



**GUIDE FOR**

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# **HULL SURVEY FOR NEW CONSTRUCTION**

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**American Bureau of Shipping  
Incorporated by Act of Legislature of  
the State of New York 1862**

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## **Foreword**

This Guide contains requirements obtained from IACS Unified Requirement, UR Z23 “Hull Survey for New Construction”. For the convenience of the users, the various cross-references to the relevant ABS Rules and Guides are provided in addition to those for IACS documents. These IACS documents, UR, UI (Unified Interpretation) and Recommendation, are available from [www.iasc.org.uk](http://www.iasc.org.uk).

The effective date of this Guide is 1 January 2008 and it is applicable for vessels contracted for construction on or after 1 January 2008.

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# GUIDE FOR HULL SURVEY FOR NEW CONSTRUCTION

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## 1 Scope

The scope of this Guide includes the following:

- i) Examination of the parts of the vessel covered by the 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.
- ii) Appraisal of the manufacturing, construction, control and qualification procedures, including welding consumables, weld procedures, weld connections and assemblies, with indication of relevant approval tests.
- iii) Witnessing inspections and tests as required in the Rules applicable 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, nondestructive examination, verification of geometry) and by whom.

Appraisal of materials and equipment used for ship construction and their inspection at works is not included in this Guide. Details of requirements for hull and machinery steel forgings and castings and for normal and higher strength hull structural steel are given in Section 2-1-6, Section 2-1-5 and Sections 2-1-2 and 2-1-3, respectively, of the *ABS Rules for Materials and Welding (Part 2)*. Acceptance of these items is verified through the survey process carried out at the manufacturer's works and the issuing of the appropriate certificates.

## 2 Definitions

### 2.1 Hull Structure

The hull structure is defined as follows:

- i) Hull envelope including all internal and external structures
- ii) Superstructures, deckhouses and casings
- iii) Welded foundations (e.g., main engine seatings)
- iv) Hatch coamings, bulwarks
- v) All penetrations fitted and welded into bulkheads, decks and shell
- vi) The fittings of all connections to decks, bulkheads and shell, such as air pipes and ship side valves – all ILLC 1966, as amended, items
- vii) Welded attachments to shell, decks and primary members (e.g., crane pedestals, bitts and bollards), but only as regards their interaction on the hull structure

### 2.2 Documents

Reference to documents also includes electronic transmission or storage.

## 2.3 Survey Methods

Definition of survey methods which the Surveyor is directly involved in: Patrol, Review and Witness:

### 2.3.1 Patrol

*Patrol* is the act of checking on an independent and unscheduled basis that the applicable processes, activities and associated documentation of the shipbuilding functions identified in Table 1 continue to conform with classification and statutory requirements.

### 2.3.2 Review

*Review* is the act of examining documents in order to determine traceability and identification and to confirm that processes continue to conform with classification and statutory requirements.

### 2.3.3 Witness

*Witness* is attendance of scheduled survey items as defined within the shipbuilding functions.

## 3 Applications

### 3.1 Vessel Types

This Guide covers the survey of all new construction of steel vessels intended for classification and for international voyages except for:

- i) Those defined in SOLAS I/3
- ii) High speed craft as defined in Part 1, Section of the *ABS Guide for Building and Classing High Speed Craft*
- iii) Mobile Offshore Drilling Units as defined in Section 1-1-3 of the *ABS Rules for Building and Classing Mobile Offshore Drilling Units*

### 3.2 Statutory Items

This Guide covers all statutory items relevant to the hull structure (i.e., Load Line and SOLAS Safety Construction).

### 3.3 Equipment, Fittings and Appendages

This Guide does not cover the manufacture of equipment, fittings and appendages, regardless of whether they are made inside or outside of the shipyard, examples being as follows. Evidence of acceptance shall be provided by accompanying documentation from class Surveyor at manufacturer and verified at the shipyard:

- i) Hatch covers
- ii) Doors and ramps integral with the shell and bulkheads
- iii) Rudders and rudder stock
- iv) All forgings and castings integral to the hull

### 3.4 Installation and Testing

This Guide applies to the installation into the vessel, welding and testing of:

- i) The items listed in 3.3 above
- ii) Equipment forming part of the watertight and weathertight integrity of the vessel.

### 3.5 Locations of Construction

This Guide applies to the hull structures constructed at any of the following:

- i) Shipbuilder's facilities
- ii) Subcontractors at the shipbuilder's facilities
- iii) Subcontractors at their own facilities or at other remote locations

## 4 Qualification and Monitoring of Personnel

The Surveyors are to verify that the vessels are built using approved plans in accordance with the relevant Rules and statutory requirements. The Surveyors are to be qualified to be able to carry out the tasks and procedures are to be in place to ensure that their activities are monitored. (See Section 1-1-6 of the *ABS Rules for Building and Classing Steel Vessels*.)

## 5 Survey of the Hull Structure

### 5.1 Items to be Surveyed

Table 1 provides a list of surveyable items for the hull structure covered by this Guide, including:

- i) Description of the shipbuilding functions.
- ii) Classification and statutory survey requirements
- iii) Survey method required by the Rules for classification
- iv) Relevant IACS and statutory requirement references
- v) Documentation to be available for the Surveyor during construction.
  - The shipbuilder is to provide the Surveyors access to documentation required for classification. This includes documentation retained by the shipbuilder or other third parties.
  - The list of documents approved or reviewed by the Bureau 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 (See 2-4-3/7 of the *ABS Rules for Materials and Welding*)
    - h) NDE operator's qualification records (See Section 1, subsection 5 of *ABS Guide for Nondestructive Inspection of Hull Welds*)
- vi) Documents to be inserted into the ship construction file. Refer to Section 10 for details.
- vii) 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 vessel type.

## 5.2 Evidence of Survey of Materials and Equipment

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 vessel has been built or manufactured under survey relevant to the Rules and statutory requirements.

## 6 Review of the Construction Facility\*

The Bureau is to review the construction facilities prior to any steelwork or construction taking place in the following circumstances:

- i) Where the Bureau has none or no recent experience of the construction facilities (typically after a one year lapse) or when significant new infrastructure has been added
- ii) Where there has been a significant management or personnel restructuring having an impact on the ship construction process
- iii) Or where the shipbuilder contracts to construct a vessel of a different type or substantially different in design

\* *Note:* Reference is made to Appendix 1, “Shipyard Review Record”, as an example.

## 7 Newbuilding Survey Planning

### 7.1 Kick-off Meeting

Prior to commencing any newbuilding project, the Bureau is to discuss with the shipbuilder at a kick-off meeting the items listed in Table 1. The purpose of the meeting is to agree how the list of specific activities shown in Table 1 is to be addressed.

The meeting is to take into account the shipbuilder’s construction facilities and vessel type and deals with subcontractors if it is known that the builder proposes to use them. The shipyard is to be informed of likely intervals for sampling and patrol activities. A record of the meeting is to be made, based upon the contents of the Table (the Table can be used as the record with comments made into the appropriate column).

If the Bureau has nominated a Surveyor for a specific newbuilding project, then the Surveyor is to attend the kick-off meeting. The builder is to be asked to agree to undertake ad hoc investigations during construction where areas of concern arise and to keep the Bureau 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 Administration and Statutory Requirements

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

### 7.3 Update of Meeting Record

The record of the meeting is to be updated as the construction process progresses in the light of changing circumstances (e.g., if the shipbuilder chooses to use or change subcontractors, 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**

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 with ABS *Guide for Shipbuilding and Repair Quality Standard for Hull Structures During Construction*, or a recognized fabrication standard which has been accepted by the Bureau prior to the commencement of fabrication/construction. The work is to be carried out in accordance with the Rules and under survey of the Bureau.

## **7.5 Attendance by Other Parties**

The kick-off meeting may be attended by other parties, Owner, Administrations, etc., subject to agreement by the shipbuilder.

## **7.6 Series Ship Production**

In the event of series ship production and where the Bureau has a continual presence in the shipyard, consideration may be given to modification of the kick off meeting. The agenda would include essential variables from previous vessels, (e.g., flag requirements, modifications from previous vessels, effects of key dates, etc.) subject to mutual agreement with the builder.

In any instance, the Bureau must maintain records to demonstrate compliance with Table 1. The Bureau will still need to demonstrate that changes described in 7.1 to 7.6 have been addressed.

# **8 Examination and Test Plan for Newbuilding Activities**

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:

- i)* 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
- ii)* Proposals for fit up examinations where necessary
- iii)* Proposals for testing of the structure (leak and hydrostatic) as well as for all watertight and weathertight closing appliances
- iv)* Proposals for nondestructive examination
- v)* Any other proposals specific to the vessel type or to the statutory requirements.

The plans and any modifications to them are to be submitted to the Surveyors in sufficient time to allow approval before the relevant construction phase commences. The Bureau is to require sample rates of NDE, proposals for steelwork survey, tank testing requirements, etc., if the actual construction process warrants it. The Bureau is to demonstrate proof to justify the request.

# **9 Proof of the Consistency of Surveys**

## **9.1 Compliance with Newbuilding Survey Planning**

The Bureau 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.

## **9.2 Audit**

For audit purposes, the information specified in 9.1 is to be made available.

## 10 Ship Construction File

### 10.1 Responsibility

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 Owner, and where separate arrangements have been made for document delivery which excludes the shipbuilder, that party has the responsibility.

### 10.2 Documents to be Included

It is recognized that the purpose of documents held in the Ship Construction File onboard the vessel, is to facilitate inspection (survey) and repair and maintenance, and, therefore, is to include in addition to documents listed in Table 1, but not be limited to:

- i) 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 [Section 7-3-2 of the *ABS Rules for Survey After Construction (Part 7)* for Hull Surveys]
- ii) Manuals required for classification and statutory requirements (e.g., loading and stability, bow doors and inner doors and side shell doors and stern doors – operations and maintenance manuals) [3-2-16/27 of the *ABS Rules for Building and Classing Steel Vessels*]
- iii) Ship structure access manual, as applicable
- iv) Copies of certificates of forgings and castings welded into the hull [Sections 2-1-6 and Section 2-1-5 of the *ABS Rules for Materials and Welding (Part 2)*]
- v) Details of equipment forming part of the watertight and weathertight integrity of the vessel
- vi) Tank testing plan including details of the test requirements [Section 3-7-1 of the *ABS Rules for Building and Classing Steel Vessels*]
- vii) Corrosion protection specifications [3-2-18/5 of the *ABS Rules for Building and Classing Steel Vessels*]
- viii) Details for the in-water survey, if applicable, information for divers, clearances measurements instructions, etc., tank and compartment boundaries [Appendix 7-A-1 of the *ABS Rules for Survey After Construction (Part 7)*]
- ix) Docking plan and details of all penetrations normally examined at drydocking [3-1-2/11 and 3-2-2/7 of the *ABS Rules for Building and Classing Steel Vessels* and Section 7-4-1 of the *ABS Rules for Survey After Construction (Part 7)*]
- x) Coating Technical File, for vessels subject to compliance with the IMO Coating Performance Standard (PSPC) as a class requirement under the IACS Common Structural Rules. [Section 6 of the *ABS Guide for The Class Notation Coating Performance Standard (CPS)*]

**TABLE 1**

Reference	Shipbuilding Function	Survey Requirements for Classification	Survey Method Required for Classification	ABS Rules/Guide <sup>(1)</sup> [IACS Reference <sup>(2,3)</sup> ]	Statutory Requirements and Relevant Reference	Documentation Available to Classification Surveyor during Construction	Documentation for Ship Construction File	Specific Activities	Bureau Proposals for the Project
<b>Shipbuilding Quality Control Function</b>									
1	<b>Welding</b>								
1.1	Welding Consumables	Approved separately at the manufacturer	Review approval status and patrol, verify storage, handling and treatment in accordance with manufacturer's requirements	Appendix 2 of the <i>Rules for Materials and Welding (Part 2)</i> [UR W17]		Consumable specification and approval status	Not required	.1 Identify consumables against approved list .2 Verify temporary and permanent storage facilities .3 Verify traceability	e.g., kept dry, covered, and where applicable, heated  e.g., random batch number checking
1.2	Welder Qualification	Qualified welders	Review of welder certification and patrol	Pub # 87: <i>Guide for Shipbuilding and Repair Quality Standard for Hull Structures During Construction</i> [Recommendation 47]		Shipyards records with individual's identification	Not required	.1 Verify welder qualification standard, e.g., class or recognized standard approval .2 Verify welder approved for weld position .3 Verify validity of qualification certificate	

**TABLE 1 (continued)**

<i>Reference</i>	<i>Shipbuilding Function</i>	<i>Survey Requirements for Classification</i>	<i>Survey Method Required for Classification</i>	<i>ABS Rules/Guide<sup>(1)</sup> [IACS Reference<sup>(2,3)</sup>]</i>	<i>Statutory Requirements and Relevant Reference</i>	<i>Documentation Available to Classifier during Surveyor's Construction</i>	<i>Documentation for Ship Construction File</i>	<i>Specific Activities</i>	<i>Bureau Proposals for the Project</i>
1.3	Welding – Mechanical Properties (Welding Procedures)	All weld joint configurations, positions and materials to be covered by weld procedures approved by the Bureau or by another IACS member available	Review and patrol	2-4-3/5 of the Rules for Materials and Welding (Part 2) [UR W28]		Approved weld procedure specification and welding plan relevant to the vessel project or process	Not required	.1 Verify weld procedures records have been approved and cover all weld processes and positions in accordance with classification or recognized standards. .2 Verify procedures are available at relevant workstations .3 Verify weld procedures are available for the Surveyor's reference	
1.3a	Welding Equipment	The Bureau witnesses all new weld procedure qualification tests carried out in the shipyard whenever the Bureau is surveying in the shipyard Correctly calibrated and maintained	Patrol and review			Shipbuilder's maintenance and calibration records	Not required	.1 Verify condition of machinery and equipment. .2 Verify machines are calibrated by appropriate staff	

**TABLE 1 (continued)**

<i>Reference</i>	<i>Shipbuilding Function</i>	<i>Survey Requirements for Classification</i>	<i>Survey Method Required for Classification</i>	<i>ABS Rules/Guide<sup>(1)</sup> [IACS Reference<sup>2,3</sup>]</i>	<i>Statutory Requirements and Reference</i>	<i>Documentation Available to Classifier during Construction</i>	<i>Documentation for Ship Construction File</i>	<i>Specific Activities</i>	<i>Bureau Proposals for the Project</i>
1.3a (cont'd.)	Welding Equipment (cont'd.)	Correctly calibrated and maintained	Patrol and review			Shipbuilder's maintenance and calibration records	Not required	.3 Verify calibration carried out in accordance with manufacturer's recommendations .4 Verify calibration in accordance with maintenance schedule	
1.3b	Welding Environment	Satisfactory environment	Patrol	Pub # 87: <i>Guide for Shipbuilding and Repair Quality Standard for Hull Structures During Construction</i> [Recommendation 47]			Not required	.1 Verify welding areas clean, dry, well lit. .2 Confirm relevant measures taken for any pre or post heat treatment, drying of surfaces prior to welding .3 Confirm shielding gases, fluxes protected	

**TABLE 1 (continued)**

<i>Reference</i>	<i>Shipbuilding Function</i>	<i>Survey Requirements for Classification</i>	<i>Survey Method Required for Classification</i>	<i>ABS Rules/Guide<sup>(1)</sup> [IACS<sup>(2,3)</sup> Reference<sup>(2,3)</sup>]</i>	<i>Statutory Requirements and Relevant Reference</i>	<i>Documentation Available to Classifier during Surveyor Construction</i>	<i>Documentation for Ship Construction File</i>	<i>Specific Activities</i>	<i>Bureau Proposals for the Project</i>
1.3c	Welding Supervision	Sufficient number of skilled supervisors	Patrol	Pub # 14: <i>Guide for Nondestructive Inspection of Hull Welds</i> [Recommendation 20 and 47]				.1 Verify 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	Pub # 14: <i>Guide for Nondestructive Inspection of Hull Welds</i> [Recommendation 20 and 47]		Shipbuilder's and recognized standards and Rules as applicable, welding and NDE plans, NDE reports, operator qualifications	Not required	.1 Identify workstations where NDE is carried out, e.g., panel line butt welds, castings into hull structure .2 Verify NDE carried out in accordance with approved plans where applicable .3 Verify suitability of NDE methods .4 Verify operators suitably qualified particularly where sub-contractors have been employed	

**TABLE 1 (continued)**

<i>Reference</i>	<i>Shipbuilding Function</i>	<i>Survey Requirements for Classification</i>	<i>Survey Method Required for Classification</i>	<i>ABS Rules/Guide<sup>(1)</sup> [IACS Reference<sup>2,3</sup>]</i>	<i>Statutory Requirements and Relevant Reference</i>	<i>Documentation Available to Classification Surveyor during Construction</i>	<i>Documentation for Ship Construction File</i>	<i>Specific Activities</i>	<i>Bureau Proposals for the Project</i>
1.4 (cont'd)	Welding-Surface Discontinuities (cont'd.)	Substantially free from significant indications, satisfactory profile and size	Visual examination, surface detection techniques, review of documents and patrol of operator	Pub # 14: <i>Guide for Nondestructive Inspection of Hull Welds</i> [Recommendation 20 and 47]		Shipbuilder's and recognized standards and Rules as applicable, welding and NDE plans, NDE reports, operator qualifications	Not required	.5 Verify NDE is carried out according to the acceptable process .6 Review NDE records	
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	Pub # 14: <i>Guide for Nondestructive Inspection of Hull Welds</i> [Recommendation 20 and 47]		Shipbuilder's and recognized standards and Rules as applicable, welding and NDE plans, NDE reports, operator qualifications	Not required	.1 Identify workstations where NDE is carried out, e.g. panel line butt welds, castings into hull structure .2 Verify NDE carried out in accordance with approved plans where applicable .3 Verify suitability of NDE methods .4 Verify operators suitably qualified particularly where sub-contractors have been employed	

**TABLE 1 (continued)**

<i>Reference</i>	<i>Shipbuilding Function</i>	<i>Survey Requirements for Classification</i>	<i>Survey Method Required for Classification</i>	<i>ABS Rules/Guide<sup>(1)</sup> [IACS<sup>(2,3)</sup> Reference<sup>(2,3)</sup>]</i>	<i>Statutory Requirements and Reference</i>	<i>Documentation Available to Classifier during Surveyor's Construction</i>	<i>Documentation for Ship Construction File</i>	<i>Specific Activities</i>	<i>Bureau Proposals for the Project</i>
1.5 (cont'd.)	Welding – Embedded Discontinuities (cont'd.)	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	Pub # 14: <i>Guide for Nondestructive Inspection of Hull Welds</i> [Recommendation 20 and 47]		Shipbuilder's and recognized standards and Rules as applicable, welding and NDE plans, NDE reports, operator qualifications	Not required	.5 Verify that records have been completed and in accordance with recognized standards, e.g. IQI and sensitivity recorded .6 Verify that reports and radiographs have been evaluated correctly by the shipbuilder. Systematic review of radiographs carried out by the Surveyor .7 Verify equipment calibration satisfactory and in accordance with manufacturer's and recognized standards requirements .8 Verify NDE is carried out according to the acceptable process	

**TABLE 1 (continued)**

Reference	Shipbuilding Function	Survey Requirements for Classification	Survey Method Required for Classification	ABS Rules/Guide <sup>(1)</sup> [IACS Reference <sup>(2,3)</sup> ]	Statutory Requirements and Relevant Reference	Documentation Available to Classifier during Construction	Documentation for Ship Construction File	Specific Activities	Bureau Proposals for the Project
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	Pub # 87: <i>Guide for Shipbuilding and Repair Quality Standard for Hull Structures During Construction</i> [Recommendation 47]		Material certificates, shipbuilder's marking/cutting production documents at the workstage - documents retained at the facility	Not required	.1 Verify stockyard storage satisfactory .2 Verify material traceability, e.g. stamping identification against material certification, archiving of records .3 Verify transfer marking after treatment line .4 Verify standard of shotblasting and priming .5 Verify suitability of primer .6 Verify that steel grades can be identified	

**TABLE 1 (continued)**

<i>Reference</i>	<i>Shipbuilding Function</i>	<i>Survey Requirements for Classification</i>	<i>Survey Method Required for Classification</i>	<i>ABS Rules/Guide<sup>(1)</sup> [IACS<sup>(2,3)</sup> Reference<sup>(2,3)</sup>]</i>	<i>Statutory Requirements and Relevant Reference</i>	<i>Documentation Available to Classifier during Construction</i>	<i>Documentation for Ship Construction File</i>	<i>Specific Activities</i>	<i>Bureau Proposals for the Project</i>
2.1 (cont'd)	Surface Preparation, Marking and Cutting	Traceability and acceptability of material, check of steel plates & profiles materials type, scantling identification, testing marks	Patrol	Pub # 87: <i>Guide for Shipbuilding and Repair Quality Standard for Hull Structures During Construction</i> [Recommendation 47]		Material certificates, shipbuilder's marking/cutting production documents at the workstage - documents retained at the facility	Not required	<p>.7 Verify machinery adjusted to maintain within IACS or manufacturer's recommendations</p> <p>.8 Verify accuracy of marking and cutting</p> <p>.9 Verify storage of piece parts.</p>	
2.2	Straightening	Approval of straightening methods/procedures against deformation	Patrol and review	Pub # 87: <i>Guide for Shipbuilding and Repair Quality Standard for Hull Structures During Construction</i> [Recommendation 47]		Recognized standards, approved procedures	Not required	<p>.1 Verify that straightening processes are approved for the grade and type of steel, e.g., tmcp, z-plate.</p> <p>2. Verify that plates and sections are within recognized tolerances</p>	

**TABLE 1 (continued)**

<i>Reference</i>	<i>Shipbuilding Function</i>	<i>Survey Requirements for Classification</i>	<i>Survey Method Required for Classification</i>	<i>ABS Rules/Guide<sup>(1)</sup> [IACS Reference<sup>2,3</sup>]</i>	<i>Statutory Requirements and Relevant Reference</i>	<i>Documentation Available to Classifier during Surveyor during Construction</i>	<i>Documentation for Ship Construction File</i>	<i>Specific Activities</i>	<i>Bureau Proposals for the Project</i>
2.3	Forming	Maintain material properties. Acceptance of forming method against improper deformations	Patrol	Pub # 87: <i>Guide for Shipbuilding and Repair Quality Standard for Hull Structures During Construction</i> [Recommendation 47]		Shipbuilder's procedure for hot forming	Not required	.1 Verify that temperature control is exercised by the operator .2 Verify that suitable methods of temperature control are available when forming special steels and materials .3 Verify that forming processes are acceptable	
2.4	Conformity with Alignment/Fit Up/Gap Criteria	Check alignment/fit up/gap against reference standards	Patrol	Pub # 87: <i>Guide for Shipbuilding and Repair Quality Standard for Hull Structures During Construction</i> [Recommendation 47]		Shipbuilder's and recognized standards and Rules as applicable	Not required	.1 Verify the processes to ensure satisfactory fit up and alignment at all workstations .2 Verify that edge preparations are re-instated where lost during fitting operations	

**TABLE 1 (continued)**

<i>Reference</i>	<i>Shipbuilding Function</i>	<i>Survey Requirements for Classification</i>	<i>Survey Method Required for Classification</i>	<i>ABS Rules/Guide<sup>(1)</sup> [IACS Reference<sup>(2,3)</sup>]</i>	<i>Statutory Requirements and Relevant Reference</i>	<i>Documentation Available to Classifier during Construction</i>	<i>Documentation for Ship Construction File</i>	<i>Specific Activities</i>	<i>Bureau Proposals for the Project</i>
2.4 (cont'd)	Conformity with Alignment/Fit Up/Gap Criteria (cont'd)	Check alignment/fit up/gap against reference standards	Patrol	Pub # 87: <i>Guide for Shipbuilding and Repair Quality Standard for Hull Structures During Construction</i> [Recommendation 47]		Shipbuilder's and recognized standards and Rules as applicable	Not required	.3 Verify remedial procedures are in place to compensate for wide gaps and alignment deviations	
2.5	Conformity for Critical Areas with Alignment/Fit Up or Weld Configuration	Check alignment/fit up/gap against approved drawings	Patrol and review	Pub # 87: <i>Guide for Shipbuilding and Repair Quality Standard for Hull Structures During Construction</i> [Recommendation 47]		Shipbuilder's and recognized standards and Rules as applicable, approved plan or standard, builder's records	Approved plans of critical areas if applicable	.1 Verify that the information relevant to the latest approved drawings is available at the workstations .2 Verify the processes to ensure satisfactory fit up and alignment at all workstations .3 Verify that edge preparations are re-instated where lost during fitting operations	

**TABLE 1 (continued)**

<i>Reference</i>	<i>Shipbuilding Function</i>	<i>Survey Requirements for Classification</i>	<i>Survey Method Required for Classification</i>	<i>ABS Rules/Guide<sup>(1)</sup> [IACS Reference<sup>2,3</sup>]</i>	<i>Statutory Requirements and Relevant Reference</i>	<i>Documentation Available to Classifier during Surveyor during Construction</i>	<i>Documentation for Ship Construction File</i>	<i>Specific Activities</i>	<i>Bureau Proposals for the Project</i>
2.5 (cont'd)	Conformity for Critical Areas with Alignment/ Fit Up or Weld Configuration (cont'd)	Check alignment/ fit up/gap against approved drawings	Patrol and review	Pub # 87: <i>Guide for Shipbuilding and Repair Quality Standard for Hull Structures During Construction</i> [Recommendation 47]		Shipbuilder's and recognized standards and Rules as applicable, approved plan or standard, builder's records	Approved plans of critical areas if applicable	.4 Verify remedial procedures are in place to compensate for wide gaps and alignment deviations	
3	Steelwork Process, (e.g., sub assembly, 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	Pub # 87: <i>Guide for Shipbuilding and Repair Quality Standard for Hull Structures During Construction</i> [Recommendation 47]		Approved plans, shipbuilder's inspection records, Shipbuilder's and recognized standards and Rules as applicable, construction plan (steelwork subdivision)		.1 Verify that the information relevant to the latest approved drawings is available at the workstations .2 Verify that correct weld sizes have been adopted .3 Verify operation of the welding processes at the different work stages is satisfactory .4 Verify that piece parts are identifiable	

**TABLE 1 (continued)**

<i>Reference</i>	<i>Shipbuilding Function</i>	<i>Survey Requirements for Classification</i>	<i>Survey Method Required for Classification</i>	<i>ABS Rules/Guide<sup>(1)</sup> [IACS<sup>(2,3)</sup> Reference<sup>(2,3)</sup>]</i>	<i>Statutory Requirements and Reference</i>	<i>Documentation Available to Classifier during Construction</i>	<i>Documentation for Ship Construction File</i>	<i>Specific Activities</i>	<i>Bureau Proposals for the Project</i>
3 (cont'd)	Steelwork Process, (e.g., sub assembly, block, grand and mega block assembly, pre-erection and erection, closing plates) (cont'd)	Compliance with approved drawings, visual examination of welding and material, check alignment and deformations	Patrol of the process and witness of the completed item	Pub # 87: <i>Guide for Shipbuilding and Repair Quality Standard for Hull Structures During Construction</i> [Recommendation 47]	Approved plans, shipbuilder's inspection records, Shipbuilder's and recognized standards and Rules as applicable, construction plan (steelwork subdivision)			.5 Verify that fit ups are within recognized tolerances .6 Verify that correct welding requirements specified in reference 1 of this table have been adopted .7 Verify processes for closing plates, etc., are acceptable .8 Confirm that steelwork is in accordance with the approved plan	
4	Remedial Work and Alteration	Welding, check against deformation, alignment	Review records and witness	Pub # 87: <i>Guide for Shipbuilding and Repair Quality Standard for Hull Structures During Construction</i> [Recommendation 47]		Permanent record of shipyard surveyable item		.1 Verify that records have been maintained of significant deviations from the approved plans, for situations such as mis-cut openings, re-routing outfit items	

**TABLE 1 (continued)**

<i>Reference</i>	<i>Shipbuilding Function</i>	<i>Survey Requirements for Classification</i>	<i>Survey Method Required for Classification</i>	<i>ABS Rules/Guide<sup>(1)</sup> [IACS Reference<sup>2,3</sup>]</i>	<i>Statutory Requirements and Relevant Reference</i>	<i>Documentation Available to Classifier during Surveyor during Construction</i>	<i>Documentation for Ship Construction File</i>	<i>Specific Activities</i>	<i>Bureau Proposals for the Project</i>
4 (cont'd)	Remedial Work and Alteration (cont'd)	Welding, check against deformation, alignment	Review records and witness	Pub # 87: <i>Guide for Shipbuilding and Repair Quality Standard for Hull Structures During Construction</i> [Recommendation 47]		Permanent record of shipyard surveyable item		.2 Verify that all deviations brought to the attention of the Bureau by the shipbuilder are acceptable	
5	Tightness Testing, including leak and hose testing, hydropneumatic testing	Absence of leaks	Patrol of the process and witness of the test	Section 3-7-1 of the <i>Rules for Building and Classing Steel Vessels</i> [UR S14]	Reg. II-1/14 of SOLAS as amended	Approved tank testing plan, shipbuilders inspection records	Approved tank testing plan	.1 Confirm that tank testing is carried out in accordance with the approved plan .2 Confirm the methods used to carry out leak testing .3 Confirm that correct test pressures maintained for leak, hose and hydro-pneumatic testing is satisfactory .4 Verify that adequate records of the tank testing have been maintained	

**TABLE 1 (continued)**

Reference	Shipbuilding Function	Survey Requirements for Classification	Survey Method Required for Classification	ABS Rules/Guide <sup>(1)</sup> [IACS Reference <sup>(2,3)</sup> ]	Statutory Requirements and Relevant Reference	Documentation Available to Classifier during Construction	Documentation for Ship Construction File	Specific Activities	Bureau Proposals for the Project
6	Structural Testing	Structural adequacy of the design	Witness testing	Section 3-7-1 of the Rules for Building and Classing Steel Vessels [UR S14]	Reg. II-1/14 of SOLAS as amended	Approved tank testing plan, shipbuilders inspection records	Approved tank testing plan	<p>.1 Confirm that tank testing is carried out in accordance with the approved plan</p> <p>.2 Confirm that correct test pressures maintained for testing is satisfactory</p> <p>.3 Verify that adequate records of the tank testing have been maintained</p>	
7	Corrosion Protection Systems (e.g., coatings, cathodic protection, impressed current)	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 and manufacturer's documentation	3-2-18/5 of the Rules for Building and Classing Steel Vessels [UR Z8 and Z9, UI SC122, UR F1]	Reg. II-1/3-2 of SOLAS as amended	Manufacturer's and builder's specification	Corrosion protection specifications	<p>.1 Verify that applied coatings are approved and review records of application</p> <p>.2 Verify that adequate records have been maintained and copied to the ship file</p>	

**TABLE 1 (continued)**

Reference	Shipbuilding Function	Survey Requirements for Classification	Survey Method Required for Classification	ABS Rules/Guide <sup>(1)</sup> [IACS Reference <sup>(2,3)</sup> ]	Statutory Requirements and Relevant Reference	Documentation Available to Classifier during Construction	Documentation for Ship Construction File	Specific Activities	Bureau Proposals for the Project
8	Installation, Welding and Testing of the Following:								
8.1	Hatch Covers	Tightness and securing	Witness	Section 3-7-1 of the Rules for Building and Classing Steel Vessels [UR S14]	Reg. 13-14-15 and 16 of ILLC '66	Approved tank testing plan, shipbuilder's inspection records	Details required, structural drawings	.1 Confirm leak test of hatch covers .2 Confirm operation and securing test	
8.2	Doors and Ramps Integral with the Shell and Bulkheads	Tightness and securing	Witness	Section 3-7-1 of the Rules for Building and Classing Steel Vessels [UR S14]	Reg. II-1/18 of SOLAS as amended; Reg. 12 and 21 of ILLC '66	Approved tank testing plan, shipbuilder's inspection records	Details required	.1 Confirm leak test .2 Confirm operation and securing test .3 Confirm safety device operation .4 Ensure correct maintenance logs/manuals supplied with the ship construction file	
8.3	Rudders	Fitting	Witness	Section 3-7-1 of the Rules for Building and Classing Steel Vessels [UR S14]		Approved plan, shipbuilder's inspection records	Details required, structural drawings	.1 Confirm alignment and mounting and fitting up to the connection to the tiller .2 Confirm function test .3 Verify fitting of pintles and all securing bolts	

**TABLE 1 (continued)**

<i>Reference</i>	<i>Shipbuilding Function</i>	<i>Survey Requirements for Classification</i>	<i>Survey Method Required for Classification</i>	<i>ABS Rules/Guide<sup>(1)</sup> [IACS Reference<sup>(2,3)</sup>]</i>	<i>Statutory Requirements and Relevant Reference</i>	<i>Documentation Available to Classifier during Surveyor's Construction</i>	<i>Documentation for Ship Construction File</i>	<i>Specific Activities</i>	<i>Bureau Proposals for the Project</i>
8.3 (cont'd)	Rudders (cont'd)	Fitting	Witness	Section 3-7-1 of the <i>Rules for Building and Classing Steel Vessels</i> [UR S14]		Approved plan, shipbuilder's inspection records	Details required, structural drawings	4. Verify 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	Sections 2-1-6 and 2-1-5 of the <i>Rules for Materials and Welding (Part 2)</i> [UR W7 and W8]		Approved plans, shipbuilder's inspection records, Shipbuilder's standards and Rules as applicable, construction plan (steelwork subdivision)	Copies of certificates of forgings and castings	<p>1. Verify casting and forgings against material certificate</p> <p>2. Verify that correct welding and fit up requirements specified in reference 1, 2.4 and 2.5 of this table have been adopted</p> <p>3. Verify that material certificates are included in the ship construction file</p>	

**TABLE 1 (continued)**

<i>Reference</i>	<i>Shipbuilding Function</i>	<i>Survey Requirements for Classification</i>	<i>Survey Method Required for Classification</i>	<i>ABS Rules/Guide<sup>(1)</sup> [IACS Reference<sup>(2,3)</sup>]</i>	<i>Statutory Requirements and Relevant Reference</i>	<i>Documentation Available to Classification Surveyor during Construction</i>	<i>Documentation for Ship Construction File</i>	<i>Specific Activities</i>	<i>Bureau Proposals for the Project</i>
8.4 (cont'd)	Appendages	with approved drawings, visual examination of welding and material, check alignment and deformations	Patrol of the process and witness of the completed item	Sections 2-1-6 and 2-1-5 of the <i>Rules for Materials and Welding (Part 2)</i> [UR W7 and W8]		Approved plans, shipbuilder's inspection records, Shipbuilder's and recognized standards and Rules as applicable, construction plan (steelwork subdivision)	Copies of certificates of forgings and castings	4. Verify that correct welding and fit up requirements specified in reference 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-1/19 of SOLAS as amended; Reg. 17-18-19-20-22-23 of ILLC '66	Approved tank testing plan, shipbuilder's inspection records	Details required	.1 Verify that correct welding and fit up requirements specified in reference 1, 2.4 and 2.5 of this table have been adopted  .2 Verify compliance with Load Line Convention 1966 as amended (i.e., all fittings in accordance with the record of freeboard assignment)	

**TABLE 1 (continued)**

Reference	Shipbuilding Function	Survey Requirements for Classification	Survey Method Required for Classification	ABS Rules/Guide <sup>(1)</sup> [IACS Reference <sup>(2,3)</sup> ]	Statutory Requirements and Relevant Reference	Documentation Available to Classifier during Construction	Documentation for Ship Construction File	Specific Activities	Bureau Proposals for the Project
8.5 (cont'd)	Equipment Forming the Watertight and Weatheright Integrity of the Ship (e.g., overboard discharges, air pipes, ventilators) (cont'd)	Tightness and securing	Witness	4-6-4/9.3.7 of the Rules for Building and Classing Steel Vessels [UR P3]	Reg. II-1/19 of SOLAS as amended; Reg. 17-18-19-20-22-23 of ILLC '66	Approved tank testing plan, shipbuilder's inspection records	Details required	.3 Verify air pipes, vents etc., closing device are approved type	
								.4 Verify material certificates for overboard discharges where applicable	
	Freeboard Marks and Draft Marks	Within allowable tolerances and in accordance with the freeboard assignment	Witness	Appendix 1-1-A1 of the Rules for Building and Classing Steel Vessels [UI-L14]	Reg. 4-5-6-7 and 8 of ILLC '66		Details required	.5 Verify record of freeboard assignment and all material certificates included in the ship construction file .6 Verify freeboard marks in accordance with load line assignment .7 Verify draft marks in accordance with the agreed tolerances specified by the builder unless more onerous flag state requirements	

**TABLE 1 (continued)**

Reference	Shipbuilding Function	Survey Requirements for Classification	Survey Method Required for Classification	ABS Rules/Guide <sup>(1)</sup> [IACS Reference <sup>2, 3</sup> ]	Statutory Requirements and Relevant Reference	Documentation Available to Classifier during Construction	Documentation for Ship Construction File	Specific Activities	Bureau Proposals for the Project
8.5 (cont'd)	Principal Dimensions	Within allowable tolerances	Review and witness	Pub # 87: <i>Guide for Shipbuilding and Repair Quality Standard for Hull Structures During Construction</i> [Recommendation 47]			Details required	.8 Verify principal dimensions in accordance with recognized standard	
	Safety Construction Certification	No outstanding imperfections or defects	Witness		Reg. 10 of SOLAS as amended			.9 Verify dimensions included in ship construction file .10 Verify that Administration requirements have been incorporated into the hull structure	

Shipbuilder's name
Project
Project Duration

Kick-off Meeting Date
Representing Builder
Representing Class Society

*Notes:*

- 1 ABS referenced documents are available from the Rules and Guides Downloads page of [www.eagle.org](http://www.eagle.org).
- 2 IACS referenced documents are available from [www.iacs.org.uk](http://www.iacs.org.uk).
- 3 IACS Recommendations are not mandatory requirements.

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## APPENDIX 1 Shipyard Review Record

<i>Name of Shipyard</i>	<i>Date</i>

### 1 Details of Any Management Systems

<i>Obtained Approval</i>	<i>Certified By</i>	<i>Expiry Date</i>	<i>Remarks (Scope, etc.)</i>
ISO-9001    ISO-9002			
ISO 14000			
ISO 18000			
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)

<i>B / D</i>	<i>Name</i>	<i>Length (m)</i>	<i>Width (m)</i>	<i>Depth* (m)</i>	<i>Building Capacity (G/T)</i>	<i>Crane (Ton × No.)</i>

\* Note: 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 of 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 \_\_\_\_\_ )

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(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 \_\_\_\_\_ )

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(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 )

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(4) Fillet welding machine ( Gravity, Automatic ) Percentage of automatization, except gravity: about \_\_\_\_\_ %  
 - Line welder ( No, Yes: submerged arc x \_\_\_\_\_ heads, CO<sub>2</sub> x \_\_\_\_\_ heads )  
 - Small automatic fillet welding machine ( No, Yes: Name: \_\_\_\_\_ x \_\_\_\_\_ )  
 - Welding robot ( No, Yes: Portal x \_\_\_\_\_, Rectangular x \_\_\_\_\_, Articulated x \_\_\_\_\_ )

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(5) Painting equipment  
 - Plate shot blasting/primer coating machine ( No, Yes: Max. Width \_\_\_\_\_ m, Length \_\_\_\_\_ m )  
 - Section bar shot blasting/primer coating machine ( No, Yes: Max. Length \_\_\_\_\_ m )  
 - Special coating factory ( No, Yes: \_\_\_\_\_ m x \_\_\_\_\_ m x \_\_\_\_\_ sections )

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(6) Vertical automatic welding machine ( No, Yes: EG x \_\_\_\_\_, SEG x \_\_\_\_\_, ES x \_\_\_\_\_ )  
 EG: Electrogas SEG: Simplified Electrogas ES: Electroslag

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(7) Other main fabrication facilities

### 3 Shipyard Control of Qualified Welders

(1) Normal steel

		<i>Certification</i>	<i>Traceability</i>	<i>Supervision</i>	<i>Maintenance of Qualification</i>
Shipyard workers	Confirm system in place				
Subcontracted workers	Confirm system in place				

### 4 Feature of Construction Procedure

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

## 5 Quality Control System

(Refer to Quality Manual, if available.)

<i>Item and Description</i>	<i>Result</i>	<i>Remarks</i>
(1) Existence of the organization chart including the departments of design, purchasing, manufacturing and quality assurance - Are the function, 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 checklist?	_____ 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 happened be checked?		
(5) Condition at the time of the surveys in the presence of class 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 Safety and Health

<i>Item and Description</i>	<i>Result</i>	<i>Remarks</i>
(1) Are conditions of scaffolding, nets, safety belt, lighting and ventilation good?		
(2) Is sufficient attention paid for radiographic examination and operation of cherry picker?		

Note:

## 7 Control System of Nondestructive Examination (NDE)

<i>Item and Description</i>	<i>Result</i>	<i>Remarks</i>
(1) Number of NDE supervisors in shipyard (including persons responsible for judging results)	_____ persons	
(2) Dependence on subcontracted NDE work - Number of shipyard employees - Number of subcontractors	about _____ (%) about _____ (%)	
(3) NDE subcontractor company's name and official technical qualifications	Name _____ (approved by) _____ Name _____ (approved by) _____	
(4) Grade and number of NDE employees with official technical qualifications in shipyard - Specialized in radiography - Specialized in ultrasonic - Specialized in surface detection	____ Grade ____ persons ____ Grade ____ persons ____ Grade ____ persons	
(5) If nondestructive examinations are subcontracted, the grade and number of officially qualified persons - Specialized in radiography - Specialized in ultrasonic -Specialized in surface detection	____ Grade ____ persons ____ Grade ____ persons ____ Grade ____ persons	
(6) Nondestructive examination equipment (in-house) - Number of radiographic equipment - Number of ultrasonic equipment	_____ _____	

Note: Even if all works are subcontracted, it is recommendable to attach the qualified person(s) who can verify the works.

## 8 Quality Control on Production Line

### 8.1 Preventive Measures for Misuse of Materials

<i>Item and Description</i>	<i>Result</i>	<i>Remarks</i>
(1) Job title of supervisor and person in charge of collating ordered steel and received steel, and checking of mill sheet	Title of supervisor: _____  Title 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 inscribing "high-tensile steel" on the surface of the high tensile steel and special indication for steel for low temperature applications?		
(4) Are there 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 the case of high-tensile steel, are there means for identifying different grades?
- In the case of (3) and (4) above, are the materials approved by other classes controlled similarly?

### 8.2 Shot Blasting/Primer Coating

<i>Item and Description</i>	<i>Result</i>	<i>Remarks</i>
(1) Existence of surface preparation standards		
(2) Existence of coating thickness control standards - Existence of thickness measurement records		

*Note:*

- The standard is to include the description related traceability after shot blasting and primer coating.
- Reference is to be made to IMO Performance Standard for Protective Coatings (PSPC) and its relevant ABS *Guide for Classification Notations Coating Performance Standards (CPS)*

**8.3 Marking and Cutting (Assembly Work)**

<i>Item and Description</i>	<i>Result</i>	<i>Remarks</i>
(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 the 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?		

*Notes:*

- In the case of (2) and (3) above, check items are to include confirmation of edge preparations free from piercing hole.
- NC for section bars is also to be in accordance with the above.

**8.4 Bending and Strain Free**

<i>Item and Description</i>	<i>Result</i>	<i>Remarks</i>
(1) Existence of standards for maximum heating temperatures during water cooling and at the time of bending and distortion removal of steel 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**

<i>Item and Description</i>	<i>Result</i>	<i>Remarks</i>
(1) Are all welding procedures applied to the vessels approved by the Bureau or other IACS members?		

*Note:*

**8.6 Treatment of Serious Non-conformities**

<i>Item and Description</i>	<i>Result</i>	<i>Remarks</i>
(1) Are repair plans submitted to the Bureau when serious non-conformities happened?		
(2) Were the NDE (RT/UT) plans submitted at appropriate timing?		
(3) Was the extent of tests extended considering the results of the test?		

*Note:*

**8.7 Hydrostatic and Watertight Tests**

<i>Item and Description</i>	<i>Result</i>	<i>Remarks</i>
(1) Is the test plan submitted to the Bureau?		
(2) Are vacuum tests applied to?		
(3) Are local air injection tests during sub-assembly works applied to?		
(4) If (2) or (3) above is applied to, are the test procedures approved by the Bureau?		

*Note:*