Guide for

# Hull Survey for New Construction


July 2011

GUIDE FOR

# 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.iacs.org.uk.

*(1 July 2010)* The July 2010 update to this Guide incorporates the latest requirements of IACS UI SC234, UI LL76, and UI MPC96, regarding initial statutory surveys at new construction. Updates to IACS UR Z23 are also incorporated.

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.

GUIDE FOR

# HULL SURVEY FOR NEW CONSTRUCTION

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SECTION 1

# Hull Survey for New Construction

## 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 *(1 July 2010)*

*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 1/10.2 TABLE 1 continue to conform to classification and statutory requirements.

### 2.3.2 Review *(1 July 2010)*

*Review* is the act of examining documents in order to determine traceability and identification and to confirm that processes continue to conform to 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 Section 1-2-2 of the ABS *Rules for Conditions of Classification - Light and High-Speed Craft (Part 1)*

***iii)*** Mobile Offshore Drilling Units as defined in Section 1-1-3 of the ABS *Rules for Conditions of Classification - Offshore Units and Structures (Part1)*

## 3.2 Statutory Items *(1 July 2010)*

This Guide covers all statutory items relevant to the hull structure and coating (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 1/3.3 above

***ii)*** Equipment forming part of the watertight and weathertight integrity of the vessel.

### 3.5 Locations of Construction *(1 July 2010)*

This Guide applies to the hull structures constructed and coatings applied 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 *(1 July 2010)*

The Surveyors are to confirm through patrol, review and witness as defined in 1/2.3, 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 Conditions of Classification*.)

## 5 Survey of the Hull Structure

### 5.1 Items to be Surveyed *(1 July 2010)*

1/10.2 TABLE 1 provides a list of surveyable items for the hull structure and coating 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 1/5 of ABS *Guide for Nondesructive Inspection* )

*vi)* Documents to be inserted into the ship construction file. Refer to 1/10 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*

***Note:***

* Reference is made to Appendix A2, "Shipyard Review Record", as an example.

*(1 July 2010)* ABS is to familiarize itself with the yard's production facilities, management processes, and safety procedures for consideration in complying with the requirements of 1/10.2 TABLE 1 prior to any steelwork or construction taking place in the following circumstances:

***i)*** Where ABS has no recent experience at 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

## 7 Newbuilding Survey Planning

### 7.1 Kick-off Meeting *(1 July 2010)*

Prior to commencement of surveys for any newbuilding project, ABS is to discuss with the shipbuilder at a kick-off meeting the items listed in 1/10.2 TABLE 1. The purpose of the meeting is to agree how the list of specific activities shown in 1/10.2 TABLE 1 is to be addressed.

The meeting is to take into account the shipbuilder's construction facilities and vessel type including the list of proposed subcontractors. 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 ABS 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 ABS 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 *(1 July 2010)*

The shipyard shall be requested to advise of any changes to the activities agreed to at the kick off meeting and these are to be documented. (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 *(1 July 2011)*

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 the latest version

of IACS Recommendation No. 47 "Shipbuilding and Repair Quality Standard", or a recognized fabrication standard which has been accepted by ABS prior to the commencement of fabrication/construction. The work is to be carried out in accordance with the Rules and under ABS survey.

### 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 *(1 July 2010)*

In the event of series ship production consideration may be given to waiving the requirement for a kickoff meeting for the second and subsequent ships provided any changes are documented as required in 1/7.1.

## 8 Examination and Test Plan for Newbuilding Activities *(1 July 2010)*

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 review before the relevant survey activity commences.

## 9 Proof of the Consistency of Surveys

### 9.1 Compliance with Newbuilding Survey Planning

ABS 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 1/9.1 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 1/10.2 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 Marine 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 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 Marine Vessels*]

***vii)*** Corrosion protection specifications [3-2-18/5 of the ABS *Rules for Building and Classing Marine Vessels*]

***viii)*** Details for the in-water survey, if applicable, information for divers, clearances measurements instructions, etc., tank and compartment boundaries [Appendix 7-A1-1 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 Marine 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 7-9-27 of the ABS *Rules for Survey After Construction (Part 7)*]

## TABLE 1
## *(1 July 2011)*

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide[1] [IACS Reference [2, 3]]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| Shipbuilding Quality Control Function | | | | | | | | | |
| 1 | Welding | | | | | | | | |
| 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 *Rules for Materials and Welding (Part 2)* [UR W17] | | Consumable specification and approval status | Not required | .1 Identify consumables against approved list | |
| | | | | | | | | .2 Verify temporary and permanent storage facilities | e.g., kept dry, covered, and where applicable, heated |
| | | | | | | | | .3 Verify traceability | e.g., random batch number checking |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide[1] [IACS Reference [2, 3]]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| 1.2 | Welder Qualification | Qualified welders | Review of welder certification and patrol | [Recommend-ation 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 | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide[1] [IACS Reference [2, 3]]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| 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. | |
| | | The Bureau witnesses all new weld procedure qualification tests carried out in the shipyard whenever the Bureau is surveying in the shipyard | | | | | | .2 Verify procedures are available at relevant workstations | |
| | | | | | | | | .3 Verify weld procedures are available for the Surveyor's reference | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide[1] [IACS Reference [2, 3]]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| 1.3a | Welding Equipment | 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 | |
| | | | | | | | | .3 Verify calibration carried out in accordance with manufacturer's recommend-ations | |
| | | | | | | | | .4 Verify calibration in accordance with maintenance schedule | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide(1) [IACS Reference (2, 3)]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| 1.3b | Welding Environment | Satisfactory environment | Patrol | [Recommend-ation 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 | |
| 1.3c | Welding Supervision | Sufficient number of skilled supervisors | Patrol | Pub # 14: *Guide for Nondestructive Inspection* [Recommend-ation 20 and 47] | | | | .1 Verify supervision is effective | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide[1] [IACS Reference [2, 3]]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| 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: *Guide for Nondestructive Inspection* [Recommend-ation 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 | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide(1) [IACS Reference (2, 3)]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | .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: *Guide for Nondestructive Inspection* [Recommend-ation 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 | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide(1) [IACS Reference (2, 3)]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | .4 Verify operators suitably qualified particularly where sub-contractors have been employed | |
| | | | | | | | | .5 Verify that records have been completed and in accordance with recognized standards, e.g. IQI and sensitivity recorded | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide[1] [IACS Reference [2, 3]]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | .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 | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide(1) [IACS Reference (2, 3)]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS 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 | [Recommend-ation 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 | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide(1) [IACS Reference (2, 3)]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | .6 Verify that steel grades can be identified | |
| | | | | | | | | .7 Verify machinery adjusted to maintain within IACS or manufacturer's recommend-ations | |
| | | | | | | | | .8 Verify accuracy of marking and cutting | |
| | | | | | | | | .9 Verify storage of piece parts. | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide(1) [IACS Reference (2, 3)]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| 2.2 | Straightening | Approval of straightening methods/ procedures against deformation | Patrol and review | [Recommend-ation 47] | | Recognized standards, approved procedures | Not required | .1 Verify that straightening processes are approved for the grade and type of steel, e.g., tmcp, z-plate. | |
| | | | | | | | | 2. Verify that plates and sections are within recognized tolerances | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide(1) [IACS Reference (2, 3)]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| 2.3 | Forming | Maintain material properties. Acceptance of forming method against unproper deformations | Patrol | [Recommend-ation 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 | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide(1) [IACS Reference (2, 3)]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| 2.4 | Conformity with Alignment/Fit Up/Gap Criteria | Check alignment/ fit up/gap against reference standards | Patrol | [Recommend-ation 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 | |
| | | | | | | | | .3 Verify remedial procedures are in place to compensate for wide gaps and alignment deviations | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide[1] [IACS Reference [2, 3]]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| 2.5 | Conformity for Critical Areas with Alignment/ Fit Up or Weld Configuration | Check alignment/ fit up/gap against approved drawings | Patrol and review | [Recommend-ation 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 | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide[1] [IACS Reference [2, 3]]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | .4 Verify remedial procedures are in place to compensate for wide gaps and alignment deviations | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide[1] [IACS Reference [2, 3]]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| 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 | [Recommend-ation 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 | |
| | | | | | | | | .5 Verify that fit ups are within recognized tolerances | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide(1) [IACS Reference (2, 3)]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | .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 | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide(1) [IACS Reference (2, 3)]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| 4 | Remedial Work and Alteration | Welding, check against deformation, alignment | Review records and witness | [Recommend-ation 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 | |
| | | | | | | | | .2 Verify that all deviations brought to the attention of the Bureau by the shipbuilder are acceptable | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide[1] [IACS Reference [2, 3]]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| 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 *Rules for Building and Classing Marine Vessels* [UR S14] | Reg. II-1/11 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 and hydro-pneumatic testing is satisfactory | |
| | | | | | | | | .4 Verify that adequate records of the tank testing have been maintained | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide[1] [IACS Reference [2, 3]]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS 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 Marine Vessels* [UR S14] | Reg. II-1/11 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 that correct test pressures maintained for testing is satisfactory | |
| | | | | | | | | .3 Verify that adequate records of the tank testing have been maintained | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide[1] [IACS Reference [2, 3]]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| 7 | *(1 July 2010)* 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 and manufacturer's documentation | 3-2-18/5 of the *Rules for Building and Classing Marine 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 | .1 Verify that applied coatings are approved and review records of application | |
| | | | | | | | | .2 Verify that adequate records have been maintained and copied to the ship file | |
| | *(1 July 2010)* Application of Antifouling Systems | | Review | | AFS Convention | Painting Specification | Paint Specification and Mfg. Declaration | .3 Verify that adequate records have been maintained and copied to the ship construction file. | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide(1) [IACS Reference (2, 3)]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| 7.1 *(1 July 2010)* | Application of Protective Coatings for Dedicated Seawater Ballast Tanks in all Types of Ships and Double-Side Skin Spaces of Bulk Carriers subject to PSPC | Monitor implementation of the coating inspection requirements. | Patrolling and Review | UI SC223, PR34 | Reg. II-1/3-2 of SOLAS as amended; | Coating Standard | Coating Technical File | .1 Verify that applied coatings are approved and review records of application in accordance with Chapter 7 of Annex to MSC.215(82). | |
| 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 Marine 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 | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide[1] [IACS Reference [2, 3]]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| 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 Marine Vessels* [UR S14] | Reg. II-1/16 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 | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide[1] [IACS Reference [2, 3]]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| 8.3 | Rudders | Fitting | Witness | Section 3-7-1 of the *Rules for Building and Classing Marine 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 | |
| | | | | | | | | .4 Verify all fit up records including all clearances maintained and placed into ship construction file | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide(1) [IACS Reference (2, 3)]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| 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 *Rules for Materials and Welding (Part 2)* [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 | .1 Verify casting and forgings against material certificate | |
| | | | | | | | | .2 Verify that correct welding and fit up requirements specified in reference 1, 2.4 and 2.5 of this table have been adopted | |
| | | | | | | | | .3 Verify that material certificates are included in the ship construction file | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide(1) [IACS Reference (2, 3)]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| | Appendages | | | | | | | .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-1/16-1 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 | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide(1) [IACS Reference (2, 3)]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | .2 Verify compliance with Load Line Convention 1966 as amended (i.e., all fittings in accordance with the record of freeboard assignment) | |
| | | | | 4-6-4/9.3.7 of the *Rules for Building and Classing Marine Vessels* [UR P3] | | | | .3 Verify air pipes, vents etc., closing device are approved type | |
| | | | | | | | | .4 Verify material certificates for overboard discharges where applicable | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide[1] [IACS Reference [2, 3]]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | .5 Verify record of freeboard assignment and all material certificates included in the ship construction file | |
| | Freeboard Marks and Draft Marks | Within allowable tolerances and in accordance with the freeboard assignment | Witness | Appendix 1-1-A1 of the *Rules for Conditions of Classification (Part 1)* [UI-LL4] | Reg. 4- 5- 6- 7 and 8 of ILLC '66 | | Details required | .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 | |

| *Reference* | *Shipbuilding Function* | *Survey Requirements for Classification* | *Survey Method Required for Classification* | *ABS Rules/ Guide(1) [IACS Reference (2, 3)]* | *Statutory Requirements and Relevant Reference* | *Documentation Available to Classification Surveyor during Construction* | *Documentation for Ship Construction File* | *Specific Activities* | *ABS Proposals for the Project* |
|---|---|---|---|---|---|---|---|---|---|
| | Principal Dimensions | Within allowable tolerances | Review and witness | [Recommend-ation 47] | | | Details required | .8 Verify principal dimensions in accordance with recognized standard | |
| | | | | | | | | .9 Verify dimensions included in ship construction file | |
| | Safety Construction Certification | No outstanding imperfections or defects | Witness | | Reg. 10 of SOLAS as amended | | | .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.

**2** IACS referenced documents are available from www.iacs.org.uk.

**3** IACS Recommendations are not mandatory requirements.

# 11 Initial Statutory Surveys at New Construction *(1 July 2010)*

## 11.1 Scope*

The scope of this section is to define the requirements for the initial statutory surveys at new construction as detailed in IMO Resolution A.997(25), which are not addressed in UR Z23 for the following as applicable:

***i)*** International Load Line Certificate (1966)

***ii)*** Cargo Ship Safety Equipment Certificate

***iii)*** International Oil Pollution Prevention Certificate

This section only covers the survey activities required and does not cover the technical interpretations of the statutory requirements or approval of plans, designs and manuals required by the Regulations.

This section does not cover the requirements for type approval or certification at vendor's works and for which evidence of acceptance is to be provided as indicated in the survey tables.

## 11.2 Definitions Used in the Survey Tables

*Survey Item:* A description of the survey item considered

*Origin of the Requirement:* Applicable Statutory Regulation

*Approved Drawings/Documentation:* Indicates whether approved drawings/documentation is required

*Conformity Verification:* This verification may consist of an examination of the certificate, a check of the marks or, for products which require type approval, to verify conformity of the product with the approved prototype or certification with Flag Administration requirements

*Survey During Construction or Installation:* Indicates whether the witness by surveyor of construction and installation on board is required

*Tightness Testing:* Indicates whether tightness testing is required to be witnessed by the surveyor for survey item

*Survey After Construction or Installation:* Indicates whether the survey item is examined by the Surveyor after completion of its construction and installation on board

*Function Test:* Indicates whether a survey item or system is to be subjected to a functioning and/or performance test or trial in the presence of a Surveyor after installation on board

*Onboard Verification of Documentation:* Indicates whether the required documentation is to be verified on board by the surveyor

*Series of Vessels:* As defined in 1-1-4/3.3 of the ABS *Rules for Conditions of Classification (Part 1)*

***Note:***

* This section is to be uniformly implemented on ships contracted for construction from 1st July 2010.

## 11.3 Application

This applies to all vessels for which the statutory certificates listed in 1/11.1 are to be issued at new construction by ABS.

## 11.4 Interpretation of the Survey Requirements

Interpretation of the survey requirements is given in Appendix A1

- A1/1 TABLE 1 – Safety Equipment
- A1/1 TABLE 2 – Load Line
- A1/1 TABLE 3 – MARPOL Annex 1

Specific flag administration requirements, if any, supersede the requirements contained in this section.

## 11.5 Qualification and Monitoring of Personnel

The surveys required by this section shall be carried out by exclusive ABS surveyors. 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.

## 11.6 Inspection and test plan for new building activities

The shipbuilder is to provide inspection and test plans for the items which are required to be surveyed and/or tested prior to the commencement of the surveys and/or test.

## 11.7 Product and Type Approval Certificates

The shipbuilder is to provide product and type approval certificates for the applicable items listed in Appendix A1 to be placed onboard.

## 11.8 Proof of the Consistency of Surveys

ABS 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 this section.

APPENDIX 1

# Survey Tables for Initial Statutory Surveys at New Construction *(1 July 2010)*

## 1 Description

| | | |
|---|---|---|
| COLUMN 1 | A.997(25) Requirements | |
| COLUMN 2 | Survey Item | A description of the survey item considered |
| COLUMN 3 | Origin of the Requirement | Applicable Statutory Regulation |
| COLUMN 4 | Correspondence with Approved Drawings/Documentation | Indicates whether approved drawings/documentation is required |
| COLUMN 5 | Conformity Verification | This verification may consist of an examination of the certificate, a check of the marks or, for type approved products, to verify conformity of the product with the approved prototype or certification with National Requirements |
| COLUMN 6 | Survey during construction or installation | Indicates whether the witness by surveyor of fabrication and installation on board is required |
| COLUMN 7 | Tightness Testing | Indicates whether tightness testing is required to be witnessed by the surveyor for survey item |
| COLUMN 8 | Survey after construction or installation | Indicates whether the survey item is examined by the Surveyor after completion of its installation on board and/or |
| COLUMN 9 | Function Test | Indicates whether a system is to be subjected to a functioning and/or performance test or trial in the presence of a Surveyor after installation on board |
| COLUMN 10 | Onboard Verification of documentation | Indicates whether the required documentation is to be verified on board by the surveyor |

## TABLE 1
## Safety Equipment *(1 July 2010)*

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Inspections During Installation* | *Inspection After Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (EI) 1.1.3.1 | Examining the fire pumps and fire main and the disposition of the hydrants, hoses and nozzles and the international shore connection and checking that each fire pump, including the emergency fire pump, can be operated separately so that two jets of water are produced simultaneously from different hydrants at any part of the ship whilst the required pressure is maintained in the fire main | Fire Pumps | (SOLAS 74/00 reg. II-2/10.2 FSSC chs.2 and 12)(SOLAS 74/88 regs. II-2/4 and 19) | X | X | | X | | X |
| | | Fire Mains | | X | | | | | X |
| | | Hydrants | | X | | | X | | |
| | | Hoses and Nozzles | | X | X | | X | | |
| | | International Shore Connection | | X | | | X | | |
| (EI) 1.1.3.2 | Examining the provision and disposition of the fire extinguishers | Fire Extinguishers | (SOLAS 74/00 reg. II-2/10.3 FSSC ch.4) (SOLAS 74/88 reg. II-2/6) | X | X | | X | | |
| (EI) 1.1.3.3 | Examining the fire fighters' outfits and emergency escape breathing devices - EEBDs | Fire Fighters' Outfits | (SOLAS 74/00 regs. II-2/10.10, 13.3.4 and 13.4.3 FSSC ch.3) (SOLAS 74/88 reg. II-2/17) | X | X | | X | | |
| | | EEBDs - Emergency Escape Breathing Devices | | X | X | | X | | |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Inspections During Installation* | *Inspection After Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (EI) 1.1.3.4 | Checking the operational readiness and maintenance of fire-fighting systems | Operational Readiness and Maintenance of Fire-fighting System | (SOLAS 74/00 reg. II2/14) (SOLAS 74/88 reg.II-2/21) | | | | | X | |
| (EI) 1.1.3.5 | Examining the fixed fire-fighting system for the machinery, cargo, vehicle, special category and ro-ro spaces, as appropriate, and confirming that the installation tests have been satisfactorily completed and that its means of operation are clearly marked | Fixed Fire fighting systems | (SOLAS 74/00 regs. II-2/10.4, 10.5, 10.7 and 20.6.1, FSSC chs.5 to 7) (SOLAS 74/88 regs.II-2/7 and 53) | X | X | | X | X | X |
| (EI) 1.1.3.6 | Examining the fire-extinguishing and special arrangements in the machinery spaces and confirming, as far as practicable and as appropriate, the operation of the remote means of control provided for the opening and closing of the skylights, the release of smoke, the closure of the funnel and ventilation openings, the closure of power operated and other doors, the stopping of ventilation and boiler forced and induced draft fans and the stopping of oil fuel and other pumps that discharge flammable liquids | Remote means of opening and closing of Skylights | (SOLAS 74/00 regs. II-2/5.2, 8.3, 9.5 and 10.5) (SOLAS 74/88 regs. II-2/7 and 11) | X | | | | | X |
| | | Fire Dampers and Funnel opening | | X | X | | | | X |
| | | Closure of power operated and other doors | | X | X | | | | X |
| | | Remote stops for ventilation and boiler fans | | X | | | | | X |
| | | Remote stops for FO pumps | | X | | | | | X |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Inspections During Installation* | *Inspection After Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (EI) 1.1.3.7 | Examining any fire detection and alarm system and any automatic sprinkler, fire detection and fire alarm system and confirming that installation tests have been satisfactorily completed | Fixed Fire Detection System | (SOLAS 74/00 regs. II-2/7.2, 7.3, 7.4, 7.5.1, 7.5.5, 19.3.3 and 20.4; FSSC ch.9) (SOLAS 74/88 regs. II-2/11, 13, 14, 53 and 54) | X | X | | X | | X |
| | | Fire Alarm System | | X | X | | X | | X |
| | | Automatic Sprinkler | | X | X | | X | | X |
| (EI) 1.1.3.8 | Examining the fire-extinguishing system for spaces containing paint and/or flammable liquids and deep-fat cooking equipment in accommodation and service spaces and confirming that installation tests have been satisfactorily completed and that its means of operation are clearly marked | Spaces containing Paint and/or flammable liquids: Fire Extinguishing System | (SOLAS 74/00 regs. II-2/10.6.3 and 10.6.4; FSSC chs.4 to 7) (SOLAS 74/88 reg. II-2/18.7) | X | | | X | | |
| | | Deep-Fat Cooking Equipment in Accommodation: Fire Extinguishing System | | X | | | X | | |
| (EI) 1.1.3.9 | Examining the arrangements for remote closing of valves for oil fuel, lubricating oil and other flammable oils and confirming, as far as practicable and as appropriate, the operation of the remote means of closing the valves on the tanks that contain oil fuel, lubricating oil and other flammable oils | Remote Closing Valves for: Oil Fuel | (SOLAS 74/00 reg. II-2/4.2.2.3.4) (SOLAS 74/88 reg. II-2/15.2.5) | X | | | | | X |
| | | Remote Closing Valves for: Lubricating Oil | | X | | | | | X |
| | | Remote Closing Valves for: Other Flammable Oils | | X | | | | | X |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Inspections During Installation* | *Inspection After Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (EI) 1.1.3.10 | Examining the fire protection arrangements in cargo, vehicle and ro-ro spaces and confirming, as far as practicable and as appropriate, the operation of the means for closing the various openings | Fire Detection and Alarm System | (SOLAS 74/00 regs. II-2/10.7, 20.2.1, 20.3 and 20.6.2) (SOLAS 74/88 reg. II-2/53) | X | X | | X | | X |
| | | Fixed Fire Extinguishing System | | X | | | | | X |
| | | Structural Fire Protection | | X | X | | X | | |
| | | Precaution against ignition of flammable vapours in closed vehicle spaces, closed ro-ro spaces and special category spaces | | X | | | X | | |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Inspections During Installation* | *Inspection After Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (EI) 1.1.3.11 | Examining, when appropriate, the special arrangements for carrying dangerous goods, including checking the electrical equipment and wiring, the ventilation, the provision of protective clothing and portable appliances and the testing of the water supply, bilge pumping and any water spray system | Water Supply | (SOLAS 74/00 reg. II-2/19 (except 19.3.8, 19.3.10 and 19.4) FSSC chs.9 and 10) (SOLAS 74/88 reg. II-2/54) | X | | | | | X |
| | | Sources of Ignition | | X | X | | X | | |
| | | Detection System | | X | X | | | | X |
| | | Ventilation | | X | | | X | | |
| | | Bilge system | | X | | | | | X |
| | | Personnel Protection | | X | X | | X | | |
| | | Fire Extinguishers | | X | X | | X | | |
| | | Insulation of Machinery space boundaries | | X | X | | X | | |
| | | Water Spray System | | X | X | X | X | | X |
| (EI) 1.1.3.12 | Checking the provision and disposition of the survival craft, where applicable, marine evacuation systems and rescue boats | Survival Craft Provision and Disposition | (SOLAS 74/88 regs. III/11 to 16 and 31; LSAC section 6.2) | X | X | | X | | |
| | | Rescue Boat Provision and Disposition | | X | X | | X | | |
| | | Marine Evacuation Systems Provision and Disposition | | X | X | | X | | |
| (EI) 1.1.3.13 | Deployment of 50% of the MES after installation | Deployment of Marine Evacuation Systems | (LSAC paragraph 6.2.2.2) | | | | | | X |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Inspections During Installation* | *Inspection After Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (EI) 1.1.3.14 | Examining each survival craft, including its equipment | Survival Craft Design | (SOLAS 74/88 reg. III/31; LSAC sections 2.5, 3.1 to 3.3 and 4.1 to 4.9) | | X | | X | | X |
| | | Survival Craft Engine | | | X | | | | |
| | | Survival Craft Equipment | | | X | | X | | |
| (EI) 1.1.3.15 | Examining the embarkation arrangements for each survival craft and the testing of each launching appliance, including overload tests, tests to establish the lowering speed and the lowering of each survival craft to the water with the ship at its lightest sea-going draught, and, where applicable, launching underway at 5 knots, checking the recovery of each lifeboat | Survival Craft Launching and Recovery appliances | (SOLAS 74/00 regs. III/11, 12, 13, 16, 31 and 33; LSAC section 6.1) | | X | | X | | X |
| | | Survival Craft Embarkation Arrangements | | | X | | X | | X |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Inspections During Installation* | *Inspection After Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (EI) 1.1.3.16 | Examining the embarkation arrangements for each marine evacuation device, where applicable, and the launching arrangements, including inspection for lack of side shell opening between the embarkation station and waterline, review of distance to the propeller and other life-saving appliances and ensuring that the stowed position is protected from heavy weather damage, as much as practicable | MES Launching and Recovery appliances | (SOLAS 74/00 reg. III/15; LSAC section 6.2) | X | X | | X | | X |
| | | MES Embarkation Arrangements | | X | | | X | | |
| (EI) 1.1.3.17 | Examining each rescue boat, including its equipment | Rescue Boat Design | (SOLAS 74/88 reg. III/31; LSAC sections 2.5, 5.1 and 6.1) | | X | | X | | |
| | | Rescue Boat Engine | | | X | | X | | X |
| | | Rescue Boat Equipment | | | X | | X | | |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Inspections During Installation* | *Inspection After Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (EI) 1.1.3.18 | Examining the embarkation and recovery arrangements for each rescue boat and testing each launching and recovery appliance, including overload tests, tests to establish the lowering and recovery speeds and ensuring that each rescue boat can be lowered to the water and recovered with the ship at its lightest sea-going draught, launching underway at 5 knots | Rescue Boat Launching and Recovery appliances and Arrangements | (SOLAS 74/88 regs. III/14, 17 and 31; LSAC section 6.1) | | X | | X | | X |
| (EI) 1.1.3.19 | Testing that the engine of the rescue boat(s) and of each lifeboat, when so fitted, start satisfactorily and operate both ahead and astern | Test of engines of lifeboat and Rescue Boat | (SOLAS 74/00 reg. III/19) | | | | | | X |
| (EI) 1.1.3.20 | Confirming that there are posters or signs in the vicinity of survival craft and their launching stations and containers, brackets, racks and other similar stowage locations for life-saving equipment | Posters or Signs | (SOLAS 74/88 regs. III/9 and 20) | | | | X | | |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Inspections During Installation* | *Inspection After Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (EI) 1.1.3.21 | Examining the provision and stowage and checking the operation of portable on board communications equipment, if provided, and two-way VHF radiotelephone apparatus and radar transponders | Two-way VHF radiotelephone apparatus | (SOLAS 74/88 regs. II-2/12.2 and III/6) | | X | | X | | X |
| | | Radar Transponders | | | X | | X | | X |
| (EI) 1.1.3.22 | Examining the provision and stowage of the distress flares and the line-throwing appliance, checking the provision and operation of fixed on board communications equipment, if provided, and testing the means of operation of the general alarm system | Distress Flares and Line-Throwing Appliances | (SOLAS 74/00 regs. III/6 and 18; LSAC sections 3.1, 7.1 and 7.2) | | X | | X | | X |
| | | On board Communications equipment | | | X | | X | | X |
| | | General Alarm System | | X | | | X | | X |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Inspections During Installation* | *Inspection After Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (EI) 1.1.3.23 | Examining the provision, disposition and stowage of the lifebuoys, including those fitted with self-igniting lights, self-activating smoke signals and buoyant lines, lifejackets, and immersion suits | Lifebuoys | (SOLAS 74/00 regs. III/7 and 32 to 37; LSAC sections 2.1, 2.5 and 3.3) | X | X | | X | | |
| | | Lifebuoys fitted with self-igniting lights | | X | X | | X | | |
| | | Lifebuoys fitted with self-activating smoke signals | | X | X | | X | | |
| | | Lifebuoys fitted with buoyant lines | | X | X | | X | | |
| | | Lifejackets | | X | X | | X | | |
| | | Immersion suits | | X | X | | X | | |
| | | Anti-exposure suits | | X | X | | X | | |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Inspections During Installation* | *Inspection After Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (EI) 1.1.3.24 | Checking the lighting of the muster and embarkation stations and the alleyways, stairways and exits giving access to the muster and embarkation stations, including when supplied from the emergency source of power | Muster and Embarkation Station Lighting | (SOLAS 74/88 regs. II-1/43 and III/11) | | | | X | | X |
| | | Alleyways and Stairways Lighting | | | | | X | | X |
| | | Exits giving Access to the Muster and Embarkation Stations Lighting | | | | | X | | X |
| | | Muster and Embarkation Station Lighting from Emergency Source of Power | | | | | X | | X |
| | | Alleyways and Stairways Lighting from Emergency Source of Power | | | | | X | | X |
| | | Exits giving Access to the Muster and Embarkation Stations Lighting from Emergency Source of Power | | | | | X | | X |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Inspections During Installation* | *Inspection After Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (EI) 1.1.3.25 | Examining the provision and positioning and checking the operation of, as appropriate, the navigation lights, shapes and sound signalling equipment | Navigation Lights<br>Shapes and Sounds signalling equipment | (International Regulations for Preventing Collisions at Sea (COLREG) in force, regs. 20 to 24, 27 to 30 and 33) | X | X | | X | | X |
| (EI) 1.1.3.26 | Checking that the minimum safe distances from the steering and standard magnetic compasses for all electrical equipment are complied with | Bridge | (SOLAS 74/00 regs. V/17 and 19) | | | | X | | |
| (EI) 1.1.3.27 | Checking the electromagnetic compatibility of electrical and electronic equipment on or in the vicinity of the bridge | Bridge | (SOLAS 74/00 reg. V/17) | | X | | X | | |
| (EI) 1.1.3.28 | Checking, as appropriate, the provision and operation of the following ship borne navigational systems equipment | | | | | | | | |
| (EI) 1.1.3.28.1 | The magnetic compass, including examining the sighting, movement, illumination and a pylorus or compass bearing device | Navigation Equipment: Magnetic Compass<br>Navigation Equipment: Pylorus or Compass Bearing Device | (SOLAS 74/00 reg. V/19) | | X | | X | | X |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Inspections During Installation* | *Inspection After Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (EI) 1.1.3.28.2 | Nautical charts and nautical publications necessary for the intended voyage are available and have been updated, and, where electronic systems are used, the electronic charts have been updated and the required back-up system is provided and updated | Navigation Equipment: ECDIS including back-up arrangements | (SOLAS 74/00 reg. V/19) | | X | | | | X |
| | | Nautical Charts and Nautical Publications | | | | | | X | |
| (EI) 1.1.3.28.3 | Global navigation satellite system receiver or terrestrial radio navigation system | Navigation Equipment: GNSS receiver | | | X | | | | X |
| (EI) 1.1.3.28.4 | Sound reception system, when bridge is totally enclosed | Navigation Equipment: Sound Reception System | | | X | | | | X |
| (EI) 1.1.3.28.5 | Means of communication to emergency steering position, where provided | Navigation Equipment: Means of communication with Emergency Steering Position | | X | X | | | | X |
| (EI) 1.1.3.28.6 | Spare magnetic compass | Navigation Equipment: Spare Magnetic Compass | | | X | | X | | |
| (EI) 1.1.3.28.7 | Daylight signalling lamp | Navigation Equipment: Daylight Signalling Lamp | | | X | | | | X |
| (EI) 1.1.3.28.8 | Echo sounding device | Navigation Equipment: Echo-sounding Device | | | X | | | | X |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Inspections During Installation* | *Inspection After Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (EI) 1.1.3.28.9 | Radar reflector | Navigation Equipment: Radar Reflector | | | X | | X | | |
| (EI) 1.1.3.28.10 | Radar(s), including examining the waveguide and cable runs for routeing and protection and the display unit confirming lighting, correct operation of all controls, and functions | Navigation Equipment: Radar Installations | | | X | | X | | X |
| (EI) 1.1.3.28.11 | Electronic plotting aid, automatic tracking aid or automatic radar plotting aid as appropriate, using the appropriate test facilities | Navigation Equipment: Electronic Plotting Aid | | | X | | | | X |
| | | Navigation Equipment: Automatic Tracking aid(s) or Automatic Radar Plotting Aid | | | X | | | | X |
| (EI) 1.1.3.28.12 | Speed and distance measuring devices "through the water"and "over the ground" | Navigation Equipment: Speed and Distance measuring Device | | | X | | | | X |
| (EI) 1.1.3.28.13 | Transmitting heading device providing heading information to radar, plotting aids and automatic identification system equipment and voyage data recorder | Navigation Equipment: Transmitting Heading Device | | | X | | | | X |
| (EI) 1.1.3.28.14 | Automatic identification system | Navigation Equipment: AIS Automatic Identification System | | | X | | | | X |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Inspections During Installation* | *Inspection After Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (EI) 1.1.3.28.15 | Gyrocompass, including examining the alignment of the master and all repeaters | Navigation Equipment: Gyro Compass | | X | X | | | | X |
| | | Navigation Equipment: Gyro Compass Repeaters | | X | X | | | | X |
| (EI) 1.1.3.28.16 | Rudder angle indicator | Navigation Equipment: Rudder Angle Indicator | | | X | | | | X |
| (EI) 1.1.3.28.17 | Propeller rate of revolution indicator | Navigation Equipment: Propeller rate of Revolution Indicator | | | X | | | | X |
| (EI) 1.1.3.28.18 | Propeller, operational mode, thrust, and pitch indicator | Navigation Equipment: Variable-Pitch propeller pitch and operational mode indicator | | | X | | | | X |
| (EI) 1.1.3.28.19 | Rate-of-turn indicator | Navigation Equipment: Rate of Turn Indicator | | | X | | | | X |
| (EI) 1.1.3.28.20 | Heading or track control system | Navigation Equipment: Heading or Track Control System | | | X | | | | X |
| (EI) 1.1.3.29 | Checking for the provision and operation of the voyage data recorder | VDR - Voyage Data Recorder | (SOLAS 74/00 reg. V/20) | | X | | | | X |
| (EI) 1.1.3.31 | Checking navigation bridge visibility | Navigation Bridge Visibility | (SOLAS 74/00 reg. V/22) | X | | | | | |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Inspections During Installation* | *Inspection After Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (EI) 1.1.3.32 | Checking the provision and, as appropriate, the deployment or operation of the pilot ladders and hoists/pilot transfer arrangements | Pilot ladders and hoists/pilot transfer arrangements | (SOLAS 74/00 reg. V/23) | X | X | | X | | X |
| (EI) 1.1.4.1 | Checking the deck foam system, including the supplies of foam concentrate, and testing that the minimum number of jets of water at the required pressure in the fire main is obtained (see (EI) 1.1.3.1) when the system is in operation | Deck Foam System: Foam Tanks | (SOLAS 74/00 reg. II-2/10.8; FSSC ch.15) (SOLAS 74/88 reg. II-2/61) | X | | | X | | |
| | | Deck Foam System: Monitors | | | X | | X | | X |
| | | Deck Foam System: Applicators | | | X | | X | | X |
| | | Deck Foam System: Foam Concentrates | | | X | | | | |
| (EI) 1.1.4.2 | Examining the inert gas system and in particular: | Cargo Tank Protection: Venting | (SOLAS 74/00 reg. II-2/4.5.5; FSSC ch.15) (SOLAS 74/88 reg. II-2/62) | X | X | | | | |
| (EI) 1.1.4.2.1 | Examining externally for any sign of gas or effluent leakage | Signs of Gas or Effluent Leakage | | | | | X | | X |
| (EI) 1.1.4.2.2 | Confirming the proper operation of both inert gas blowers | Inert Gas Blowers | | | | | | | X |
| (EI) 1.1.4.2.3 | Observing the operation of the scrubber-room ventilation system | Scrubber Room Ventilation | | | | | | | X |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Inspections During Installation* | *Inspection After Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (EI) 1.1.4.2.4 | Checking the deck water seal for automatic filling and draining | Deck Water Seal | | | | | X | | X |
| (EI) 1.1.4.2.5 | Examining the operation of all remotely operated or automatically controlled valves and, in particular, the flue gas isolating valves | Remote or Automatic Control Valves | | | | | | | X |
| | | Flue Gas Isolating Valve | | | | | X | | X |
| (EI) 1.1.4.2.6 | Observing a test of the interlocking feature of soot blowers | Interlocking of soot Blowers | | | | | | | X |
| (EI) 1.1.4.2.7 | Observing that the gas pressure-regulating valve automatically closes when the inert gas blowers are secured | Gas Pressure-Regulating Valve | | | | | | | X |
| (EI) 1.1.4.2.8 | Checking, as far as practicable, the following alarms and safety devices of the inert gas system using simulated conditions where necessary: | | | | | | | | X |
| (EI) 1.1.4.2.8.1 | High oxygen content of gas in the inert gas main | Simulation Test for Alarms and Safety Devices | | | | | | | X |
| (EI) 1.1.4.2.8.2 | Low gas pressure in the inert gas main | Simulation Test for Alarms and Safety Devices | | | | | | | X |
| (EI) 1.1.4.2.8.3 | Low pressure in the supply to the deck water seal | Simulation Test for Alarms and Safety Devices | | | | | | | X |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Inspections During Installation* | *Inspection After Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (EI) 1.1.4.2.8.4 | High temperature of gas in the inert gas main | Simulation Test for Alarms and Safety Devices | | | | | | | X |
| (EI) 1.1.4.2.8.5 | Low water pressure or low water-flow rate | Simulation Test for Alarms and Safety Devices | | | | | | | X |
| (EI) 1.1.4.2.8.6 | Accuracy of portable and fixed oxygen-measuring equipment by means of calibration gas | Simulation Test for Alarms and Safety Devices | | | X | | | | X |
| (EI) 1.1.4.2.8.7 | High water level in the scrubber | Simulation Test for Alarms and Safety Devices | | | | | | | X |
| (EI) 1.1.4.2.8.8 | Failure of the inert gas blowers | Simulation Test for Alarms and Safety Devices | | | | | | | X |
| (EI) 1.1.4.2.8.9 | Failure of the power supply to the automatic control system for the gas regulating valve and to the instrumentation for continuous indication and permanent recording of pressure and oxygen content in the inert gas main | Simulation Test for Alarms and Safety Devices | | | | | | | X |
| (EI) 1.1.4.2.8.10 | High pressure of gas in the inert gas main | Simulation Test for Alarms and Safety Devices | | | | | | | X |
| (EI) 1.1.4.2.9 | Checking the proper operation of the inert gas system on completion of the checks listed above | IGS Operating Procedure | | | | | | X | |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Inspections During Installation* | *Inspection After Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (EI) 1.1.4.3 | Examining the fixed fire-fighting system for the cargo pump room, confirming that the installation tests have been satisfactorily completed and that its means of operation are clearly marked and, when appropriate, checking the operation of the remote means for closing the various openings | Cargo Pump Room Fire Extinguishing | (SOLAS 74/00 reg. II-2/10.9; FSSC chs.5, 6, 7 and 8, as applicable) | X | | | X | | X |
| | | Cargo Pump Room Means of Closing Various Opening | | | | | X | | X |
| (EI) 1.1.4.4 | Examining the protection of the cargo pump-rooms and confirming that the installation tests have been satisfactorily completed | Temperature sensing devices | (SOLAS 74/00 reg. II-2/4.5.10) (SOLAS 74/88 regs. II-2/55 to 58) | X | X | | | | X |
| | | Interlock between lighting and ventilation | | | | | | | X |
| | | Monitoring of hydrocarbon gas | | | X | | | | X |
| | | Bilge monitoring | | | | | | | X |
| (EI) 1.1.5.1 | Confirming that the fire control plans are permanently exhibited or, alternatively, emergency booklets have been provided and that a duplicate of the plans or the emergency booklet are available in a prominently marked enclosure external to the ship's deckhouse | Required Documentations | (SOLAS 74/00 reg. II-2/15.2.4) (SOLAS 74/88 reg. II-2/20) | | | | | X | |
| (EI) 1.1.5.2 | Confirming that maintenance plans have been provided | Required Documentations | (SOLAS 74/00 regs. II-2/14.2.2 and 14.4) | | | | | X | |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Inspections During Installation* | *Inspection After Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (EI) 1.1.5.3 | Confirming that the training manuals and the fire safety operational booklets have been provided | Required Documentations | (SOLAS 74/00 regs. II-2/15.2.3, 16.2 and 16.3) | | | | | X | |
| (EI) 1.1.5.4 | Confirming, where appropriate, that the ship is provided with a document indicating compliance with the special requirement for carrying dangerous goods | Required Documentations | (SOLAS 74/00 reg. II-2/19.4) (SOLAS 74/88 reg. II-2/54(3)) | | | | | X | |
| (EI) 1.1.5.5 | Confirming that emergency instructions are available for each person on board, that the muster list is posted in conspicuous places and they are in a language understood by the persons on board | Required Documentations | (SOLAS 74/00 regs. III/8 and 37) | | | | | X | |
| (EI) 1.1.5.6 | Confirming that the training manual and training aids for the lifesaving appliances have been provided | Required Documentations | (SOLAS 74/00 reg. III/35) | | | | | X | |
| (EI) 1.1.5.7 | Confirming that the instructions for on board maintenance of the life-saving appliances have been provided | Required Documentations | (SOLAS 74/88 reg. III/36) | | | | | X | |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Inspections During Installation* | *Inspection After Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (EI) 1.1.5.8 | Confirming that a table or curve of residual deviations for the magnetic compass has been provided, and that a diagram of the radar installations shadow sectors is displayed | Required Documentations | (SOLAS 74/00 reg. V/19) | | | | | X | |
| (EI) 1.1.5.9 | Checking that operational and, where appropriate, maintenance manuals for all navigational equipment are provided | Required Documentations | (SOLAS 74/00 reg. V/16) | | | | | X | |
| (EI) 1.1.5.10 | Checking that the charts and nautical publications necessary for the intended voyage are available and have been updated | Required Documentations | (SOLAS 74/88 reg. V/27) | | | | | X | |
| (EI) 1.1.5.11 | Checking that the International Code of Signals and a copy of Volume III of the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual have been provided | Required Document | (SOLAS 74/00/02, reg. V/21) | | | | | X | |
| (EI) 1.1.5.12 | Checking that arrangements are provided to maintain records of navigational activities and daily reporting | Required Documents | (SOLAS 74/00/03, reg. V/28) | | | | | X | |
| (EI) 1.1.5.13 | Checking that the life-saving signals to be used by ships, aircraft or persons in distress are available | Required Documents | (SOLAS 74/00, reg. V/29) | | | | | X | |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Inspections During Installation* | *Inspection After Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (EI) 1.1.5.14 | Confirming that continuous synopsis record is provided | Required Documents | (SOLAS 74/02, reg. XI-1/5) | | | | | X | |
| (EI) 1.1.6.1 | Confirming, when appropriate, that the instruction manuals for the inert gas system have been provided | Required Documents | (FSSC ch.15 paragraph 2.4.4) (SOLAS 74/88, reg. II-2/62.21) | | | | | X | |

## TABLE 2
## Load Line *(1 July 2010)*

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Survey During Construction or Installation* | *Tightness Test* | *Survey After Construction or Installation* | *Function Test* | *On Board Verification of Documentation* |
|---|---|---|---|---|---|---|---|---|---|---|
| (LI) 1.1.2 | For the load line the survey during construction and after installation should consist of: | | | | | | | | | |
| (LI) 1.1.2.2 | Confirming that the deck line and load line mark are properly positioned | Positioning of Deck Line and Load Line Mark | (LLC 66/88 regs. 4 to 9) | X | | | | X | | |
| (LI) 1.1.2.3 | Witnessing the inclining experiment or lightweight survey | Inclining Experiment | (LLC 66/88/03 reg. 10) | X | | | | X | | |
| (LI) 1.1.2.4 | Examining the superstructure end bulkheads and the openings therein | Superstructure End Bulkheads | (LLC 66/88 regs. 11 and 12) | | | | | | | |
| | | Superstructure Openings | | X | X | | X | X | | |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Survey During Construction or Installation* | *Tightness Test* | *Survey After Construction or Installation* | *Function Test* | *On Board Verification of Documentation* |
|---|---|---|---|---|---|---|---|---|---|---|
| (LI) 1.1.2.5 | Examining the means of securing the weather tightness of cargo hatchways, other hatchways and other openings on the freeboard and superstructure decks | Freeboard Deck - Means of Securing the weather tightness of Cargo Hatchways | (LLC 66/88 regs. 13 to 18) | X | | X | X | | X | |
| | | Freeboard Deck - Means of Securing the weather tightness of Other Hatchways | | X | | | X | | X | |
| | | Freeboard Deck - Means of Securing the weather tightness of Other Openings | | X | | | X | | X | |
| | | Superstructure Deck - Means of Securing the weather tightness of Cargo Hatchways | | X | | X | X | | X | |
| | | Superstructure Deck - Means of Securing the weather tightness of Other Hatchways | | X | | | X | | X | |
| | | Superstructure Deck - Means of Securing the weather tightness of Other Openings | | X | | | X | | X | |
| (LI) 1.1.2.6 | Examining the ventilators and air pipes, including their coamings and closing appliances | Ventilators and air pipes including their coamings and closing appliances | (LLC 66/88 regs. 19 and 20) | X | X | | | X | | |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Survey During Construction or Installation* | *Tightness Test* | *Survey After Construction or Installation* | *Function Test* | *On Board Verification of Documentation* |
|---|---|---|---|---|---|---|---|---|---|---|
| (LI) 1.1.2.7 | Examining the watertight integrity of the closures to any openings in the ship's side below the freeboard deck | Closures to any openings in the ship's side below the freeboard deck | (LLC 66/88 reg. 21) | X | X | | X | X | X | |
| (LI) 1.1.2.8 | Examining the scuppers, inlets and discharges | Scuppers, Inlets and Discharger | (LLC 66/88 reg. 22) | X | X | | | X | | |
| (LI) 1.1.2.9 | Examining the garbage chutes | Garbage chute | (LLC 66/88/03, reg. 22-1) | X | | X | X | | | |
| (LI) 1.1.2.10 | Examining the spurling pipes and cable lockers | Spurling Pipe | (LLC 66/88/03, reg. 22-2) | X | | X | X | | | |
| | | Cable Locker | | X | | X | X | | | |
| (LI) 1.1.2.11 | Examining the side scuttles and deadlights | Side Scuttles and Deadlights | (LLC 66/88 reg. 23) | X | X | | X | X | | |
| (LI) 1.1.2.12 | Examining the bulwarks including the provision of freeing ports, special attention being given to any freeing ports fitted with shutters | Bulwarks | (LLC 66/88/03 reg. 24, 25) | X | | | | X | | |
| | | Freeing Ports | | X | | | | X | | |
| | | Freeing Ports fitted with shutters | | X | | | | X | X | |
| (LI) 1.1.2.13 | Examining the guardrails, gangways, walkways and other means provided for the protection of the crew and means for safe passage of crew | Guardrails | (LLC 66/88/03 reg. 25, 25-1) | X | | | | X | | |
| | | Gangways | | | | | | | | |
| | | Walkways | | | | | | | | |
| | | Other means | | | | | | | | |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Survey During Construction or Installation* | *Tightness Test* | *Survey After Construction or Installation* | *Function Test* | *On Board Verification of Documentation* |
|---|---|---|---|---|---|---|---|---|---|---|
| (LI) 1.1.2.14 | Special requirements for ships permitted to sail with type "A" or type "B-minus" freeboards | Machinery Casings | (LLC 66/88/03 reg. 26, 27) | X | | | X | X | | |
| | | Gangway and Access | | | | | | | | |
| | | Hatchways | | | | | | | | |
| | | Freeing arrangements | | | | | | | | |
| (LI) 1.1.2.15 | Checking, when applicable, of the fittings and appliances for timber deck cargoes | Uprights | (LLC 66/88 regs. 42 to 45) | X | | | | X | | X |
| | | Lashings | | X | | | | | | X |
| | | Stability | | X | | | | | | |
| | | Protection of Crew | | X | | | | X | | |
| (LI) 1.1.3.1 | Checking that the loading and ballasting information has been supplied to the master | Loading and Stability Manual | (LLC 66/88 reg. 10) | X | | | | | | X |

## TABLE 3
## MARPOL Annex 1 *(1 July 2010)*

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Survey During Construction or Installation* | *Survey After Construction or Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| **Requirements for All Ships** | | | | | | | | | |
| (OI) 1.1.3.1 | Confirming the satisfactory installation and operation of, as appropriate, oil filtering equipment and when appropriate the operation of the automatic means provided to stop the discharge of effluent and the satisfactory operation of the alarm - or other installation | oil filtering equipment Automatic Stopping Device Alarm | MARPOL 90/04 Annex I regs. 14 and 15 | X | X | | | X | X |
| (OI) 1.1.3.2 | Confirming, when applicable, that the oil content meter and its recording device are operable and that there is a sufficient supply of consumables for the recording device on board | Oil Content Meter | MARPOL 90/04 Annex I regs. 14 and 15 | | X | X | | | X |
| | | Recording Device | | | X | X | | | X |
| | | Consumables | | | | | | X | |
| (OI) 1.1.3.3 | testing, where fitted, the automatic stopping device required for discharges in Special Areas | Stopping Device | MARPOL 90/04 Annex I reg. 15 | | | | | | X |
| (OI) 1.1.3.4 | confirming the segregation of the oil fuel and water ballast system and the non-carriage of oil in forepeak tanks | Segregation of WB and Oil Carriage of Oil in FP Tank | MARPOL 90/04 Annex I reg. 16 | X | | X | | | |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Survey During Construction or Installation* | *Survey After Construction or Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (OI) 1.1.3.5 | Confirming that the oily residue (sludge) tank and its discharge arrangements are satisfactory and, when the size of the sludge tank is approved on the basis of such installations, confirming the satisfactory operation of homogenizers, sludge incinerators or other recognised means for the control of sludge | Oily residue (sludge) tank | MARPOL 90/04 Annex I reg. 12 | X | | | X | | |
| | | Discharge Arrangement | | X | | | X | | |
| | | Approved Sludge Tank's Size | | X | | | X | | |
| | | Incinerators/ Homogenisers | | X | X | | X | | X |
| (OI) 1.1.3.6 | Confirming the provision of the standard discharge connection | Standard Discharge Connection | MARPOL 90/04 Annex I reg. 13 | | | | X | | |
| (OI) 1.1.3.7 | Confirming oil fuel tank protection arrangements | Tank Arrangements | MARPOL 90/04 Annex I reg. 12A | X | | X | | | |
| **Additional Requirements for Oil Tankers** | | | | | | | | | |
| (OI) 1.1.4.1 | Confirming that the arrangements of slop tanks or cargo tanks designated as slop tanks and associated piping systems are satisfactory | Slop Tanks | MARPOL 90/04 Annex I regs. 29 and 34 | X | | | X | | |
| | | Cargo Tanks designated as slop tanks | | X | | | X | | |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Survey During Construction or Installation* | *Survey After Construction or Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (OI) 1.1.4.2 | Confirming the satisfactory installation and operation of the oil discharge monitoring and control system, including any audible or visual alarms, the automatic and manual means to stop the discharge of effluent, the starting interlock and the accuracy of the flow meter and the applicable resolution's requirements for installation survey | Discharge Monitoring and Control System | MARPOL 90/04 Annex I regs. 31 and 34 | X | X | | X | | X |
| | | Audible and Visual Alarms | | | | | X | | X |
| | | Automatic and manual means to stop discharge of Effluent | | | | | X | | X |
| | | Starting Interlock | | | | | X | | X |
| | | Accuracy Flow Meter | | | | | X | | X |
| (OI) 1.1.4.3 | Confirming that the oil content meter and its recording device are operable and that there is a sufficient supply of consumables for the recording device on board | Oil Content meter and recording device | MARPOL 90/04 Annex I regs. 31 and 34 | | X | | X | | X |
| (OI) 1.1.4.4 | Confirming that the approved oil/water interface detectors are on board and are operational | Oil/water interface detectors | MARPOL 90/04 Annex I reg. 32 | | X | | X | | |
| (OI) 1.1.4.5 | Confirming that the arrangements of pumps, pipes and valves are in accordance with the requirements for segregated ballast systems and that there are no cross-connections between the cargo and segregated ballast systems | Segregated Ballast Tanks: Pumps, Piping and Valves | MARPOL 90/04 Annex I reg. 18 | X | | | X | | |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Survey During Construction or Installation* | *Survey After Construction or Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (OI) 1.1.4.6 | Where a portable spool piece is provided for the emergency discharge of segregated ballast by connecting the segregated ballast system to a cargo pump, confirming that non-return valves are fitted on the segregated ballast connections and that the spool piece is mounted in a conspicuous position in the pump room with a permanent notice restricting its use | Segregated Ballast Tanks: Emergency Discharge | MARPOL 90/04 Annex I reg. 18 | X | | | X | | |
| (OI) 1.1.4.7 | Testing ballast pipelines that pass through cargo tanks and those cargo pipelines that pass through ballast tanks to ensure there is no cross contamination | Pipelines | MARPOL 90/04 Annex I reg. 18 | X | | | X | | |
| (OI) 1.1.4.8 | Confirming that the crude oil washing system is installed in accordance with the approved plans and, in particular: | | MARPOL 90/04 Annex I regs. 18 & 33 | X | | | | | |
| (OI) 1.1.4.8.1 | Examining crude oil washing piping, pumps, valves and deck mounted washing machines for signs of leakage and to check that all anchoring devices for crude oil washing piping are intact and secure; | Piping, Pumps Valves & Anchoring Devices | | | | | X | | |
| (OI) 1.1.4.8.2 | Carrying out pressure testing of the crude oil washing system to 1.5 times the working pressure; | Pressure Test | | | | | X | | |
| (OI) 1.1.4.8.3 | Confirming in those cases where drive units are not integral with the tank washing machines, that the number of operational drive units specified in the Manual are on board; | Operational Drive Units | | | | | X | | |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Survey During Construction or Installation* | *Survey After Construction or Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (OI) 1.1.4.8.4 | Checking that, when fitted, steam heaters for water washing can be properly isolated during crude oil washing operations, either by double shut-off valves or by clearly identifiable blanks; | Steam Heaters | | | | | X | | X |
| (OI) 1.1.4.8.5 | Checking that the prescribed means of communications between the deck watch keeper and the cargo control position is operational; | Means of Communication | | | | | X | | X |
| (OI) 1.1.4.8.6 | Confirming that an overpressure relief device (or other approved arrangement) is fitted to the pumps supplying the crude oil washing system; | Overpressure Relief Device | | | | | X | | X |
| (OI) 1.1.4.8.7 | Verifying that flexible hoses for supply of oil to the washing machines on combination carriers are of an approved type, are properly stored and are in good condition; | Flexible Hoses | | | X | | X | | |
| (OI) 1.1.4.9 | Verifying the effectiveness of the crude oil washing system and, in particular: | COW-Crude Oil Washing: Effectiveness | MARPOL 90/04 Annex I reg. 33 | | | | | | |
| (OI) 1.1.4.9.1 | Checking that the crude oil washing machines are operable and to observe the proper operation of the washing machines by means of the movement indicators and/or sound patterns or other approved methods; | | | | | | X | | X |
| (OI) 1.1.4.9.2 | Checking the effectiveness of the stripping system in appropriate cargo tanks by observing the monitoring equipment and by hand-dipping or other approved means; | | | | | | | | X |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Survey During Construction or Installation* | *Survey After Construction or Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (OI) 1.1.4.9.3 | Verifying by internal tank inspection after crude oil washing that the installation and operational procedures laid down in the Operations and Equipment Manual are satisfactory; | | | | | | | | X |
| (OI) 1.1.4.10 | Confirming that, where there is a crude oil washing system, an inert gas system has been installed and tested in accordance with the requirements of SOLAS 74/88/2000 (see (EI) 1.1.4.2 in Annex 1); | COW-Crude Oil Washing: General | | | X | | X | | X |
| (OI) 1.1.4.11 | Confirming, as appropriate, that the arrangements for the prevention of oil pollution in the event of collision or stranding are in accordance with the approved plans | Pollution due to Collision or Stranding | MARPOL 90/04 Annex I regs. 19 to 22 | X | | | X | | |
| (OI) 1.1.4.12 | Confirming that the piping systems associated with the discharge of dirty ballast water or oil-contaminated water are satisfactory | Pumping, Piping and Discharge | MARPOL 90/04 Annex I reg. 30 | X | | | X | | |
| (OI) 1.1.4.13 | Confirming that the observation and discharge control positions for visually observing the discharge of oil-contaminated water, including the testing of the communication system between the two positions are satisfactory | Observation and Discharge Control | MARPOL 90/04 Annex I reg. 30 | | | | X | | X |
| (OI) 1.1.4.14 | Confirming that the means of draining cargo pumps and cargo lines, including the provision of a stripping device and the connections for pumping to the slop or cargo tanks or ashore are satisfactory | Means of Draining and Stripping | MARPOL 90/04 Annex I reg. 30 | X | | | X | | |
| | | Means for pumping ashore/ slop/ cargo tanks | | X | | | X | | |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Survey During Construction or Installation* | *Survey After Construction or Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (OI) 1.1.4.16 | Confirming that closing devices installed in the cargo transfer system and cargo piping, as appropriate, are satisfactory | Closing arrangements | MARPOL 90/04 Annex I regs. 23 & 26 | | | | | | X |
| (OI) 1.1.4.17 | Confirming that the subdivision and stability arrangements, in addition to the provision of (OI) 1.1.4.16, to prevent progressive flooding are satisfactory | Stability Manual Tank Arrangement | MARPOL 90/04 Annex I regs. 23 & 26 | X | | | X | X | |
| (OI) 1.1.4.18 | Confirming the arrangements for cargo pump-room bottom protection (double bottom where required) | Tank Arrangements | MARPOL 90/04 Annex I reg. 22 | X | | | X | | |
| **Requirements for All Ships** | | | | | | | | | |
| (OI) 1.1.5.1 | Confirming that certificates for type approval for the oil filtering equipment and oil content meters are available | Type Approval Certificates | MARPOL 90/04 Annex I reg. 14 | | X | | | X | |
| (OI) 1.1.5.2 | Confirming that the Oil Record Book (Part I) has been provided | Oil Record Book | MARPOL 90/04 Annex I reg. 17 | | | | | X | |
| (OI) 1.1.5.3 | Confirming that the shipboard oil pollution emergency plan or, in the case of a chemical/product tanker, a shipboard marine pollution emergency plan has been provided | SOPEP/SMPEP | MARPOL 90/04 Annex I reg. 37 | X | | | | X | |
| (OI) 1.1.5.4 | Confirming, as appropriate, that the Operating and Maintenance manuals for the 15 ppm bilge separator and 15 ppm bilge alarm are available | Operations Manual | | | | | | X | |
| **Additional Requirements for Oil Tankers** | | | | | | | | | |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Survey During Construction or Installation* | *Survey After Construction or Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (OI) 1.1.6.2 | confirming that, if applicable, a Crude Oil Washing Operations and Equipment Manual has been provided | COW-Crude Oil Washing: Operations & Equipment Manual | MARPOL 90/04 Annex I reg. 35 | X | | | | X | |
| (OI) 1.1.6.3 | Confirming that an operations manual for the oil discharge monitoring and control system has been provided together with any other documentation requested by the applicable resolution | ODM Operation Manual | MARPOL 90/04 Annex I reg. 31 | X | | | | X | |
| (OI) 1.1.6.4 | Confirming that certificates for type approval for the oil content meters, oil discharge monitoring and control system and oil/water interface detectors are available | Type Approval Certificates | MARPOL 90/04 Annex I regs. 31 and 32 | | | | | X | |
| (OI) 1.1.6.5 | Confirming that an Oil Record Book (Part II) has been provided | Oil Record Book | MARPOL 90/04 Annex I reg. 36 | | | | | X | |
| (OI) 1.1.6.7 | Confirming that the information and data concerning the loading and damage stability has been provided | Loading and Damage Stability Data | MARPOL 90/04 Annex I reg. 28 | X | | | | X | |
| (OI) 1.1.6.8 | Confirming that the shipboard oil pollution emergency plan or in the case of a chemical/product tanker a shipboard marine pollution emergency plan has been provided | SOPEP/SMPEP | MARPOL 90/04 Annex I reg. 37 | X | | | | X | |

| | *A.997(25) Requirement* | *Survey Item* | *Origin of the Requirement* | *Correspondence with Approved Drawings/ Documentation* | *Conformity Verification* | *Survey During Construction or Installation* | *Survey After Construction or Installation* | *Onboard Verification of Documentation* | *Function Test* |
|---|---|---|---|---|---|---|---|---|---|
| (OI) 1.1.6.9 | Confirming, for oil tankers of 5,000 deadweight and above delivered on/after 1 February 2002, that the intact stability has been approved | Stability Information | MARPOL 90/04 Annex I reg. 27 | X | | | | X | |
| (OI) 1.1.6.10 | Confirming, for oil tankers of 5,000 deadweight and above, that arrangements are in place to provide prompt access to shore-based damage stability and residual structural strength computerized calculation programmes | Shore based emergency support arrangements | MARPOL 90/04 Annex I reg. 37.4 | | | | | X | |

APPENDIX 2

# 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-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)

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

*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 × No.)* |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |

| *Name* | *Length (m)* | *Width (m)* | *Depth (m)* | *Berthing Capacity (G/T)* | *Crane (Ton × No.)* |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

## 2.3 Main Fabrication and Erection Facilities

| | |
|---|---|
| (1) | Marking and cutting of steel plates (including internal members)<br>- Marking method ( Manual, Photo × _____, EPM × _____, NC × _____ Others _____ )<br>- NC cutting machine ( Gas × _____, Plasma × _____, Laser × _____ )<br>Control procedure of NC ( On-line, Other )<br>- Cutting equipment ( Edge planer × _____, Roll-shear × _____ ) |
| (2) | Marking and cutting of section bar<br>- Marking method ( Manual, NC ) - Marking of reference curved line ( Manual, NC )<br>- Cutting method ( Manual, NC ) - In case of NC ( Gas × _____, Plasma × _____ ) |
| (3) | One-side automatic welding machine ( Yes, No )<br>- Type of welding machine ( Flux Backing × _____, Flux and Copper Backing × _____, Other _____ )<br>- Existence of special surface plate for plate welding ( Yes, No ) |
| (4) | Fillet welding machine ( Gravity, Automatic ) Percentage of automatization, except gravity: about _____ %<br>- Line welder ( No, Yes: submerged arc × _____ heads, $CO_2$ × _____ heads )<br>- Small automatic fillet welding machine ( No, Yes: Name: _____ × _____ )<br>- Welding robot ( No, Yes: Portal × _____, Rectangular × _____, Articulated × _____ ) |
| (5) | Painting equipment<br>- Plate shot blasting/primer coating machine ( No, Yes: Max. Width _____ m, Length _____ m )<br>- Section bar shot blasting/primer coating machine ( No, Yes: Max. Length _____ m )<br>- Special coating factory ( No, Yes: _____ m × _____ m × _____ sections ) |
| (6) | Vertical automatic welding machine ( No, Yes: EG × _____, SEG × _____, ES × _____ )<br>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 | | | | |
| Subcontracted workers | Confirm system in place | | | | |

## 4 Feature of Construction Procedure

| | |
|---|---|
| (1) | Subcontract of hull blocks (weight)<br>- Sub members ( No, Yes: Ratio of subcontracted works _____ %, No. of subcontractors _____ )<br>- Blocks ( No, Yes: Ratio of subcontracted works _____ %, No. of subcontractors _____ ) |
| (2) | Method of plate block assembly<br>- Method fitting and welding longitudinals and transverse webs on jointed panels<br>- Method welding longitudinals on jointed panels prior to fitting and welding transverse webs<br>- Method fitting and welding a frame consists of longitudinals and transverse webs on jointed panels<br>- Method jointing panels with pre-assembled longitudinals by welding prior to fitting and welding transverse webs |
| (3) | Pre-erection outfitting carried out<br>grand block/mega block adopted<br>Method of erection at building berth/dock: _____<br>- Max. weight of loading block: _____ ton<br>- Construction method in building dock/berth/land construction etc. ( 1 ship, 1.5 ships: Semi-tandem, dual entrance )<br>- Block loading process ( single starting block, multi starting blocks, inserting block: No, Yes ) |
| (4) | Final dock ( No, Yes: In-house, Other place of the same company, Use other company ) |
| (5) | Other feature 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<br>- Are the function, responsibility and competence of the organization clear? | | |
| (2) | Quality control organization<br>- Existence of quality control organization<br>- Number of employees in this organization<br>- Existence of procedures or plans related to tests and inspections | _____ persons<br>including the chief | |
| (3) | Pre-inspection system of shipyard<br>- Is pre-inspection carried out prior to shipyard inspection?<br>- Are pre-inspectors assigned? (Check the list.)<br>- Number of pre-inspectors (related to hull only)<br>- Are inspection results marked on the object and/or recorded in the checklist? | _____ persons | |

| Item and Description | Result | Remarks |
|---|---|---|
| (4) Records of inspections and tests<br>- Are records made and kept properly?<br>- Does the responsible person verify the records?<br>- 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<br>- Is the schedule of the surveys changed often?<br>- Are pre-inspection, shipyard inspection and repairs completed beforehand?<br>- 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

| Item and Description | Result | Remarks |
|---|---|---|
| (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)

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

| Item and Description | Result | Remarks |
|---|---|---|
| (6) Nondestructive examination equipment (in-house) | | |
| - Number of radiographic equipment<br>- Number of ultrasonic equipment | _____<br>_____ | |

*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

| Item and Description | Result | Remarks |
|---|---|---|
| (1) Job title of supervisor and person in charge of collating ordered steel and received steel, and checking of mill sheet | Title of supervisor:<br>_____<br>Title of person in charge:<br>_____ | |
| (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?<br>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:<br>_____ | |

*Note:*

- 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

| Item and Description | Result | Remarks |
|---|---|---|
| (1) Existence of surface preparation standards | | |
| (2) Existence of coating thickness control standards<br>- 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)

| *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 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? | | |

***Note:***

- 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

| *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 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

| *Item and Description* | *Result* | *Remarks* |
|---|---|---|
| (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

| *Item and Description* | *Result* | *Remarks* |
|---|---|---|
| (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

| *Item and Description* | *Result* | *Remarks* |
|---|---|---|
| (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:***