisfactory fit up and alignment at all workstations	
								Verify that edge preparations are reinstated where lost during fitting operations	
								Verify that remedial procedures are in place to compensate for wide gaps and alignment deviations	
3.	Steelworks process e.g. subassembly, block, grand and mega block assembly, pre-erection and erection, closing plates	Compliance with approved drawings, visual examination of welding and material, check alignment and deformations	Patrol of the process and witness of the completed item	Rec. 47		Approved plans, shipbuilders inspection records, shipbuilders and recognised standards and Rules as applicable, construction plan (steelwork subdivision)		Verify that the information relevant to the latest approved drawings is available at the workstations	

1	2	3	4	5	6	7	8	9	10
								Verify that correct weld sizes have been adopted	
								Verify that operation of the welding processes at the different work stages is satisfactory	
								Verify that piece parts are identifiable	
								Verify that fit ups are within recognised tolerances	
								Verify that correct welding requirements specified in reference 1 of this Table have been adopted	
								Verify that processes for closing plates etc. are acceptable	
								Confirm that steelwork is in accordance with the approved plan	
4.	Remedial work and alteration	Welding, check against deformation, alignment	Review of records and witness	Rec. 47		Permanent record of shipyard survey able item		Verify that records have been maintained of significant deviations from the approved plans, for situations such as miscut openings, re-routing outfit items	
								Verify that all deviations brought to the attention of PRS by the shipbuilder are acceptable	

1	2	3	4	5	6	7	8	9	10
5.	Tightness testing, including leak hose and hydropneumatic testing	Absence of leaks	Review and witness of the test	UR S14	Reg. II-1/11 of SOLAS as amended	Approved tank testing plan, shipbuilders inspection records	Approved tank testing plan	Confirm that tank testing is carried out in accordance with the approved plan	
								Confirm the methods used to carry out leak testing	
								Confirm that correct test pressures maintained for leak, hose, hydro and hydropneumatic testing is satisfactory	
								Verify that adequate records of the tank testing have been maintained	
6.	Structural testing	Structural adequacy of the design	Review and Witness testing	UR S14	Reg. II-1/11 of SOLAS as amended	Approved tank testing plan, shipbuilders inspection records	Approved tank testing plan	Confirm that tank testing is carried out in accordance with the approved plan	
								Confirm that correct test pressures maintained for testing is satisfactory	
								Verify that adequate records of the tank testing have been maintained	

1	2	32	4	5	6	7	8	9	10
7.	Corrosion protection systems, e.g. coatings, cathodic protection, impressed current except for coating system subject to PSPC	Salt water ballast tanks with boundaries formed by the hull envelope, and also bulk carrier hold internal surfaces, coamings and hatch covers shall have an efficient protective coating. Safety aspects of cathodic systems to be dealt with separately.	Review and report on builder's & manufacturer's documentation	URZ8 and Z9, UI SC122, URF1	Reg. II-1/3-2 of SOLAS as amended	Manufacturer's and builder's documentation	corrosion protection specifications	Verify that applied coatings are approved and review records of application	
								Verify that adequate records have been maintained and copied to the ship file	
	Application of antifouling systems		Review		AFS Convention	Painting specification	Paint specification and mfg declaration	Verify that adequate records have been maintained and copied to the ship file	
7.1	Application of protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers subject to PSCP	Monitor implementation of the coating inspection requirements	Patrol and review	UI SC223	Reg. II-1/3-2 of SOLAS as amended	Signed and Verified Tripartite Agreement	Coating Technical File	Verify that applied coatings are approved and review records of application in accordance with Ch. 7 of Annex to MSC.215(82)	
8.	Installation, welding and testing of the following:								
8.1	Hatch covers	Tightness and securing	Witness	UR S14 and Rec. 14	Reg. 13-14-15 and 16 of ILLC '66	Approved tank testing plan, shipbuilders inspection records	Details required, structural drawings	Confirm leak test of hatch covers	
								Confirm operation and securing test	

1	2	3	4	5	6	7	8	9	10
8.2	Doors and ramps integral with the shell and bulkheads	Tightness and securing	Witness	UR S14	REG. II-1/18 of SOLAS as amended; Reg. 12 and 21 of ILLC ‘66	Approved tank testing plan, shipbuilders inspection records	Details required	Confirm leak test	
								Confirm operation and securing test	
								Confirm safety device operation	
								Ensure correct maintenance logs/manuals supplied with the ship construction file	
8.3	Rudders	Fitting	Witness	UR S14		Approved plan, shipbuilders inspection records	Details required, structural drawings	Confirm alignment and mounting and fitting up to the connection to the tiller	
								Confirm function test	
								Verify fitting of pintles and all securing bolts	
								Verify that all fit up records including all clearances maintained and placed into ship construction file	
8.4	Forgings and castings	Compliance with approved drawings, visual examination of welding and material, check alignment and deformations	Patrol of the process and witness of the completed item	UR W7 and W8		Approved plans, shipbuilders inspection records, shipbuilders and recognised standards and Rules as applicable (steelwork subdivision)	Copies of certificates of forgings and castings	Verify casting and forgings against material certificate	

1	2	3	4	5	6	7	8	9	10
								Verify that correct welding and fit up requirements in ref. 1, 2.4 and 3.5 of this Table have been adopted	
								Verify that material certificates are included in the ship construction file	
	Appendages							Verify that correct welding and fit up requirements specified in ref. 1, 2.4 and 2.5 of this Table have been adopted	
8.5	Equipment forming the watertight and weathertight integrity of the ship, e.g. overboard discharges, air pipes, ventilators	Tightness and securing	Witness		Reg. II-1/16 and II-1/16-1 of SOLAS as amended; Reg. 17, 18, 19, 20, 22, 23 of ILLC ‘66	Approved tank testing plan, shipbuilders inspection record	Details required	Verify that correct welding and fit up requirements specified in ref. 1, 2.4 and 2.5 of this Table have been adopted	
								Verify compliance with ILLC ’66 as amended – i.e. all fittings in accordance with the record of freeboard assignment	
				UR P3				Verify that air pipes, vents etc. closing device are type approved	
								Verify material certificates for overboard discharges where applicable	

1	2	3	4	5	6	7	8	9	10
								Verify record of freeboard assignment and all material certificates included in the ship construction file	
	Freeboard marks	Within allowable tolerances and in accordance with the freeboard assignment	Witness	UI LL4	Reg. 4, 5, 6, 7 and 8 of ILLC ‘66		Details required	Verify freeboard marks in accordance with load line assignment	
								Verify draft marks in accordance with the agreed tolerances specified by the builder unless more onerous flag state requirements	
	Principal dimensions	Within allowable tolerances	Review and witness	Rec. 47			Details required	Verify principal dimensions in accordance with recognised standard	
								Verify dimensions included in ship construction file	
	Safety Construction certification	No outstanding imperfections or defects	Witness		Reg. I/7 or I/10 of SOLAS as amended, as appropriate			Verify that Administration requirements have been incorporated into the hull structure	

1	2	3	4	5	6	7	8	9	10
8.6	watertight cable transit seal systems	compliance with approved drawings, visual examination of fitting, check alignment and securing	patrol of the process and witness of the completed item		Reg. II-1/13 and 13-1 of SOLAS as amended	shipbuilder's inspection records, manufacturer's specification	Cable Transit Seal Systems Register	Verify that correct welding and fit up requirements, including as specified in reference 1, 2.4 and 2.5 of this table have been adopted Verify watertight cable transit seal systems are type approved Verify the format and content of the Register	

Shipbuilder’s name:	
Project:	
Project duration:	
Kick off meeting date:	
Person representing builder:	
Person representing PRS:	

APPENDIX I

SHIPYARD REVIEW RECORD

Name of Shipyard	Date

1. Details of any management systems

Obtained Approval	Certified by	Expiry Date	Remarks (scope, etc.)
ISO 9001			
ISO 14001			
ISO 18001			
Other:			

2. Construction facilities

(Documents such as a brochure of shipyard can be attached in lieu of completing this section)

2.1 Building Berth (B) or Dock (D)

B/D	Name	Length (m)	Width (m)	Depth* (m)	Building Capacity (G/T)	Crane (ton x No.)

* In case of berth, depth is not applicable.

2.2 Outfitting Quays

Name	Length (m)	Width (m)	Depth (m)	Berthing capacity (G/T)	Crane (ton x No.)

2.3 Main fabrication and erection facilities

(1) Marking and cutting steel plates (including internal members) – Marking method (Manual, Photo x ……, EPM x …….., NC x ……., others ……..) – NC cutting machine (Gas x ……, Plasma x ……, Laser x ……) – Control procedure of NC (on-line, other) – Cutting equipment (Edge planer x ……, Roll-shear x ……)
(2) Marking and cutting of section bar – Marking method (Manual, NC) – Marking of reference curved line (Manual, NC) – Cutting method (Manual, NC) – In case of NC (Gas x ……, Plasma x ……)
(3) One side automatic welding machine (Yes, No) – Type of welding machine (Flux Backing x ……, Flux and Copper Backing x ……, other ……) – Existence of special surface plate for plate welding (Yes, No)
(4) Fillet welding machine (Gravity, Automatic) Percentage of automatization except gravity: about …… % – Line welder (No, Yes: submerged arc x …… heads, CO_2 x …… heads) – Small automatic fillet welding machine (Yes, No: Name: …….. x ……..) – Welding robot (Yes, No: Portal x ……, Rectangular x ……, Articulated x ……)
(5) Painting equipment – Plate shot blasting/primer coating machine (Yes, No: Max. Width …… m, Length …… m) – Section bar shot blasting/primer coating machine (Yes, No: Max Length …… m) – Special coating factory (Yes, No: …… m x …… m x ……. sections)
(6) Vertical automatic welding machine (Yes, No: EG x ……, SEG x ……, ES x ……) EG: Electrogas, SEG: Simplified Electrogas, ES: Electroslag
(7) Other main fabrication facilities:

3. Shipyard Control of Qualified Welders

(1) Normal steel

		Certification	Traceability	Supervision	Maintenance of qualification
Shipyard workers	Confirm system in place	Yes/No	Yes/No	Yes/No	Yes/No
Subcontracted workers	Confirm system in place	Yes/No	Yes/No	Yes/No	Yes/No

4. Feature of Construction Procedure

(1) Subcontract of hull blocks (weight) – Sub members (Yes, No: Ratio of subcontracted works ….. %, No. of subcontractors ……) – Blocks (Yes, No: Ratio of subcontracted works ….. %, No. of subcontractors ……)
(2) Method of plate block assembly – Method of fitting and welding longitudinals and transverse webs on jointed panels – Method of welding longitudinals on jointed panels prior to fitting and welding transverse webs – Method of fitting and welding a frame consisting of longitudinals and transverse webs on jointed panels – Method of joining panels with pre-assembled longitudinals by welding prior to fitting and welding transverse webs – Other (please specify in (5) below)
(3) Pre-erection outfitting carried out grand block/mega block adopted – Method of erection at building berth/dock – Max. weight of loading block : …… ton – Construction method in building dock/berth/land construction etc. (1 ship, 1.5 ships: semi-tandem, dual entrance) – Block loading process (single start block, multi starting blocks, inserting block: Yes, No)
(4) Final dock (Yes, No: In-house, Other place of the same company, Use other company)
(5) Other features of construction procedure

5. Quality Control System: (Refer to Quality Manual, if available)

Item and description	Result	Remarks
(1) Existence of the organization chart including the departments of design, purchasing, manufacturing and quality assurance – Are the functions, responsibility and competence of the organization clear?		
(2) Quality control organization – Existence of quality control organization – Number of employees in this organization – Existence of procedures or plans related to tests and inspections	…….. persons including the chief	
(3) Pre-inspection system of shipyard – Is pre-inspection carried out prior to shipyard inspection? – Are pre-inspectors assigned? (Check the list) – Number of pre-inspectors (related to hull only) – Are inspection results marked on the object and/or recorded in the checklists?	…….. persons	
(4) Records of inspections and tests – Are records made and kept properly? – Does the responsible person verify the records? – Can the adoption of necessary corrective actions against non-conformity revealed be checked?		
(5) Condition at the time of the surveys in the presence of PRS surveyors – Is the schedule of the surveys changed often? – Are pre-inspection, shipyard inspection and repairs completed beforehand? – Are the sufficient preparations for surveys such as scaffoldings, lighting, cleaning made?		
Note: Above mentioned (3) and (4) include the acceptance inspection of subcontracted items.		

6. Measures for Work Safety and Health

Item and description	Result	Remarks
(1) Are condition of scaffolding, nets, safety belt, lighting and ventilation good?		
(2) Is sufficient attention paid to radiographic examination and operation of cherry picker?		
Note:		

7. Control System of Non-Destructive Testing (NDT)

Item and description	Result	Remarks
(1) Number of NDT supervisors in shipyard (including persons responsible for judging results)	……..... persons	
(2) Dependence on subcontracted NDT work – Number of shipyard employees – Number of sub-contractors	 …… persons …… persons	
(3) NDT sub-contractor company's name and official technical qualifications	name ……..…. (approved by) ….. name ……..…. (approved by) ……...	
(4) Grade and number of NDT employees with official technical qualifications in shipyard – specialized in radiography (RT) – specialized in ultrasonic testing (UT) – specialised in surface detection (VT, PT, MT)	 ……..... grade ……..... persons ……..... grade ……..... persons ……..... grade ……..... persons	
(5) If non-destructive testing is subcontracted, the grade and number of officially qualified persons – specialized in radiography (RT) – specialized in ultrasonic testing (UT) – specialised in surface detection (VT, PT, MT)	 …..…….... grade ……..….... persons ……..…….... grade ……..….... persons ……..…….... grade ……..….... persons	
(6) Non-destructive testing equipment (in-house) – number of radiographic equipment – number of ultrasonic equipment	 ……..….. ……..…..	
Note: Even if all works are subcontracted, it is recommended to attach the qualified person(s) who will verify the works.		

8. Quality Control on Production Line

8.1 Preventive measures for misuse of materials

Item and description	Result	Remarks
(1) Job title of supervisor and person on charge of collating ordered steel and received steel, and checking mill sheet	Position of supervisor: ……... Position of person in charge ……...	
(2) Are means for checking the material grade in hand prescribed for high-grade steels?		
(3) Are regulations prescribed for checking the material grade for high-tensile steel and steel for low-temperature applications? Are there regulations for marking high-tensile steel on the surface of the high-tensile and special indication for steel for low-temperature applications?		
(4) Are procedures for re-using of remaining cut-off mild steel?		
(5) Are there procedures for re-using of remaining cut-off high-tensile steel?		
(6) In the case of (4) and (5) above, can a collation be made with the mill sheet?		
(7) Section of controlling the lists of remaining cut-off steel	Name of section: ……..	
Notes: – In case of high-tensile steel, are means for identifying different grades provided? – In case of (3) and (4) above, are the materials approved by other classes controlled similarly?		

8.2 Shot blasting/Primer coating

Item and description	Result	Remarks
(1) Existence of surface preparation standards		
(2) Existence of coating thickness control standards – Existence of thickness measurements records		
Note: – The standard is to include the description related to traceability after shot blasting and primer coating		

8.3 Marking and cutting (assembly work)

Item and description	Result	Remarks
(1) Existence of standards for accuracy and periodical inspection of tape measures, tapes, stencils, etc.		
(2) Existence of standards for accuracy of cut dimensions and edge preparation		
(3) Existence of standards for finish of cutting face		
(4) What is the frequency and extent of maintenance and inspection carried out for ensuring accuracy of NC cutter and/or flame planer ?		
(5) In case of NC, are the disks, tapes etc. maintained in good condition ?		
(6) What are the measures adopted and guidance given to make the worker fully conversant with cutting work standards for maintaining accuracy ?		
Note: – In case of (2) and (3) above, check items are to include confirmation of edge preparations made without piercing holes. – NC for section bars is also to be in accordance with the above.		

8.4 Bending and strain free

Item and description	Result	Remarks
(1) Existence of standards for maximum heating temperatures during water cooling and at the time of bending and distortion removal of steam by quick heating and cooling.		
(2) Existence of regulations for plate thickness and bending radius for flange processing		
(3) What are the measures adopted and guidance given to make the worker fully conversant with maintaining quality and accuracy during the bending process?		
Note:		

8.5 Control of welding procedure

Item and description	Result	Remarks
(1) Are all welding procedures applied to the ships approved by PRS or other Society recognized by PRS?		
Note:		

8.6 Treatment of serious non-conformities

Item and description	Result	Remarks
(1) Are repair plans submitted to PRS when serious non-conformities are revealed ?		
(2) Where the NDT (RT/UT) plans submitted at appropriate timing ?		
(3) Was the scope of tests extended considering their results ?		
Note:		

8.7 Hydrostatic and watertight tests

Item and description	Result	Remarks
(1) Is the test plan submitted to PRS ?		
(2) Are vacuum tests applied to ?		
(3) Are local air injection tests during sub-assembly works applied to ?		
(4) If (2) and (3) above is applied to, are the test procedures approved by PRS ?		
Note:		

APPENDIX II

REQUIREMENTS FOR TANKERS AND BULK CARRIERS SUBJECT TO SOLAS CHAPTER II-1, PART A-1, REGULATION 3-10.

Goal-based ship construction standards for bulk carriers and oil tankers

1. Examination and test plan for newbuilding activities

1.1 The shipbuilder is to provide plans of the items which are intended to be examined and tested in accordance with the PRS Rules in a document known as the Survey Plan, taking into account the ship type and design. This Survey Plan shall be reviewed at the time of the kick off meeting, and must include:

1.1.1 A set of requirements, including specifying the extent and scope of the construction survey(s) and identifying areas that need special attention during the survey(s), to ensure compliance of construction with mandatory ship construction standards including

- **.1** Types of surveys (visual, non-destructive examination, etc.) depending on location, materials, welding, casting, coatings, etc.
- **.2** Establishment of a construction survey schedule for all assembly stages from the kick-off meeting, through all major construction phases, up to delivery.
- **.3** Inspection/survey plan, including provisions for critical areas identified during design approval.
- **.4** Inspection criteria for acceptance.
- **.5** Interaction with shipyard, including notification and documentation of survey results.
- **.6** Correction procedures to remedy construction defects.
- **.7** List of items that would require scheduling or formal surveys.
- **.8** Determination and documentation of areas that need special attention throughout ship's life, including criteria used in making the determination. In order to identify areas of high stress or fatigue risk, designers and specialists should apply the following criteria for structures:
  - with regard to yielding strength:
    $\lambda_y > 0.95\ \lambda_{yperm}$
    λ_y – yield utilization factor
    λ_{yperm} – coarse mesh permissible yield utilization factor
  - with regard to buckling capability of plates and stiffened panel:
    $\eta > 0.95\ \eta_{all}$
    η – calculated maximum buckling utilization factor
    η_{all} – allowable buckling utilization factor
  - with regard to fatigue capacity of structural details:
    $T_F < 30$ years
    T_F – calculated fatigue life , in years

1.1.2 A description of the requirements for all types of testing during survey, including test criteria.

2. Design Transparency

2.1 For ships subject to compliance with IMO Res. MSC.287(87), IMO Res. MSC.290(87), IMO Res. MSC.296(87) and IMO MSC.1/Circ.1343, readily available documentation is to include the main goal-based parameters and all relevant design parameters that may limit the operation of the ship.

3. Ship Construction File (SCF)

3.1 A Ship Construction File (SCF) with specific information on how the functional requirements of the Goal-based Ship Construction Standards for Bulk Carriers and Oil Tankers have been applied in the ship design and construction is to be provided upon delivery of a new ship, and kept on board the ship

and/or ashore and updated as appropriate throughout the ship's service. The contents of the Ship Construction File are to conform to the requirements below**.**

3.1.1 The following design specific information is to be included in the Ship Construction File (SCF):

.1 Areas requiring special attention throughout the ship's life (including critical structural areas).

.2 All design parameters limiting the operation of a ship.

.3 Any alternatives to the rules, including structural details and equivalency calculations.

.4 "As built" drawings and information which are verified to incorporate all alterations approved by the recognized organization or flag State during the construction process including scantling details, material details, location of butts and seams, cross section details and locations of all partial and full penetration welds.

.5 Net (renewal) scantlings for all the structural constituent parts, as built scantlings and voluntary addition thicknesses.

.6 Minimum hull girder section modulus along the length of the ship which has to be maintained throughout the ship's life, including cross section details such as the value of the area of the deck zone and bottom zone, the renewal value for the neutral axis zone.

.7 A listing of materials used for the construction of the hull structure, and provisions for documenting changes to any of the above during the ship's service life.

.8 Copies of certificates of forgings and castings welded into the hull (UR W7 and UR W8).

.9 Details of equipment forming part of the watertight and weathertight integrity of the ship.

.1 cable transit seal systems register, to be prepared by the shipbuilder for watertight cable transits. The Register can be in either a hard copy or digitized media. For an example of a register see Appendix 3 - Recommendatory Sample - Cable Transit Seal Systems Register. 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.

.10 Tank testing plan including details of the test requirements (UR S14).

.11 Details for the in-water survey, when applicable, information for divers, clearances measurements instructions etc., tank and compartment boundaries.

.12 Docking plan and details of all penetrations normally examined at dry-docking.

.13 Coating Technical File, for ships subject to compliance with the IMO Performance Standard for Protective Coatings (PSPC)(note 2).

3.1.2 Refer to Table A of this Appendix for details of information to be further included. This information has to be kept on board the ship and/or ashore and updated as appropriate throughout the ship's life in order to facilitate safe operation, maintenance, survey, repair and emergency measures.

3.1.3 It is to be noted that parts of the content of the SCF may be subject to various degrees of restricted access and that such documentation may be appropriately kept ashore.

3.1.4 The SCF has to include the list of documents constituting the SCF and all information listed in Table A of this Appendix, which is required for a ship's safe operation, maintenance, survey, repair and in emergency situations. Details of specific information that is not considered to be critical to safety might be included directly or by reference to other documents.

3.1.5 When developing an SCF, all of the columns in Table A of this Appendix have to be reviewed to ensure that all necessary information has been provided.

3.1.6 It may be possible to provide information listed in the annex under more than one Tier II (note 1) functional requirement as a single item within the SCF, for example, the Coating Technical File required by the PSPC (note 2) is relevant for both "Coating life" and "Survey during construction".

3.1.7 The SCF has to remain with the ship and, in addition, be available to PRS and flag State throughout the ship's life. Where information not considered necessary to be on board is stored ashore,

procedures to access this information should be specified in the onboard SCF. The intellectual property provisions within the SCF should be duly complied with.

3.1.8 The SCF should be updated throughout the ship's life at any major event, including, but not limited to, substantial repair and conversion, or any modification to the ship structure.

3.2 The SCF shall be reviewed (note 3), at the time of new building, in accordance with the requirements of paragraphs 3.1.1 and 3.1.2 and the normal storage location shall be distinguished.

3.2.1 For the SCF stored on board ship, the surveyor is to verify that the information is placed on board the ship, upon completion of ship construction.

3.2.2 For the SCF stored on shore archive, the surveyor is to verify that the information is stored on shore archive by examining the list of information included on shore archive, upon completion of ship construction.

4. Determination of number of Surveyor(s)

PRS will assign adequate number of suitable qualified surveyor(s) for new building projects according to the construction progress of each ship to meet appropriate coverage of the examination and testing activities as agreed in the Survey Plan.

Notes:

1. Tier II items means the functional requirements included in the International Goal-based Ship Construction Standards for Bulk Carriers and Oil Tankers (GBS), adopted by IMO Res. MSC 287(87)
2. Performance standard for protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers, adopted by IMO Res. MSC 215(82), as amended and Performance standard for protective coatings for cargo oil tanks of crude oil tankers, adopted by IMO Res. MSC 288(87), as amended.
3. "Review" means the examination of the SCF that is carried out by the surveyor, at the end of the newbuilding process, in order to confirm that:
   – drawings and documents required under the paragraph 3 of the appendix 2 to this Publication, plus
   – the possible additional drawings/documents provided by the shipyard, as per the Ship Constructional File (SCF) list of drawings/documents are present in the copies of the SCF stored on board and in the ashore archive.

   The "review" is not to be intended as an assessment of the drawings/documents in order to verify their compliances with the applicable Rules/Regulations.

Table A
List of Information to be Included in the Ship Construction File (SCF)

Tier II items		Information to be included	Further explanation of the content	Example documents	Normal storage location
1		2	3	4	5
DESIGN					
1.	Design life	- assumed design life in years	- statement or note on midship section	- SCF-specific	- on board
				- mishap section plan	- on board
2.	Environmental conditions	- assumed environmental conditions	- statement referencing data source or Rule (specific rule and data) or; - in accordance with Rule (date and revision)	- SCF-specific	- on board
3.	Structural strength				
3.1	General design	- applied Rule (revision date) - applied alternative to Rule	- applied design method alternative to Rule and subject structure(s)	- SCF-specific	- on board
				- capacity plan	- on board
3.2	Deformation and failure modes	- calculating conditions and results - assumed loading conditions	- allowable loading pattern - maximum allowable hull girder bending moment and shear force	- loading manual - trim and stability booklet	- on board - on board
3.3	Ultimate strength	- operational restrictions due to structural strength	- maximum allowable cargo density or storage factor	- loading instrument instruction manual	- on board
				- operation and maintenance manuals	- on board
				- strength calculation	- on shore
3.4	Safety margins	- strength calculation results	- bulky output of strength calculation - plan showing highly stressed areas (e.g. critical structural areas) prone to yielding and/or buckling	- areas prone to yielding and/or buckling	- on board
		- gross hull girder section modulus - minimum hull girder section modulus along the length of the ship to be maintained throughout the ship's life, including cross section details such as the value of the area of the deck zone and bottom zone, the renewal value for the neutral axis zone		- general arrangement plan	- on board

Tier II items		Information to be included	Further explanation of the content	Example documents	Normal storage location
		- gross scantling of structural constituent parts - net scantlings of structural constituent parts, as built scantlings and voluntary addition thicknesses	- structural drawing - rudder and stern frame - structural details of typical members	- key construction plans - rudder and rudder stock plans - structural details - yard plans - dangerous area plan	- on board - on board - on board - on shore - on board
		- hull form	- hull form information indicated in key construction plans - hull form data stored within an onboard computer necessary for trim and stability and longitudinal strength calculations	- lines plan or - equivalent	- on shore - on board
4.	Fatigue life	- applied Rule (revision date) - applied alternative to Rule - calculating conditions and results - assumed loading conditions - fatigue life calculations results	- applied design method alternative to rule and subject structures - assumed loading conditions and rates - bulky output of fatigue life calculation - plan showing areas (e.g. critical structural areas) prone to fatigue	- SCF-specific - structural details - fatigue life calculation areas prone to fatigue	- on board - on board - on ashore - on board
5.	Residual strength	- applied Rule (revision date)		- SCF-specific	- on board
6.	Protection against corrosion				
6.1	Coating life Corrosion addition	- coated areas and target coating life and other measures for corrosion protection in holds, cargo and ballast tanks, other structure-integrated deep tanks and void spaces	- plans showing areas (e.g. critical structural areas) prone to excessive corrosion	- SCF-specific - Coating Technical File required by PSPC	- on board - on board

Tier II items		Information to be included	Further explanation of the content	Example documents	Normal storage location
		- specification for coating and other measures for corrosion protection in holds, cargo and ballast tanks, other structure-integrated deep tanks and void spaces		- areas prone to excessive corrosion	- on board
		- gross scantling of structural constituent parts		- key construction plans	- on board
		- net scantlings of structural constituent parts, as built scantlings and voluntary addition thicknesses			
7.	Structural redundancy	- applied Rule (revision date)		- SCF-specific	- on board
8.	Watertight and weathertight integrity	- applied Rule (revision date)		- SCF-specific	- on board
		- key factors for watertight and weathertight integrity	- details of equipment forming part of the watertight and weathertight integrity	- structural details of hatch covers, doors and other closings integral with the shell and bulkheads	- on board
9.	Human element considerations	- list of ergonomic design principles applied to ship structure design to enhance safety during operations, inspections and maintenance of ship		- SCF-specific	- on board
10.	Design transparency	- applied Rule (revision date)		- intellectual property provisions	- on board
		- applicable industry standards for design transparency and IP protection			
		- reference to part of SCF information kept ashore		- summary, location and access procedure for part of SCF information on shore	- on board
CONSTRUCTION					
11.	Construction quality procedures	- applied construction quality standard	- recognized national or international construction quality standard	- SCF-specific	- on board

Tier II items		Information to be included	Further explanation of the content	Example documents	Normal storage location
12.	Survey during construction	- survey regime applied during construction (to include all owner and class scheduled inspections during construction)	- applied Rules (revision date) - copies of certificates of forgings and castings welded into the hull	- SCF-specific - tank testing plan	- on board - on board
		- information on non-destructive examination		- non-destructive testing plan	- on board
				- Coating Technical File required by PSPC	- on board
IN-SERVICE CONSIDERATIONS					
13.	Survey and maintenance	- maintenance plans specific to the structure of the ship where higher attention is called for	- plans showing highly stressed areas (e.g. critical structural areas) prone to yielding, buckling, fatigue and/or excessive corrosion	- SCF-specific - operation and maintenance manuals (e.g. hatch covers and doors)	- on board - on board
		- preparation for survey	- arrangement and details of all penetrations normally examined at dry-docking	- docking plan	- on board
		- gross hull girder section modulus	- details for dry-docking	- dangerous area plan	- on board
		- minimum hull girder section modulus along the length of the ship to be maintained throughout the ship's life, including cross section details such as the value of the area of the deck zone and bottom zone, the renewal value for the neutral axis zone	- details for in-water survey	- Ship Structure Access Manual	- on board
				- Means of access to other structure-integrated deep tanks	- on board
				- Coating Technical File required by PSPC	- on board

Tier II items		Information to be included	Further explanation of the content	Example documents	Normal storage location
		- gross scantling of structural constituent parts - net scantlings of structural constituent parts, as built scantlings and voluntary addition thicknesses - hull form	 - hull form information indicated in key construction plans	- key construction plans - rudder and rudder stock - structural details - yard plans - lines plan or - equivalent	- on board - on board - on board - on shore - on shore - on board
14.	Structural accessibility	- means of access to holds, cargo and ballast tanks and other structure-integrated deep tanks	- plans showing arrangement and details of means of access	- Ship Structure Access Manual - means of access to other structure-integrated deep tanks	- on board - on board
RECYCLING CONSIDERATIONS					
15.	Recycling	- identification of all materials that were used in construction and may need special handling due to environmental and safety concerns	- list of materials used for the construction of the hull structure	- SCF-specific	- on board

Notes:

1. "SCF-specific" means documents to be developed especially to meet the requirements of these GBS guidelines (MSC.1/Circ.1343).
2. "Key construction plans" means plans such as midship section, main O.T. and W.T. transverse bulkheads, construction profiles/plans, shell expansions, forward and aft sections in cargo tank (or hold) region, engine-room construction, forward construction and stern construction drawings.
3. "Yard plans" means a full set of structural drawings, which include scantling information of all structural members.
4. "Hull form" means a graphical or numerical representation of the geometry of the hull. Examples would include the graphical description provided by a lines plan and the numerical description provided by the hull form data stored within an onboard computer.
5. "Lines plan" means a special drawing which is dedicated to show the entire hull form of a ship.
6. "Equivalent (to Lines plan)" means a set of information of hull form to be indicated in key construction plans for SCF purposes. Sufficient information should be included in the drawings to provide the geometric definition to facilitate the repair of any part of the hull structure.
7. "Normal storage location" means a standard location where each SCF information item should be stored. However, those items listed as being on board in the table above should be on board as a minimum to ensure that they are transferred with the ship on a change of owner.
8. "Shore archive" is to be operated in accordance with applicable international standards.

RECOMMENDATORY SAMPLE – CABLE TRANSIT SEAL SYSTEM REGISTER

Name of Ship:	Sample
IMO No:	12345
Place:	Hamburg
Date:	XX/XX/2017
Inspected by:	Smith

Transits 4

Total Openings 4

TRANSIT			Inspected side		BRAND	FRAME		Type Approved	CONDITION(G,F,P)	INSPECTED	REPAIRED	MODIFIED	MAINTAINED	NOTES: C = Compound (not known brand) R = Smith Blocks B = MCT Williams H = Heavy corrosion N = Nelson, Terasaki MB = Mixed brands MM = Mixed module sizes NVD = No Visible Defects CPA = Checkpoints rectangular frames CPB = Checkpoints round frames	Checked by	DATE
Drawing number	ID	Location	F	B		Type	Opening number									
GIA-07-1047-000-883	TT-MCT-011				C	d = 50	x							NVD	PTO	26/02/2015
GIA-07-1047-000-883	TT-MCT-012				C	450x200	x							NVD	PTO	26/02/2015
GIA-07-1047-000-883	TT-MCT-013				C	550x200	x							NVD	PTO	26/02/2015
GIA-07-1047-000-883	TT-MCT-014				C	750x200	x							Open, drilled hole not closed	PTO	26/02/2015

List of amendments effective as of July 2021

Item	*Title/Subject*	*Source*
7.4	New building survey planning; Recognized Fabrication Standard (RFS)	UR Z23 rev.7
10.2	Ship Construction File; –cable transit seal systems register	
Annex 1 par.1.3-1.5	Rec.20 deleted; UR W33 added; NDE	
Appendix III	Recommendatory Sample – Cable transit Seal System Register	