



**BUREAU  
VERITAS**

# **Rules for the Classification of Offshore Units**

## **PART A - Classification and Surveys**

### **Chapters 1 – 2**

Preliminary Issue

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**BUREAU  
VERITAS**

## MARINE DIVISION GENERAL CONDITIONS

### ARTICLE 1

1.1. - BUREAU VERITAS is a Society the purpose of whose Marine Division (the "Society") is the classification ("Classification") of any ship or vessel or structure of any type or part of it or system therein collectively hereinafter referred to as a "Unit" whether linked to shore, river bed or sea bed or not, whether operated or located at sea or in inland waters or partly on land, including submarines, hovercrafts, drilling rigs, offshore installations of any type and of any purpose, their related and ancillary equipment, subsea or not, such as well head and pipelines, mooring legs and mooring points or otherwise as decided by the Society.

The Society:

- prepares and publishes Rules for classification, Guidance Notes and other documents ("Rules");
- issues Certificates, Attestations and Reports following its interventions ("Certificates");
- publishes Registers.

1.2. - The Society also participates in the application of National and International Regulations or Standards, in particular by delegation from different Governments. Those activities are hereafter collectively referred to as "Certification".

1.3. - The Society can also provide services related to Classification and Certification such as ship and company safety management certification; ship and port security certification, training activities; all activities and duties incidental thereto such as documentation on any supporting means, software, instrumentation, measurements, tests and trials on board.

1.4. - The interventions mentioned in 1.1., 1.2. and 1.3. are referred to as "Services". The party and/or its representative requesting the services is hereinafter referred to as the "Client". **The Services are prepared and carried out on the assumption that the Clients are aware of the International Maritime and/or Offshore Industry (the "Industry") practices.**

1.5. - The Society is neither and may not be considered as an Underwriter, Broker in ship's sale or chartering, Expert in Unit's valuation, Consulting Engineer, Controller, Naval Architect, Manufacturer, Shipbuilder, Repair yard, Charterer or Shipowner who are not relieved of any of their expressed or implied obligations by the interventions of the Society.

### ARTICLE 2

2.1. - Classification is the appraisalment given by the Society for its Client, at a certain date, following surveys by its Surveyors along the lines specified in Articles 3 and 4 hereafter on the level of compliance of a Unit to its Rules or part of them. This appraisalment is represented by a class entered on the Certificates and periodically transcribed in the Society's Register.

2.2. - Certification is carried out by the Society along the same lines as set out in Articles 3 and 4 hereafter and with reference to the applicable National and International Regulations or Standards.

2.3. - **It is incumbent upon the Client to maintain the condition of the Unit after surveys, to present the Unit for surveys and to inform the Society without delay of circumstances which may affect the given appraisalment or cause to modify its scope.**

2.4. - The Client is to give to the Society all access and information necessary for the performance of the requested Services.

### ARTICLE 3

3.1. - **The Rules, procedures and instructions of the Society take into account at the date of their preparation the state of currently available and proven technical knowledge of the Industry. They are not a code of construction neither a guide for maintenance or a safety handbook.**

Committees consisting of personalities from the Industry contribute to the development of those documents.

3.2. - **The Society only is qualified to apply its Rules and to interpret them. Any reference to them has no effect unless it involves the Society's intervention.**

3.3. - The Services of the Society are carried out by professional Surveyors according to the Code of Ethics of the Members of the International Association of Classification Societies (IACS).

3.4. - **The operations of the Society in providing its Services are exclusively conducted by way of random inspections and do not in any circumstances involve monitoring or exhaustive verification.**

### ARTICLE 4

4.1. - The Society, acting by reference to its Rules:

- reviews the construction arrangements of the Units as shown on the documents presented by the Client;
- conducts surveys at the place of their construction;
- classes Units and enters their class in its Register;
- surveys periodically the Units in service to note that the requirements for the maintenance of class are met.

**The Client is to inform the Society without delay of circumstances which may cause the date or the extent of the surveys to be changed.**

### ARTICLE 5

5.1. - **The Society acts as a provider of services. This cannot be construed as an obligation bearing on the Society to obtain a result or as a warranty.**

5.2. - **The certificates issued by the Society pursuant to 5.1. here above are a statement on the level of compliance of the Unit to its Rules or to the documents of reference for the Services provided for.**

In particular, the Society does not engage in any work relating to the design, building, production or repair checks, neither in the operation of the Units or in their trade, neither in any advisory services, and cannot be held liable on those accounts. Its certificates cannot be construed as an implied or express warranty of safety, fitness for the purpose, seaworthiness of the Unit or of its value for sale, insurance or chartering.

5.3. - **The Society does not declare the acceptance or commissioning of a Unit, nor of its construction in conformity with its design, that being the exclusive responsibility of its owner or builder, respectively.**

5.4. - The Services of the Society cannot create any obligation bearing on the Society or constitute any warranty of proper operation, beyond any representation set forth in the Rules, of any Unit, equipment or machinery, computer software of any sort or other comparable concepts that has been subject to any survey by the Society.

### ARTICLE 6

6.1. - The Society accepts no responsibility for the use of information related to its Services which was not provided for the purpose by the Society or with its assistance.

6.2. - **If the Services of the Society cause to the Client a damage which is proved to be the direct and reasonably foreseeable consequence of an error or omission of the Society, its liability towards the Client is limited to ten times the amount of fee paid for the Service having caused the damage, provided however that this limit shall be subject to a minimum of eight thousand (8,000) Euro, and to a maximum which is the greater of eight hundred thousand (800,000) Euro and one and a half times the above mentioned fee.**

**The Society bears no liability for indirect or consequential loss such as e.g. loss of revenue, loss of profit, loss of production, loss relative to other contracts and indemnities for termination of other agreements.**

6.3. - All claims are to be presented to the Society in writing within three months of the date when the Services were supplied or (if later) the date when the events which are relied on were first known to the Client, and any claim which is not so presented shall be deemed waived and absolutely barred.

### ARTICLE 7

7.1. - Requests for Services are to be in writing.

7.2. - **Either the Client or the Society can terminate as of right the requested Services after giving the other party thirty days' written notice, for convenience, and without prejudice to the provisions in Article 8 hereunder.**

7.3. - The class granted to the concerned Units and the previously issued certificates remain valid until the date of effect of the notice issued according to 7.2. hereabove subject to compliance with 2.3. hereabove and Article 8 hereunder.

### ARTICLE 8

8.1. - The Services of the Society, whether completed or not, involve the payment of fee upon receipt of the invoice and the reimbursement of the expenses incurred.

8.2. - **Overdue amounts are increased as of right by interest in accordance with the applicable legislation.**

8.3. - **The class of a Unit may be suspended in the event of non-payment of fee after a first unfruitful notification to pay.**

### ARTICLE 9

9.1. - The documents and data provided to or prepared by the Society for its Services, and the information available to the Society, are treated as confidential. However:

- Clients have access to the data they have provided to the Society and, during the period of classification of the Unit for them, to the **classification file** consisting of survey reports and certificates which have been prepared at any time by the Society for the classification of the Unit ;
- copy of the documents made available for the classification of the Unit and of available survey reports can be handed over to another Classification Society Member of the International Association of Classification Societies (IACS) in case of the Unit's transfer of class;
- the data relative to the evolution of the Register, to the class suspension and to the survey status of the Units are passed on to IACS according to the association working rules;
- the certificates, documents and information relative to the Units classed with the Society may be reviewed during IACS audits and are disclosed upon order of the concerned governmental or inter-governmental authorities or of a Court having jurisdiction.

The documents and data are subject to a file management plan.

### ARTICLE 10

10.1. - Any delay or shortcoming in the performance of its Services by the Society arising from an event not reasonably foreseeable by or beyond the control of the Society shall be deemed not to be a breach of contract.

### ARTICLE 11

11.1. - In case of diverging opinions during surveys between the Client and the Society's surveyor, the Society may designate another of its surveyors at the request of the Client.

11.2. - Disagreements of a technical nature between the Client and the Society can be submitted by the Society to the advice of its Marine Advisory Committee.

### ARTICLE 12

12.1. - Disputes over the Services carried out by delegation of Governments are assessed within the framework of the applicable agreements with the States, international Conventions and national rules.

12.2. - Disputes arising out of the payment of the Society's invoices by the Client are submitted to the Court of Nanterre, France.

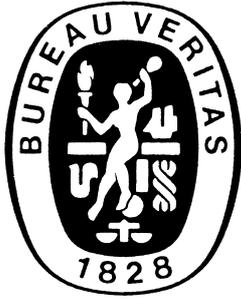
12.3. - **Other disputes over the present General Conditions or over the Services of the Society are exclusively submitted to arbitration, by three arbitrators, in London according to the Arbitration Act 1996 or any statutory modification or re-enactment thereof. The contract between the Society and the Client shall be governed by English law.**

### ARTICLE 13

13.1. - **These General Conditions constitute the sole contractual obligations binding together the Society and the Client, to the exclusion of all other representation, statements, terms, conditions whether express or implied. They may be varied in writing by mutual agreement.**

13.2. - The invalidity of one or more stipulations of the present General Conditions does not affect the validity of the remaining provisions.

13.3. - The definitions herein take precedence over any definitions serving the same purpose which may appear in other documents issued by the Society.



# RULES FOR THE CLASSIFICATION OF OFFSHORE UNITS

## Part A **Classification and Surveys**

### Chapters 1 2

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<b>Chapter 1</b>	<b>CLASSIFICATION</b>
<b>Chapter 2</b>	<b>MAINTENANCE OF CLASS</b>



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Part A  
**Classification Surveys**

Chapter 1  
**CLASSIFICATION**

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## SECTION 1

## GENERAL PRINCIPLES OF CLASSIFICATION

### 1 Principles of classification

#### 1.1 Purpose of the Rules

**1.1.1** The Rules published by the Society give the requirements for the assignment and the maintenance of classification for offshore units.

Note 1: The general conditions of classification are laid down in the Marine Division General Conditions.

**1.1.2** The application criteria of the different parts of the present Rules are the following:

- Part A - Classification and Surveys applies to all units.
- Part B - Structural safety, Part C - Facilities, Part D - Service Notations apply to offshore units of welded steel construction. Where necessary, the extent of application is more precisely defined in each chapter of these parts of the Rules.

The classification of units other than those dealt with in the above-mentioned Parts B, C, D is covered by specific Rules published by the Society.

#### 1.2 General definitions

##### 1.2.1 Wording

The following general definitions are used in these Rules:

- Society means the Classification Society with which the unit is classed
- Rules means these Rules for the Classification of Offshore Units and documents issued by the Society serving the same purpose
- Ship Rules means the Rules for the Classification of Steel Ships
- Surveyor means technical staff acting on behalf of the Society to perform tasks in relation to classification and survey duties
- Survey means an intervention by the Surveyor for assignment or maintenance of class, or interventions by the Surveyor within the limits of the tasks delegated by the Administrations
- Administration means the Government of the State whose flag the unit is entitled to fly or the State under whose authority the unit is operating in the specific case

- Interested Party means a party, other than the Society, having responsibility for the classification of the unit, such as the Owners of a unit and his representatives, or the Shipbuilder, or the Engine Builder, or the Supplier of parts to be tested
- Owner means the Registered Owner or the Disponent Owner or the Manager or any other party having the responsibility to keep the unit seaworthy, having particular regard to the provisions relating to the maintenance of class laid down in Part A, Chapter 2
- Approval means the review by the Society of documents, procedures or other items related to classification, verifying solely their compliance with the relevant Rules requirements, or other referentials where requested
- Type approval means an approval process for verifying compliance with the Rules of a product, a group of products or a system, and considered by the Society as representative of continuous production
- Essential service is intended to mean a service necessary for a unit to operate at site, be steered or manoeuvred, or undertake activities connected with its operation, and for the safety of life, as far as class is concerned.

##### 1.2.2 Date of “contract of construction”

The date of “contract for construction” of a unit is the date on which the contract to build the unit is signed between the Owner and the Shipbuilder. This date is normally to be declared to the Society by the Interested Party applying for the assignment of class to a new unit.

#### 1.3 Meaning of classification, scope and limits

##### 1.3.1 Classification process

The classification process consists of:

- the development of Rules, guidance notes and other documents relevant to the structure, material, equipment, machinery and other items covered by such documents
- the review of plans and calculations and the surveys, checks and tests intended to demonstrate that the unit meets the Rules (refer to Ch 1, Sec 3)
- the assignment of class (see Ch 1, Sec 2) and issue of a Certificate of Classification, where compliance with the above Rules is found
- the periodical, occasional and class renewal surveys performed to record that the unit in service meets the conditions for maintenance of class (see Part A, Chapter 2)

##### 1.3.2 Other parties

The Rules, surveys performed, reports, certificates and other documents issued by the Society, are in no way intended to

replace or alleviate the duties and responsibilities of other parties such as Administrations, Designers, Shipbuilders, Manufacturers, Repairers, Suppliers, Contractors or Sub-contractors, actual or prospective Owners or Operators, Charterers, Brokers, Cargo-owners and Underwriters.

The activities of such parties which fall outside the scope of the classification as set out in the Rules, such as design, engineering, manufacturing, operating alternatives, choice of type and power of machinery and equipment, number and qualification of crew or operating personnel, lines of the unit in case of a surface unit, trim, hull vibrations, spare parts including their number, location and fastening arrangements, life-saving appliances, and maintenance equipment, remain therefore the responsibility of those parties, even if these matters may be given consideration for classification according to the type of unit or additional class notation assigned.

### 1.3.3 Non permanently installed equipment

Unless otherwise specified, the Rules do not deal with structures, pressure vessels, machinery and equipment which are not permanently installed and used solely for operational activities such as dredging or heavy load lifting, workshops or welding equipment, except for their effect on the classification-related matters, as declared by the Interested Party, such as fire protection and unit's general strength.

During periods of construction, modification or repair, the unit is solely under the responsibility of the builder or the repair yard. As an example, the builder or repair yard is to ensure that the construction, modification or repair activities are compatible with the design strength of the unit and that no permanent deformations are sustained.

Note 1: Refer to [3.3] as regards the Owner's responsibility for maintenance and operation of the unit in relation to the maintenance of class.

### 1.3.4 Certificate of Classification

The class assigned to a unit by the Society following its interventions is embodied in a Certificate of Classification and noted in the appropriate Register.

At a certain date the class of a unit is maintained or regular when no surveys are overdue, when the conditions for suspension of class are not met and when the class is not withdrawn nor suspended. Otherwise the class is irregular. Attention is drawn on the fact that a unit holding a valid Certificate of Classification may be in an irregular class position.

### 1.3.5 Site conditions and related operating procedures

- It is incumbent to the Owners/Operators to perform the necessary investigations, including environmental and geotechnical surveys, prior to operating the unit at a given site.
- For permanent installations, Owner/Operator is to provide supporting information to give evidence to the Society that the proposed design criteria are an adequate representations of the actual conditions on site, including both environmental and soil conditions.
- For other units, these investigations are to be conducted in order to ascertain that the actual conditions met at

the contemplated operating site remain on the safety side when compared to design data and assumptions, particularly those listed in the Design Criteria Statement. Such site assessment is however not part of Classification, which also does not cover the assessment of sea bottom conditions and geotechnical investigations or the assessment of possible sea floor movement.

- The procedures to be used for the unit's positioning, anchors setting and retrieving, legs lowering and jacking, preloading, jetting and other related operations are not part of Classification. It is the responsibility of the Owner, or of the Operator if distinct from the Owner, to ascertain that the said procedures and their implementation satisfy the design criteria of the unit and the design of the related equipment.

For permanent installations, above procedures are only considered in so far as they could affect the safety or integrity of completed installation on site.

- For other classification limits applicable to operating procedures, refer to Part B, Chapter 2.

### 1.3.6 Classification restrictions

When the design data and assumptions specified by the party applying for classification do not comply with the applicable Rule requirements, restrictions may be placed upon the unit's class.

When deemed necessary, restrictions may be placed on the duration of the service life of the unit.

Class restrictions, if any, are to be entered as a Note on the unit's Certificate of Classification and are to be incorporated in the Operating Manual prescribed in [3.4].

## 1.4 Request for services

1.4.1 Requests for interventions by the Society, such as surveys during construction, surveys of units in service, tests, etc., are in principle to be submitted in writing and signed by the Interested Party. Such request implies that the applicant will abide by all the relevant requirements of the Rules, including the Marine Division General Conditions.

The Society reserves the right to refuse or withdraw the class of any unit for which any applicable requirement of the Rules is not complied with.

## 1.5 Register

1.5.1 A Register is published periodically by the Society. This publication, which is updated by the Society, contains the names of units which have received the Certificate of Classification, as well as particulars of the class assigned and information concerning each unit.

## 1.6 Design Criteria Statement

### 1.6.1 General

Classification is based upon the design data or assumptions specified by the party applying for classification.

A Design Criteria Statement will list the service(s) performed by the unit and the design conditions and other assumptions on the basis of which class is assigned to the unit.

The Design Criteria Statement will be issued by the Society, based on information provided by the party applying for classification.

The Design Criteria Statement will be referred to on the unit's Classification Certificates.

The Design Criteria Statement is to be incorporated in the Operating Manual as prescribed in [3.4].

### 1.6.2 Unit's activities

The Design Criteria statement will list the main services for which the unit is designed, the service notation and other notations assigned to the unit.

The nature of the unit's activity will be duly accounted for in the application of the present Rules, as far as classification is concerned.

The Design Criteria statement will mention when the unit is, or is part of a permanent installation, and will make reference to the applicable site data.

### 1.6.3 Structural design criteria

The Design Criteria Statement will list the necessary data pertaining to the structural design of the unit for the different conditions of operation of the unit, according to provisions of Part B, Chapter 2.

Note 1: Transit of non self-propelled units is covered by classification as regards only the unit's structural overall and local strength as well as stability. All other aspects relating to towing are reviewed only on special request for a towage survey.

Note 2: As regards design of the foundations of equipment, classification is based upon the data submitted by the party applying for classification, under the format called for by the Rules.

### 1.6.4 Machinery, electrical and other system design conditions

The party applying for classification is to submit the necessary description, diagrammatic plans, design data of all systems, including those used solely for the service (drilling, pipelaying, lifting, etc.) performed by the unit and, where applicable, their cross connections with other systems. The submitted data are to incorporate all information necessary to the assessment of the unit for the purpose of the assignment of class or for the assignment of additional and special marks.

In accordance with [4.8.2] and [1.6.1] the party applying for classification is to give an estimation of electric balance for the different conditions of operation of the unit. The specifications are to list all important equipment and apparatus, their rating and the power factors as applicable.

## 2 Rules

### 2.1 Rule application

**2.1.1** The requirements of the present Rules are applicable to all offshore units, as defined in [4], unless a specific statement to the contrary is made.

Requirements of the present Rules may be made applicable to other units, when deemed appropriate by the Society.

The designer is to contact the Society for information about any amendments to these Rules.

The present Rules are not applicable to bottom founded fixed platforms.

### 2.2 Effective date

**2.2.1** The effective date of entry into force of any amendments to the Rules is indicated on the inside front page of the Rules or in the relevant Section.

**2.2.2** In principle, the applicable Rules for assignment of class to a new unit are those in force at the date of contract for construction.

**2.2.3** Special consideration may be given to applying new or modified rule requirements which entered into force subsequent to the date of contract for construction, at the discretion of the Society and in the following cases:

- when a justified written request is received from the party applying for classification
- when the keel is not yet laid and more than one year has elapsed since the contract for construction was signed
- where it is intended to use existing previously approved plans for a new contract

**2.2.4** The above procedures for application of the Rules are, in principle, also applicable to existing units in the case of major conversions and, in the case of alterations, to the altered parts of the unit.

### 2.3 Equivalence

**2.3.1** The Society may consider the acceptance of alternatives to these Rules, provided that they are deemed to be equivalent to the Rules to the satisfaction to the Society.

The Society may accept surveys and approval done by Administration or by a recognised organisation, concerning fire prevention, ventilation systems, means of escape in accommodation and service spaces. In such a case, supporting documents are to be transmitted to the Society.

### 2.4 Novel features

**2.4.1** The Society may consider the classification of units based on or applying novel design principles or features, to which the Rules are not directly applicable, on the basis of experiments, calculations or other supporting information provided to the Society. Specific limitations may then be indicated on the Certificate of Classification.

### 2.5 Disagreement and appeal

**2.5.1** Any technical disagreement with the Surveyor in connection with the performance of his duties should be raised by the Interested Party as soon as possible.

The Interested Party may appeal in writing to the Society, which will subsequently consider the matter and announce its decision according to its established procedure.

## 2.6 Risk assessment and Rule application

**2.6.1** As an alternative to the full application of the present prescriptive rules, a hazard analysis approach may be used to justify deviations or modifications from Rule requirements.

**2.6.2** This alternative approach is authorised and encouraged as far as the class is concerned, under reserve of the agreement of the Owner when it leads to deviation from the Rules. Regarding the application to statutory requirements, attention is drawn upon the necessary agreement of the flag and/or coastal Authorities.

**2.6.3** The risk levels obtained by the arrangement resulting from the analysis are to be as low as reasonably practicable.

**2.6.4** It is to be noted that the use of prescriptive rules is not contradictory with the use in parallel of analytical methods, the rules deriving from collection and analysis of past experience.

**2.6.5** The analysis is to be documented and a complete file is to be submitted to the Society for agreement.

## 3 Duties of the Interested Parties

### 3.1 International and national regulations

**3.1.1** The classification of a unit does not relieve the Interested Party from compliance with any requirements issued by Administrations.

**3.1.2** Where requirements of International Conventions, such as SOLAS, ILLC, MARPOL, ILO or of IMO Assembly Resolutions, are quoted as excerpts, they are printed in italic type replacing the word "Administration" with "Society".

These requirements are quoted for ease of reference.

**3.1.3** When authorised by the Administration concerned, the Society will act on its behalf within the limits of such authorisation. In this respect, the Society will take into account the relevant national requirements, survey the unit, report and issue or contribute to the issue of the corresponding certificates.

The above surveys do not fall within the scope of the classification of units, even though their scope may overlap in part and may be carried out concurrently with surveys for assignment or maintenance of class.

**3.1.4** In the case of a discrepancy between the provisions of the applicable international and national regulations and those of the Rules, normally, the former take precedence. However, the Society reserves the right to call for the necessary adaptation to preserve the intention of the Rules or to apply the provisions of [1.4.1].

### 3.2 Surveyor's intervention

**3.2.1** Surveyors are to be given free access at all times to units which are classed or being classed, shipyards and works, to carry out their interventions within the scope of assignment or maintenance of class, or within the scope of

interventions carried out on behalf of Administrations, when so delegated.

Free access is also to be given to auditors accompanying the Surveyors of the Society within the scope of the audits as required in pursuance of the Society's internal Quality System or as required by external organizations.

**3.2.2** Interested Parties are to take the necessary measures for the Surveyors' inspections and testing to be carried out safely. Interested Parties - irrespective of the nature of the service provided by the Surveyors of the Society or others acting on its behalf - assume with respect to such Surveyors all the responsibility of an employer for his workforce such as to meet the provisions of applicable legislation. As a rule, the Surveyor is to be constantly accompanied during surveys by personnel of the Interested Party.

Interested Parties are to inform promptly the Surveyor of defects or problems in relation to class.

Refer also to Pt A, Ch 2, Sec 2, [2.5] of the Ship Rules to Pt A, Ch 2, Sec 2, [2.8] of the Ship Rules.

**3.2.3** The Certificate of Classification and/or other documents issued by the Society remain the property of the Society. All certificates and documents necessary to the Surveyor's interventions are to be made available by the Interested Party to the Surveyor on request.

**3.2.4** During the phases of unit design and construction, due consideration should be given to rule requirements in respect of all necessary arrangements for access to spaces and structures with a view to carrying out class surveys. Arrangements of a special nature are to be brought to the attention of the Society.

### 3.3 Operation and maintenance of units

**3.3.1** The classification of a unit is based on the understanding that the unit is loaded and operated in a proper manner by competent and qualified crew or operating personnel according to the environmental, loading, operating and other criteria on which classification is based.

In particular, it will be assumed that the draught of the unit in operating conditions will not exceed that corresponding to the freeboard assigned or the maximum approved for the classification, that the unit will be properly loaded taking into account both its stability and the stresses imposed on its structures and that cargoes will be properly stowed and suitably secured and that the speed and course of the unit are adapted to the prevailing sea and weather conditions.

**3.3.2** Units are to be maintained at all times, at the diligence of the Owners, in proper condition complying with international safety and pollution prevention regulations.

**3.3.3** Any document issued by the Society in relation to its interventions reflects the condition of the unit as found at the time and within the scope of the survey. It is the Interested Party's responsibility to ensure proper maintenance of the unit until the next survey required by the Rules. It is the duty of the Interested Party to inform the Surveyor when he boards the unit of any events or circumstances affecting the class.

### 3.4 Operating manual

**3.4.1** An Operating Manual, which includes instructions regarding the safe operation of the unit and of the systems and equipment fitted on the unit, is to be placed onboard the unit.

The Operating Manual is to incorporate a dedicated section containing all information relating to classification, particularly environmental, loading and other design criteria as well as classification restrictions. The Operating Manual is to be, at all times, placed on board the unit and made available to all concerned. A copy of the Operating Manual is to be retained ashore by the Owners of the unit or their representatives.

It is the responsibility of the party applying for classification to prepare the contents of the Operating Manual.

**3.4.2** The Operating Manual is to be submitted for review to the Society, this review being limited to checking that the classification related material contained in the dedicated section mentioned in [3.4.1] is consistent with data given in the Design Criteria Statement (see [1.6] and Part B, Chapter 2).

**3.4.3** When a construction portfolio is not required according to Ch 1, Sec 3, [2.4], the Operating Manual is to contain all reviewed drawings relative to structural strength, stability, fire and explosion safety.

### 3.5 Flag and Port State Control inspections

**3.5.1** Where defects are found further to an inspection by an Administration in pursuance of Port State Control or similar programmes, Owners are to:

- immediately report the outcome of this inspection to the Society, and
- ask the Society to perform an occasional survey in order to verify that the deficiencies, when related to the class of the unit or to the statutory certificates issued by the Society on behalf of the flag Administration, are rectified and/or the necessary repair work is carried out within the due time.

### 3.6 Use of measuring equipment and of service suppliers

#### 3.6.1 General

Firms providing services on behalf of the Interested Party, such as measurements, tests and servicing of safety systems and equipment, the results of which may form the basis for the Surveyor's decisions, are subject to the acceptance of the Society, as deemed necessary.

The equipment used during tests and inspections in workshops, shipyards and on board units, the results of which may form the basis for the Surveyor's decisions, is to be customary for the checks to be performed. Firms are to individually identify and calibrate to a national or international standard each piece of such equipment.

#### 3.6.2 Simple measuring equipment

The Surveyor may accept simple measuring equipment (e.g. rulers, tape measures, weld gauges, micrometers) without

individual identification or confirmation of calibration, provided it is of standard commercial design, properly maintained and periodically compared with other similar equipment or test pieces.

#### 3.6.3 Onboard measuring equipment

The Surveyor may accept measuring equipment fitted on board a unit (e.g. pressure, temperature or rpm gauges and meters) and used in examination of onboard machinery and/or equipment based either on calibration records or comparison of readings with multiple instruments.

### 3.7 Spare parts

**3.7.1** It is the Owner's responsibility to decide whether and which spare parts are to be carried on board.

**3.7.2** As spare parts are outside the scope of classification, the Surveyor will not check that they are kept on board, maintained in a satisfactory condition, or suitably protected and lashed.

However, in the case of repairs or replacement, the spare parts used are to meet the requirements of the Rules as far as practicable; refer to Ch 2, Sec 2, [6.4.2].

## 4 Definitions

### 4.1 Offshore units

**4.1.1** For the purpose of the application of the present Rules, an offshore unit is defined as a unit fulfilling simultaneously the following conditions:

- to be designed for use in connection with offshore recovery of subsea resources including but not limited to hydrocarbons
- to be of a normally floating type, or to be so designed as to be capable of being moved from one operating site to another in a floating mode

Other units, not fulfilling the above, may be also considered as offshore units, where deemed appropriate by the Society.

### 4.2 Propulsion

#### 4.2.1 Self-propelled units

A self-propelled unit is a unit capable of unassisted transit between different geographic locations.

Note 1: Units capable of short moves from one operating location to another close one are not considered as self-propelled units.

#### 4.2.2 National and international regulations

The Owners' attention is drawn to different national or international regulations applicable to self-propelled units.

### 4.3 Units' structural types

#### 4.3.1 Surface units

Surface units, for the application of the present Rules, are floating units designed with a single conventional hull.

A ship is a self-propelled surface unit.

A barge is a non self-propelled surface unit.

A submersible ship is a ship capable of being ballasted to rest on the sea bed under working condition.

A submersible barge is a barge capable of being ballasted to rest on the sea bed under working condition.

#### 4.3.2 Semi-submersible units

Semi-submersible units are designed with their main deck, which supports most of the equipment, connected to underwater hulls or footings by columns. Bracings may be provided between the lower hulls or footings, the columns and the deck structure.

A semi-submersible unit is intended for use in the floating mode, the unit's stability in working and storm conditions being afforded by the columns water plane area.

A submersible unit is a unit capable of being designed to rest on the sea bed under working condition and capable, when deballasted, to be kept afloat in a semi submerged position.

#### 4.3.3 Self-elevating units

Self-elevating or jack-up units are designed with legs capable of being lowered to the sea bed and of raising the unit hull, which supports the equipment, above the sea surface.

The unit's legs may be of a shell (cylindrical) or truss (tubular or structural sections) type. The legs may be equipped with a lower mat or with footings designed to penetrate the sea bed.

The unit's legs may be vertical or slanted.

#### 4.3.4 Buoys

A buoy is a floating body, not normally manned, generally of a cylindrical shape, and fitted with mooring equipment as necessary to perform the mooring of a vessel and ensuring fluid transfer between production and/or storage unit or onshore installation and the moored vessel.

It is composed of the following main parts:

- a hull providing buoyancy and stability,
- a rotating part to which the vessel is moored and that allows weathervaning,
- a fixed part to which the mooring lines and underbuoy pipes are connected.

Note 1: The hull may be either the rotating part or the fixed part.

#### 4.3.5 Other structural types

Units of other structural types will be given special consideration.

#### 4.3.6 Structural type notations

The structural type notations corresponding to the structural types described in [4.3] are defined in Ch 1, Sec 2, [4].

### 4.4 Units' services

#### 4.4.1 Drilling and drilling assistance

For the purpose of the present Rules, drilling includes drilling activities for the exploration of the seabed and/or exploitation of subsea resources including but not limited to hydrocarbons.

For the purpose of the present Rules, drilling assistance includes activities related to drilling without involving the

use of a drilling derrick, such as mud treatment, tendering, well remedial or other servicing activities, etc.

#### 4.4.2 Production and related activities

For the purpose of the present Rules:

- **production** means processing of oil/gas well effluents prior to exporting or storage
- **storage** means storage (in significant quantities) of hydrocarbons (oil, gas), or other subsea resources, prior to exporting
- **offloading** means facilities to transfer stored hydrocarbons to shuttle ships

#### 4.4.3 Other services

Other services are purposes other than drilling, production and related activities, i.e.:

- Construction, maintenance and support activities: lifting, pipelaying, diving support, accommodation, jacket launching and transportation.
- Other services which may be defined by the party applying for classification.

#### 4.4.4 Service notations

The service notations corresponding to the services described in [4.4] are defined in Ch 1, Sec 2, [4].

### 4.5 Units' operation

#### 4.5.1 Nature of installation

a) Permanent installation

A permanent installation is an installation performing its service at a single location, or for a duration not less than, typically, 5 years on a single site. A permanent installation will be given a site notation.

Note 1: This is not applicable to drilling and related activities.

b) Disconnectable permanent installation

A disconnectable permanent installation is a permanent installation capable of being disconnected during severe storm conditions.

c) Mobile unit

A mobile unit is a unit which does not correspond to definitions of a) and b)

#### 4.5.2 Conditions of operations

a) Working conditions

Working conditions are conditions wherein a unit is on location and performs its service(s), as defined by its service notation (refer to !), operational and environmental loads remaining within design limits corresponding to this (these) service(s). The unit may be floating or supported by the sea-bed, as applicable.

b) Severe storm conditions

Severe storm conditions are the most severe environmental conditions which the unit is designed to withstand, this unit being floating or supported by the sea-bed, as applicable. These conditions may discontinue the activities of the unit (for drilling units, the riser may be disconnected; for pipelaying units, the pipe may be disconnected and the stinger raised; for crane barges, the boom may be laid down in its cradle, etc.).

## c) Transit conditions

Transit condition is condition wherein a unit is moving from one location to another.

Transit includes short duration field moves, between locations in close proximity, and ocean transit, for which a specific preparation of the unit is generally needed.

The unit may be self-floating or supported by a transportation barge or vessel, as applicable. Some design limits to environmental loads may be specified.

The initial transportation to site of a permanent installation is also considered as a transit condition.

## 4.6 Temporary mooring and position anchoring

### 4.6.1 Temporary mooring

Surface units may be provided with classical temporary mooring equipment.

The Owners' attention is drawn to applicable national regulations regarding mooring of surface units, particularly self-propelled units.

### 4.6.2 Station keeping

Station keeping herein means deep sea or location mooring and/or dynamic positioning.

The purpose of positioning equipment and machinery is to maintain the unit on location, within station keeping requirements, in view of its designed functions.

Station keeping may be either passive, by means of catenary equipment (position anchoring) or active (dynamic positioning) or may involve a combination of these.

Additional class notations corresponding to position anchoring and to dynamic positioning are dealt with in Ch 1, Sec 2, [7] and Ch 1, Sec 2, [6] respectively.

## 4.7 Dimensions

**4.7.1** The nominal water depth is the vertical distance from the sea bed to a reference sea surface level (such as the Chart Datum).

The design maximum water depth is the vertical distance from the sea bed to the highest still water surface, including astronomical tide and storm (wind and pressure differential) tide.

**4.7.2** Except for surface units, all dimensions such as length, breadth, depth relate to overall dimensions, measured without taking into account locally protruding elements (for instance stinger foundations, anchor racks, fenders, etc.).

**4.7.3** The draughts are the vertical distances between the moulded base line and the water lines in different afloat conditions.

**4.7.4** In the case of semi-submersible units, three draughts (transit, working, severe storm) are normally to be considered.

**4.7.5** In the case of self-elevating units, only transit draught are to be considered.

**4.7.6** For surface units, refer to definitions of breadth, moulded depth and block-coefficient given in the Ship Rules.

For the definition of scantling draught, rule length, refer to.

## 4.8 Other definitions

### 4.8.1 International instruments

- SOLAS means the 1974 International Convention for the Safety Of Life At Sea, as amended.
- ILLC means the 1966 International Convention on Load Lines, as amended.
- MODU Code means the IMO Code for the Construction and Equipment of Mobile Offshore Drilling Units, as amended.
- MARPOL means the 1973 International Convention for Prevention of Pollution from Ships and its 1978 Protocol, as amended.
- COLREG means the 1972 Convention on the International Regulations for Preventing Collisions at Sea, as amended.

### 4.8.2 Essential and emergency services

Essential services mean services required to be in continuous condition of operation to maintain the safety of the unit and to generate the power supply necessary to meet the operational demand of the unit. Operational power demands are to be specified by the party applying for classification.

Emergency services mean services required to be put into operation for the safety of the unit under an emergency condition.

## SECTION 2

## CLASSIFICATION NOTATIONS

### 1 General

#### 1.1 Purpose of the classification notations

**1.1.1** The classification notations give the scope according to which the class of the unit has been based and refer to the specific rule requirements which are to be complied with for their assignment. In particular, the classification notations are assigned according to the type, service and navigation of the unit and other criteria which have been provided by the Interested Party, when applying for classification.

The Society may change the classification notations at any time, when the information available shows that the requested or already assigned notations are not suitable for the intended service, navigation and any other criteria taken into account for classification.

Note 1: Reference should be made to Ch 1, Sec 1, [1.3] on the limits of classification and its meaning.

**1.1.2** The classification notations assigned to a unit are indicated on the Certificate of Classification, as well as in the Register published by the Society.

**1.1.3** The classification notations applicable to existing units conform to the Rules of the Society in force at the date of assignment of class, as indicated in Ch 1, Sec 3. However, the classification notations of existing units may be updated according to the current Rules, as far as applicable.

#### 1.2 Types of notations assigned

**1.2.1** The types of classification notations assigned to a unit are the following:

- a) class symbol
- b) construction marks
- c) structural type notations
- d) service notations with additional service features, as applicable
- e) navigation notations
- f) site notation (optional)
- g) additional class notations (optional)

The different classification notations and their conditions of assignment are listed in [2] to [7], according to their types.

**1.2.2** As an example, the classification notations assigned to a unit may be as follows (the kind of notation shown in brackets does not form part of the classification notation indicated in the Register and on the Certificate of Classification):

**I** ✕ **HULL** ✕ **MACH**

(class symbol, construction marks)

**Offshore Service Barge**

(structural type notation)

**Production/Oil storage**

(service notations)

**Unrestricted navigation**

(navigation notation)

**Dalissol field**

(site notation)

**AUTO** ✕ **POSA** ✕ **IG** ✕ **VeriSTAR-Hull**

(additional service features)

✕ **ALP**

(additional class notation).

### 2 Class symbol

#### 2.1 General

**2.1.1** The class symbol expresses the degree of compliance of the unit with the rule requirements as regards its construction and maintenance. There is one class symbol, which is compulsory for every classed unit.

**2.1.2** The class symbol **I** is assigned to units built in accordance with the requirements of the Rules or other rules recognised as equivalent, and maintained in a condition considered satisfactory by the Society.

The period of class (or interval between class renewal surveys) assigned to class symbol **I** units is maximum 5 years.

Note 1: The class symbol **I** is to be understood as being the highest class granted by the Society.

**2.1.3** The class symbol **II** is assigned to units which do not meet all requirements for class symbol **I**, but are deemed acceptable to be entered into the Register.

The period of class assigned to class symbol **II** units is maximum 3 years.

**2.1.4** Except for special cases, class is assigned to a unit only when the hull, propulsion and auxiliary machinery installations, and equipment providing essential services have all been reviewed in relation to the requirements of the Rules.

### 3 Construction marks

#### 3.1 General

**3.1.1** The construction mark identifies the procedure under which the unit and its main equipment or arrangements have been surveyed for initial assignment of the class. The

procedures under which the unit is assigned one of the construction marks are detailed in Ch 1, Sec 3.

**3.1.2** One of the construction marks defined below is assigned separately to the hull of the unit and its appendages, to the machinery installation, and to some installations for which an additional classification notation is assigned.

The construction mark is placed before the symbol **HULL** for the hull, before the symbol **MACH** for the machinery installations, and before the additional class notation granted, when such a notation is eligible for a construction mark.

If the unit has no machinery installations covered by classification, the symbol **MACH** is not granted and the construction mark will be only placed before the symbol **HULL**.

**3.1.3** The construction marks refer to the original condition of the unit. However, the Society may change the construction mark where the unit is subjected to repairs, conversion or alterations.

## 3.2 List of construction marks

**3.2.1** The mark  $\boxtimes$  is assigned to the relevant part of the unit, when it has been surveyed by the Society during its construction in compliance with the new building procedure detailed in Ch 1, Sec 3.

**3.2.2** The mark  $\boxplus$  is assigned to the relevant part of the unit, when the latter is classed after construction and is changing class from an IACS Society at the time of the admission to class.

**3.2.3** The mark  $\bullet$  is assigned to the relevant part of the unit, where the procedure for the assignment of classification is other than those detailed in [3.2.1] and [3.2.2], but however deemed acceptable.

## 4 Structural type and service notations

### 4.1 Structural type notations

**4.1.1** The structural type notation of a unit classed according to the present Rules includes the structural type of the unit, preceded by "Offshore service" or "Offshore" as introductory wording, according to the case (refer to [4.1.2]).

**4.1.2** Structural types being defined in Ch 1, Sec 1, [4.3], the following structural type notations may be granted:

- offshore service ship
- offshore service barge
- offshore submersible ship
- offshore submersible barge
- offshore semi-submersible unit
- offshore submersible unit
- offshore self-elevating unit
- offshore buoy
- special type offshore unit/[ ], for units not belonging to any of the preceding structural types; the mention

between brackets is to be completed according to the exact type of the unit in agreement with the Society

### 4.2 Service notations

**4.2.1** The service notations define the type and/or service of the unit which have been considered for its classification, according to the request for classification signed by the Interested Party. At least one service notation is to be assigned to every classed unit.

Note 1: The service notations applicable to existing units conform to the Rules of the Society in force at the date of assignment of class. However, the service notations of existing units may be updated according to the current Rules, as far as applicable, at the request of the Interested Party.

**4.2.2** The assignment of any service notation to a new unit is subject to compliance with general rule requirements laid down in Part B and Part C of the Rules and, for some service notations, the additional requirements laid down in Part D.

**4.2.3** A unit may be assigned several different service notations. In such case, the specific rule requirements applicable to each service notation are to be complied with. However, if there is any conflict in the application of the requirements applicable to different service notations, the Society reserves the right to apply the most appropriate requirements or to refuse the assignment of one of the requested service notations.

**4.2.4** A service notation may be completed by one or more additional service features, giving further precision regarding the type of service of the unit, for which specific rule requirements are applied.

**4.2.5** The different service notations which may be assigned to a unit are listed in [4.2.6], according to the category to which they belong.

Several service notations may be used, e.g.:

pipelaying-lifting-diving support.

**4.2.6** Considered services are defined in Ch 1, Sec 1, [4.4]. The following service notations may be granted:

- drilling, which may be completed by an indication between brackets, such as in the following examples: drilling (geotechnical), drilling (workover)
- drilling assistance
- oil storage
- liquefied gas storage
- production
- lifting
- pipelaying
- diving support
- accommodation
- jacket launching
- transportation
- special service/[ ]; this service notation is assigned to units which, due to the peculiar characteristics of their activity, are not covered by any of the above mentioned notations. The classification requirements of such units are considered by the Society on a case by

case basis. An additional service feature may be specified after the notation to identify the particular service in which the unit is intended to operate. The scope and criteria of classification of such units are indicated in an annex to the Certificate of Classification.

## 5 Navigation and site notations

### 5.1 Navigation notations

**5.1.1** Every mobile surface unit is to be assigned a navigation notation as listed in [5.2].

**5.1.2** A navigation notation may be assigned to surface units which are permanent installations, as defined in Pt D, Ch 1, Sec 1.

Note 1: In other cases, the criteria for navigation/transit are specified in the Design Criteria Statement.

Note 2: In no case a navigation notation may cover the situation on site of a permanent installation.

**5.1.3** The assignment of a navigation notation, including the reduction of scantlings or specific arrangements for restricted navigation notations, is subject to compliance with the requirements laid down in Part B, Part C and Part D of the Rules.

**5.1.4** The assignment of a navigation notation does not absolve the Interested Party from compliance with any international and national regulations established by the Administrations for a unit operating in national waters, or a specific area, or a navigation zone. Neither does it waive the requirements in Ch 1, Sec 1, [3.3.1].

### 5.2 List of navigation notations

**5.2.1** The navigation notation **unrestricted navigation** is assigned to units intended to operate in any area and any period of the year.

**5.2.2** The navigation notation **summer zone** is assigned to units intended to operate only within the geographical limits as defined in ILLC 1966 for the Summer zones.

**5.2.3** The navigation notation **tropical zone** is assigned to units intended to operate only within the geographical limits as defined in ILLC 1966 for the Tropical zones.

**5.2.4** The navigation notation **coastal area** is assigned to units intended to operate only within 20 nautical miles from the shore and with a maximum sailing time of six hours from a port of refuge or safe sheltered anchorage.

**5.2.5** The navigation notation **sheltered area** is assigned to units intended to operate in sheltered waters, i.e. harbours, estuaries, roadsteads, bays, lagoons and generally calm stretches of water and when the wind force does not exceed 6 Beaufort scale.

**5.2.6** In specific cases, the designation of the geographical area and/or the most unfavourable sea conditions considered may be added to the navigation notation.

### 5.3 Site notations

**5.3.1** Permanent installations are given a site notation, consisting in the name of the field where the unit will operate.

The site notation is indicated after the navigation notation.

Example: **unrestricted navigation - "site notation"**

**5.3.2** Mobile units are not given a site notation.

Note 1: For mobile units, the criteria for operation at site are specified in the Design Criteria Statement.

## 6 Additional class notations

### 6.1 General

**6.1.1** An additional class notation expresses the classification of additional equipment or specific arrangement, which has been requested by the Interested Party.

**6.1.2** The assignment of such an additional class notation is subject to the compliance with additional rule requirements.

**6.1.3** Some additional class notations are assigned a construction mark, according to the principles given in [3.1.2]. This is indicated in the definition of the relevant additional class notations.

**6.1.4** The different additional class notations which may be assigned to a unit are listed in [6.2] and [6.3], according to the category to which they belong. These additional class notations are also listed in Tab 1.

### 6.2 Additional class notations applicable to all offshore units

#### 6.2.1 General

Additional class notations detailed in [6.2.2] to [6.2.8] may be assigned by the Society on request of the party applying for classification.

#### 6.2.2 Lifting appliances (ALP, ALM, ALS)

**ALP, ALM and ALS** additional class notations may be assigned to units equipped with cranes and other lifting appliances meeting the corresponding requirements of the NI 184 "Rules for the Classification and Certification of Lifting Appliances of Ships and Offshore Units".

#### 6.2.3 Dynamic positioning (DYNAPOS)

**DYNAPOS** with optional additional class notations, may be assigned to units equipped with dynamic station keeping installations complying with the corresponding requirements of Pt F, Ch 9, Sec 6 of the Ship Rules.

**Table 1 : List of additional class notations**

Additional class notation	Reference for definition	Reference for assignment	Remarks
<b>ALP, ALM, ALS</b>	[6.2.2]	NR 184	(1)
<b>DYNAPOS</b>	[6.2.3]	Pt F, Ch 9, Sec 6 of the Ship Rules	(1)
<b>ICE</b>	[6.2.4]	Pt F, Ch 8 of the Ship Rules	
<b>ICE CLASS ID</b>	[6.2.4]	Pt F, Ch 8 of the Ship Rules	
<b>PROC</b>	[6.3.1]	NR 459	
<b>RIPRO</b>	[6.3.2]	Pt D, Ch 1, Sec 14	
<b>COMF</b>	[6.2.8]	Pt F, Ch 6 of the Ship Rules	
<b>LSA</b>	[6.2.5]	NR 460	
<b>ETA</b>	[6.2.6]	Pt B, Ch 10, Sec 4 of the Ship Rules	
<b>STI</b>	[6.2.7]	Pt D, Ch 1, Sec 1	
(1) A construction mark is added to this notation.			

**Table 2 : List of additional service features**

Additional service feature	Reference for definition	Reference for assignment	Remarks
<b>POSA</b>	[7.1]	NI 493	(1)
<b>AUTO</b>	[7.2]	Part C, Chapter 2	
<b>VeriSTAR-HULL</b>	[7.5]	Pt F, Ch 1, Sec 2 of the Ship Rules	(1)
<b>IG</b>	[7.4]	Pt E, Ch 7, Sec 6 and Pt E, Ch 8, Sec 9 of the Ship Rules	
<b>HEL</b>	[7.3]	Pt D, Ch 1, Sec 8	
(1) A construction mark is added to this notation			

**6.2.4 Operation in ice (ICE)**

- The additional class notation **ICE CLASS ID** is assigned to units that comply with the specific requirements detailed in Pt F, Ch 8 of the Ship Rules.
- The additional class notation **ICE** is assigned to units whose reinforcements for navigation in ice are similar but not equivalent to those required for the assignment of the notation defined above, when this has been specially considered by the Society.

**6.2.5 Life saving appliances (LSA)**

**LSA** additional class notation may be assigned to units the life-saving equipment of which complies with the applicable provisions of Rule Note "Safety features of offshore units and installations".

Note 1: It is reminded that, except if **LSA** additional class notation is to be granted, life-saving appliances are out of the scope of classification.

**6.2.6 Emergency towing arrangement (ETA)**

The additional class notation **ETA** may be assigned to units fitted with an emergency towing arrangement.

The requirements for the assignment of this notation are given in Pt B, Ch 10, Sec 4 of the Ship Rules.

**6.2.7 Specific thickness increment (STI)**

The additional class notation **STI** may be assigned to units with thickness increments determined in accordance with the Interested Party.

The requirements for the assignment of this notation are given in Pt D, Ch 1, Sec 1.

**6.2.8 Comfort on board (COMF)**

The notations dealt with under this heading are relevant to the assessment of comfort on board floating units with regard to the level of noise and /or vibration.

The parameters which are taken into consideration for the evaluation of the comfort such as the level of noise, and the level of vibration will be indicated in the relevant annex to the Certificate of Classification.

The parameters are only verified once for all when the unit is classed.

As an initial approach, the requirements for the additional class notation **COMF** for passenger ships in Pt F, Ch 6 of the Ship Rules will be considered for the floating unit. The Society will take into consideration realistic criteria upon the final evaluation of the unit – and based on Owner requirements.

### 6.3 Additional class notations applicable to floating, production and storage units

#### 6.3.1 Process (PROC)

**PROC** additional class notation may be assigned to units fitted with oil and/or gas production installations meeting the corresponding requirements of the Rule Note "Process systems on board offshore units and installations".

Note 1: **PROC** additional class notation is strongly recommended for permanent installations fitted with oil and/or gas production installations, so as to allow a global approach of unit's safety.

#### 6.3.2 Risers (RIPRO)

**RIPRO** additional class notation will be assigned to permanent installations fitted with risers meeting the corresponding requirements of Chapter 10.

Note 1: **RIPRO** additional class notation is strongly recommended for permanent installations fitted with risers.

## 7 Additional service features

### 7.1 Station keeping (POSA)

#### 7.1.1 Station keeping (POSA)

**POSA** additional service feature may be assigned to units equipped with position anchoring equipment complying with the applicable requirements of NI 493 "Classification of mooring systems for permanent offshore units".

Note 1: **POSA** additional service feature is mandatory for permanent installations.

### 7.2 Automation systems (AUTO)

**AUTO** additional service feature may be assigned to units the control and safety systems of which comply with the applicable requirements of Part C, Chapter 2.

### 7.3 Helideck (HEL)

**7.3.1** Units fitted with helicopter facilities complying with Chapter 13 of the IMO MODU Code may be assigned addi-

tional service feature **HEL**, subject to design review and construction and installation survey by the Society.

### 7.4 Inert gas (IG)

**7.4.1** Additional service feature **IG** may be assigned to surface units intended to receive service notation oil storage, when they are equipped with an inert gas plant for crude oil storage tanks complying with the corresponding provisions of Part D, Chapter 1. This service feature also applies to gas blanketing systems.

Additional service feature **IG** is mandatory for those units intended to receive service notation oil storage equipped with a crude oil washing system (**COW**) or the displacement of which is at least equal to 20,000 tdw.

### 7.5 VeriSTAR-HULL

**7.5.1** The additional service feature **VeriSTAR-HULL** is assigned to units the structural condition of which is monitored using computerised survey data.

## 8 Other notations

### 8.1 Service notations

**8.1.1** The Society may define service notations other than those mentioned in the present Section, by means of provisional rules and recommendations, which are then published in the form of tentative rules.

### 8.2 Additional class notations

**8.2.1** On request of the Interested Party, the Society may assign, in addition to those mentioned in the present Section, additional class notations as defined in Part A of the Ship Rules when the unit meets the requirements of these Rules, or of Guidance Notes to which it is referred.

## SECTION 3

## ASSIGNMENT OF CLASS

### 1 General

#### 1.1

**1.1.1** Class is assigned to a unit upon a survey, with the associated operations, which is held in order to verify whether it is eligible to be classed on the basis of the Rules of the Society (see Ch 1, Sec 1, [1.3.2]). This may be achieved through:

- the completion of the new building, during which a survey has been performed,
- a survey carried out according to the agreement developed by the IACS Member Societies when units change class between members, or
- a specific admission to class survey, in cases where a unit is classed with a non-IACS Society or is not classed at all.

### 2 New building procedure

#### 2.1 Units surveyed by the Society during construction

**2.1.1** When a unit is surveyed by the Society during construction, it is to comply with those requirements of the Rules which are in force and applicable depending on the class of the ship, taking into account the provisions of Ch 1, Sec 1, [2.2] and Ch 1, Sec 1, [2.3].

**2.1.2** The Society:

- approves the plans and documentation submitted as required by the Rules
- proceeds, if required, with the appraisal of the design of materials and equipment used in the construction of the unit and their inspection at works
- carries out surveys or obtains appropriate evidence to satisfy itself that the scantlings and construction meet the rule requirements in relation to the approved drawings
- attends tests and trials provided for in the Rules
- assigns the construction mark  $\boxtimes$ ; refer to Ch 1, Sec 2, [3.1.2]

**2.1.3** The Society defines in specific Rules which materials and equipment used for the construction of units built under survey are, as a rule, subject to appraisal of their design and to inspection at works, and according to which particulars.

**2.1.4** As part of his interventions during the ship's construction, the Surveyor will:

- conduct an overall examination of the parts of the unit covered by the Rules

- examine the construction methods and procedures when required by the Rules
- check selected items covered by the rule requirements
- attend tests and trials where applicable and deemed necessary

#### 2.1.5 Use of materials, machinery, appliances and items

As a general rule, all materials, machinery, boilers, auxiliary installations, equipment, items etc. (generally referred to as "products") which are covered by the class and used or fitted on board units surveyed by the Society during construction are to be new and, where intended for essential services as defined in Ch 1, Sec 1, [1.2.1], tested by the Society.

Second hand materials, machinery, appliances and items may be used subject to the specific agreement of the Society and the Owner.

The requirements for the selection of materials to be used in the construction of the various parts of a unit, the characteristics of products to be used for such parts and the checks required for their acceptance are to be as stated in Part C and in NR 216 "Materials and welding", as applicable, or in other Parts of the Rules or as specified on approved plans. In particular, the testing of products manufactured according to quality assurance procedures approved by the Society and the approval of such procedures are governed by the requirements of NR 216 "Materials and welding".

#### 2.1.6 Defects or deficiencies and their repair

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

All repairs are subject to the preliminary agreement of the Society. When the limits of tolerance for defects are specified in the Rules concerned or by the Manufacturer, they are to be taken into account for repairs.

It is incumbent upon the Interested Party to notify the Society of any defects noted during the construction of the unit and/or of any item not complying with the applicable requirements or in any case unsatisfactory. Proposals regarding remedial actions intended to be adopted to eliminate such defects or unsatisfactory items are to be submitted to the Society and, if accepted, carried out to the Surveyor's satisfaction.

#### 2.1.7 Equivalence of Rule testing under certain conditions

Notwithstanding the provisions of [2.1.5], the Society may, at its discretion and subject to conditions and checks deemed appropriate, accept certain materials, appliances or machinery which have not been subjected to rule testing.

## 2.2 Other cases

**2.2.1** When the procedure adopted does not comply with that detailed in [2.1] but the Society deems that it is acceptable for the assignment of class, the construction mark ● is assigned in accordance with Ch 1, Sec 2, [3.2.3].

## 2.3 Documentation

**2.3.1** Documentation relevant to the class applied for is to be submitted for the approval of the Society.

**2.3.2** The required documentation listed in Ch 1, Sec 4, [2] for new built units is to be considered as a minimum, to be completed in compliance with the particular requirements of the other chapters, accounting for the unit's service(s), structural type and contemplated additional class notations.

The Society may also call for additional information according to the specific nature of the unit to be classed.

**2.3.3** The documentation submitted to the Society is examined in relation to the class applied for in the request for classification.

Note 1: Should the Interested Party subsequently wish to have the class, in particular the service notation or navigation notation, granted to the unit modified, plans and drawings are generally to be re-examined.

**2.3.4** A copy of the submitted plans will be returned duly stamped, with remarks related to the compliance with the rule requirements should the need arise.

**2.3.5** As a rule, modifications of the approved plans regarding items covered by classification are to be submitted.

**2.3.6** Design data to be submitted to the Society are to incorporate all information necessary for the assessment of the design of the unit for the purpose of assignment of class. It is the responsibility of the Interested Party to ascertain that the design data are correct, complete and compatible with the use of the unit.

**2.3.7** Design calculations are to be provided, when called for, as supporting documents to the submitted plans.

**2.3.8** Design data and calculations are to be adequately referenced. It is the duty of the Interested Party to ascertain that the references used are correct, complete and applicable to the design of the unit.

**2.3.9** The submitted plans are to contain all necessary information for checking the compliance with the requirements of the Rules.

**2.3.10** In the case of conflicting information, submitted documentation will be considered in the following order of precedence: design data, plans, design calculations.

**2.3.11** It is the responsibility of the Interested Party to ascertain that drawings used for the procurement, construction and other works are in accordance with the approved plans.

## 2.4 Construction portfolio

**2.4.1** For units built under special survey, a construction portfolio, including items listed in [2.4.2], is to be prepared and a copy placed on board the unit.

For units not built under special survey, it is recommended that a construction portfolio, as complete as possible, be prepared and a copy placed on board the unit.

**2.4.2** The portfolio is to include the following:

- quality control plans;
- reviewed drawings relating to the structure of the unit showing the location and extent of application of different grades and strengths of materials (material list);
- fabrication procedures and qualifications (welding, forming, heat treatment, etc.);
- testing procedures (NDT, pressure testing, functional testing, etc.);
- personnel qualifications (welders, NDT operators);
- material certificates;
- test certificates.

**2.4.3** Restrictions or prohibitions, as applicable, regarding alterations or repairs in connection with [2.4.2] are to be included in the portfolio.

**2.4.4** The construction portfolio is to be submitted to the review of the Surveyor attending the construction of the unit for review of the items specified in [2.4.2].

## 3 Date of initial classification

### 3.1 Definitions

#### 3.1.1 Date of build

For a new building the date of build is the year and month at which the new construction survey process is completed. Where there is a substantial delay between the completion of the construction survey process and the unit commencing active service, the date of commissioning may be also specified.

If modifications are carried out, the date of build remains assigned to the unit. Where a complete replacement or addition of a major portion of the unit (e.g. forward section, after section, main cargo section) is involved, the following applies:

- the date of build associated with each major portion of the unit is indicated on the Classification Certificate
- survey requirements are based on the date of build associated with each major portion of the unit.

#### 3.1.2 Date of initial classification for new buildings

As a general rule, for new buildings the date of initial classification coincides with the date of build.

#### 3.1.3 Date of initial classification for existing units

In principle, for existing units the date of initial classification is the date of completion of the admission to class survey.

## 4 Reassignment of class

### 4.1

**4.1.1** At the request of the Owner, a unit which was previously classed with the Society, subsequently withdrawn

from class and has not been classed since may have the class reassigned subject to an admission to class survey. If applicable and appropriate, account may be taken of any periodical surveys held in the former period of class with the Society.

## SECTION 4 REQUIRED DOCUMENTATION

### 1 General

#### 1.1 Principle

**1.1.1** The documentation listed in the present Section is to be considered as a minimum, to be completed in compliance with the particular requirements of the other chapters, accounting for the unit's service(s), structural type and contemplated additional class notations.

#### 1.2 Time of submission

**1.2.1** The required plans, drawings and documentation are to be submitted to the Society by the party applying for classification, as early as possible, unless otherwise agreed upon.

#### 1.3 Contents of documentation

**1.3.1** The submitted plans and drawings are to clearly show all essential features, arrangements and scantlings of the structure, machinery, boilers, auxiliaries and other equipment covered by the classification.

In addition to the above, drawings and documents may also be required for assigning the requested additional class notations or special notations.

### 2 New built units

#### 2.1 Design data

##### 2.1.1 Structural data

The following design data are to be submitted for information and plan review purposes:

- environmental including:
  - metocean data, applicable to each mode of operation
  - soil conditions
  - minimum atmospheric and sea water temperatures and ice formation if applicable

The data are to be as comprehensive as possible and are to give clearly evidence of all applicable environmental restrictions.

- for permanent installations, background data to the above, such as metocean investigation reports, soil investigation reports, and other relevant documentation, are to be also provided
- distributions of fixed and variable loads for each mode of operation
- maximum loading for all decks areas

- necessary data relevant to corrosion protection
- results of model basin tests, when performed
- results of wind tunnel tests, when performed
- for helidecks, data of the heaviest helicopter intended to be used (see Part B, Chapter 2)
- for equipment liable to induce, when in use, significant loads within the structure of the unit, all information on these loads (refer to Part B, Chapter 2), such as:
  - drilling loads
  - crane loads on pedestal and on boom and hook rests (lifting)
  - stinger and tensioner loads (pipelaying)
  - other loads from lifting and handling equipment

##### 2.1.2 Power consumers

The list of essential and emergency power consumers of all types is to be submitted together with the complete indications of the required power supplies associated to different operational configurations.

#### 2.2 Design calculations

##### 2.2.1 Structural calculations

The following design calculations are to be provided as supporting documents to the submitted plans and drawings:

- calculations of environmental loadings to include forces and moments from wind, waves, currents, ice, snow, earthquakes as applicable
- stability calculations for the intact and damaged conditions including detailed computation of wind exposed areas and, if applicable, ice formation effects
- calculations of the unit's resistance against overturning while resting on the sea bed, if applicable
- calculations of unit motions, where applicable
- calculations of loads induced by equipment (refer to [2.1.1])
- overall strength calculations
- local strength calculations
- jacking systems calculations, where applicable
- mooring and anchoring calculations, as applicable
- calculations of cathodic protection system

##### 2.2.2 Piping calculations

The following design calculations are to be provided as supporting documents to the submitted plans and drawings:

- piping and pressure vessels strength calculations, in particular for calculation of steam pipes and other pressure piping
- fire water demand and fire pump capacity calculations

### 2.2.3 Electrical calculations

Electrical design calculations are to be provided as supporting documents to the submitted plans and drawings, including:

- Electrical balance, estimated for the different conditions of operation of unit (refer to Ch 1, Sec 1, [1.6.4])
- justification of sizes of conductors (temperature rises and voltage drops)
- for installations where the total rated current of generators arranged to run in parallel is above 1000 A, estimation of the prospective short-circuit currents
- where the main bus-bar maximum symmetrical short-circuit current is expected to exceed 50 kA, justification of the bus-bar and bracket strength related to the induced electromagnetic forces

### 2.2.4 Additional class notations

Additional calculations as may be called for concerning the assignment of additional class notations are to be also provided.

## 2.3 Plans and drawings

### 2.3.1 General drawings

The following general drawings are to be submitted:

- general arrangement plan
- lines drawings (body plan) and offset table of frames, together with plotting of fore and aft axial longitudinal curves
- capacity plan indicating the volumes, overflows and the positions of the centres of gravity of the various compartments together with their locations
- tank sounding tables
- distribution, actual or estimated, of the unit's light-weight
- deck loading plans

### 2.3.2 Structural drawings

The following structural plans are to be submitted:

- test plan of compartments intended for liquids
- arrangements and details of watertight doors and other closing appliances; arrangement and details of all openings including locations of overflow and air pipes
- main structural drawings showing structural arrangements, scantlings, grades of steel, welded connections. These drawings are to include, as applicable: transverse and longitudinal sections, decks including helicopter deck; shell plating and framing; bulkheads and flats; legs; columns, bracings and floaters; hull, footings and mats; superstructures and deck houses
- detailed structural drawings in the areas of connections between main structural members (for instance, connections between bracings, bracing and column, column and floater, column and deck in semi-submersible units), in way of foundations of jacking systems for self-elevating units, drilling derrick, anchoring equipment, crane foundations and of all other parts liable to be subject to high local loadings or stress concentrations
- drawings showing corrosion control arrangements

### 2.3.3 Machinery and piping systems

The following machinery and piping drawings are to be submitted:

- a) General:
  - general arrangement showing particularly location of essential machinery and equipment
  - bilge and ballast pipings, outside and inside machinery spaces
  - sea inlets, scuppers and sanitary discharges
  - air vents, overflow and sounding piping systems and/or devices
  - remote level indicating systems and draught measurements systems
  - boiler feed system
  - sea water distillation system
  - fuel oil and lubricating oil systems, including pipings and tanks not forming part of the unit's structure
  - live steam piping
  - reduced pressure steam, draining, and exhaust piping
  - machinery circulation and cooling piping
  - compressed air systems for remote control, instrumentation, engine starting and bulk handling, including compressed air vessels and pipings
  - accessories such as heaters, coolers, etc.
  - exhaust ducts of engines and boilers
  - location and arrangement of drip-trays and gutterways
  - jacking systems, for self-elevating units
  - propulsion and power generating systems
- b) Thermal oil heating installation:
  - piping and pumping systems
  - general arrangement of the installation
  - boilers including their major components
  - protections against oil leakage
  - monitoring and alarm systems
  - nature and characteristics of the thermal oil: viscosity, flash point, fire point, decomposition temperature, auto-ignition temperature, etc.
  - operation and maintenance instructions
- c) Hydraulic installations:
  - piping and pumping systems
  - arrangement of the installations
  - protections against leakage
  - description of the main components
  - protection against overpressure
  - monitoring and alarm systems
  - nature and characteristics of the hydraulic medium (flash point and auto-ignition in particular)
  - operation and maintenance instructions
- d) Incinerators:
  - general arrangement of the installation
  - incinerators
  - piping and pumping systems

- monitoring and alarm systems
  - programme of type tests and tests after completion
  - operation and maintenance instructions
- e) Helicopter refuelling system:
- general arrangement of the installation
  - storage vessels, piping and pumping system
  - protection against leakage
  - protection against overpressure
  - jettisoning or emergency draining
  - helideck drainage system
  - emergency shutdown system

The drawings are to be diagrammatic and are to refer to a single system, in order to facilitate their examination. They are to include:

- service pressures and temperatures, in order to determine their classes
- size and nature of materials for pipes and accessories
- capacity, prime mover and, if needed, location of the pumps
- arrangements proposed when remote control, remote monitoring or automation, are foreseen for the installations concerned
- generally, all information allowing the verification of the requirements of the Rules
- specification of systems
- fabrication specification
- welding procedure specification
- operation control procedures

#### 2.3.4 Electrical drawings

The following electrical plans and diagrams are to be submitted:

- a) General arrangement of:
- main switchboard
  - other distribution boards
  - emergency switchboard
  - generators
  - electric propulsion plant, if any
  - motors and equipment serving the essential services;
  - batteries
  - cable trays
- b) Single line diagrams of the main and emergency distribution networks, including single line diagrams of intrinsically safe circuits, indicating:
- make, type, cross section area, of the conductors with mention of the intensity carried under full load
  - make, type and rating of switch-gears, fuses and circuit-breakers
- c) For main, sub and emergency switchboards:
- assembly drawing showing the various sections and the arrangement of the equipment and instrumentation
  - bus-bar arrangement with mention of their cross section areas

- d) For offshore units where exist hazardous area(s):
- a general diagram showing the location of the electrical equipment within the hazardous area(s) and their safety type (e.g. Ex "d" II BT3)
  - an evidence of the safety character of the above equipment
  - list of explosion protected equipment
- e) Impressed current cathodic protection systems if applicable

#### 2.3.5 Safety plans

The following safety plans and documents are to be submitted:

- general arrangement of the installation
- the dedicated sections of the Operating Manual related to classification as specified in Ch 1, Sec 1, [3.4]
- the dedicated sections of the construction portfolio as specified in Ch 1, Sec 3, [2.4.4]
- hazardous areas classification drawing, including information about all openings located in these hazardous areas
- mechanical and natural ventilation systems including location of air intakes and exhausts, air renewal rate per hour, location of fan controls
- air intakes and exhaust outlets of internal combustion engines and boilers
- fire structural protection drawings
- fire detection and extinguishing system description and drawings, including fire-fighting water piping and pumping systems, with flow calculations
- alarm and internal communication systems description and drawings
- emergency shutdown systems description, procedures and drawings
- escape way and life saving appliances description and drawings

### 2.4 Operating manual

#### 2.4.1 Submission

An operating manual is to be submitted for review to the Society.

#### 2.4.2 Content

As a minimum, the operating manual is to include the following informations, where applicable:

- General description and principal particulars of the unit
- General arrangement plan showing watertight compartments, closures, vents, intakes and discharges, down flooding points
- Capacity plan showing the capacity, centre of gravity and free surface correction for each tank, fixed and variable deck loads, permanent ballast, and the location of draught gauges and draught marks
- Book of loading conditions
- Permissible loadings for all decks
- Amount of snow and ice allowable on deck

- Stability drawings including body plan, inclining experiment results and allowable KG curves
- Amount of allowable marine growth
- Towing arrangements
- Temporary mooring and position anchoring arrangements
- Ballast control system drawings including piping diagram showing remote and manual control devices
- Bilge system
- Hazardous areas drawings
- Fire bulkhead arrangement drawing
- Fire and gas drawings showing types and locations of detection and extinguishing equipment
- Schematic diagrams of main emergency power supplies and electrical installations
- Corrosion protection system including:
  - In case of impressed current system, operating manual and detail of maintenance operations
  - In case of sacrificial anodes: detail of maintenance/retrofit operations
- List of key as-built drawings incorporated in the Operating Manual or in the construction portfolio
- Design Criteria Statement issued by the Society, including classification restrictions, if any
- Design data sheets referred to in the Design Criteria Statement
- Classification Certificates, continuous survey lists and other certificates issued by the Society



Part A  
**Classification Surveys**

Chapter 2  
**MAINTENANCE OF CLASS**

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- SECTION 1      GENERAL PROVISIONS CONCERNING SURVEYS**
- SECTION 2      ANNUAL SURVEY**
- SECTION 3      INTERMEDIATE SURVEY**
- SECTION 4      CLASS RENEWAL SURVEY**
- SECTION 5      SCOPE OF SURVEYS FOR MOBILE OFFSHORE DRILLING UNITS**
- SECTION 6      SURVEYS RELATED TO STORAGE AREA OF OIL STORAGE UNITS**
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## SECTION 1

## GENERAL PROVISIONS CONCERNING SURVEYS

### 1 General principles of surveys

#### 1.1 Survey types

**1.1.1** Classed units are submitted to surveys for the maintenance of class. These surveys include the class renewal survey, intermediate and annual survey, bottom survey (either survey in dry condition or in-water survey), tailshaft survey, boiler survey, and surveys for the maintenance of additional class notations, where applicable. Such surveys are carried out at the intervals and under the conditions laid down in this Section. In addition to the above periodical surveys, units are to be submitted to occasional surveys whenever the circumstances so require; refer to [5].

Note 1: For the definitions and procedures related to surveys, refer to Pt A, Ch 2, Sec 2, [2] of the Ship Rules.

For the requirements related to the extent, determination of locations and acceptance criteria of thickness measurements, reference is made to Pt A, Ch 2, App 3 of the Ship Rules, as applicable.

**1.1.2** Where there are no specific survey requirements for additional class notations assigned to a unit, equipment and/or arrangements related to these additional class notations are to be examined, as applicable, to the Surveyor's satisfaction at each class renewal survey for the class.

The surveys are to be carried out in accordance with the relevant requirements in order to confirm that the hull, machinery, equipment and appliances comply with the applicable Rules and will remain in satisfactory condition based on the understanding and assumptions mentioned in Ch 1, Sec 1, [3.3].

Where the conditions for the maintenance of the class, service notations and additional class notations are not complied with, the class and/or the service notation and/or the additional class notations as appropriate will be suspended and/or withdrawn in accordance with the applicable Rules given in Pt A, Ch 2, Sec 3 of the Ship Rules.

Note 1: It is understood that requirements for surveys apply to those items that are required according to the Rules or, even if not required, are fitted on board.

**1.1.3** Unless otherwise specified, any survey other than bottom survey and tailshaft survey may be effected by carrying out partial surveys at different times to be agreed upon with the Society, provided that each partial survey is adequately extensive. The splitting of a survey into partial surveys is to be such as not to impair its effectiveness.

#### 1.2 Change of periodicity, postponement or advance of surveys

**1.2.1** The Society reserves the right, after due consideration, to change the periodicity, postpone or advance surveys, taking into account particular circumstances.

**1.2.2** When a survey becomes overdue during a voyage, the following applies:

- a) In the case of a class renewal survey, the Society may, under exceptional circumstances, grant an extension to allow for completion of this survey provided there is documented agreement to such an extension prior to the expiry date of the Certificate of Classification, adequate arrangements have been made for the attendance of the Surveyor at the first port of call and the Society is satisfied that there is technical justification for such an extension. Such an extension will be granted only until arrival at the first port of call after the expiry date of the Certificate of Classification
- b) In the case of annual and intermediate surveys, no postponement is granted. Such surveys are to be completed within their prescribed windows
- c) In the case of all other periodical surveys and recommendations, extension of class may be granted until the arrival of the unit at the port of destination.

#### 1.3 Extension of scope of survey

**1.3.1** The Society and/or its Surveyors may extend the scope of the provisions in the present Chapter, which set forth the technical requirements for surveys, whenever and so far as considered necessary, or modify them in the case of special units or systems.

**1.3.2** The extent of any survey also depends upon the condition of the unit and its equipment. Should the Surveyor have any doubt as to the maintenance or condition of the unit or its equipment, or be advised of any deficiency or damage which may affect the class, then further examination and testing may be conducted as considered necessary.

#### 1.4 General procedure of survey

**1.4.1** The general procedure of survey consists in:

- an overall examination of the parts of the unit covered by the rule requirements
- checking selected items covered by the rule requirements
- attending tests and trials where applicable and deemed necessary by the Surveyor.

**1.4.2** When a survey results in the identification of significant corrosion, structural defects or damage to hull, machinery and/or any piece of its equipment which, in the opinion of the Surveyor, affect the unit's class, remedial measures are to be implemented before the unit continues in service (see also Pt A, Ch 2, Sec 2, [2.10] of the Ship Rules).

Note 1: The Society's survey requirements cannot be considered as a substitute for specification and acceptance of repairs and maintenance, which remain the responsibility of the Owner.

Note 2: In accordance with the provisions of Ch 1, Sec 1, [3.1.4], the Society will, at the request of the Owner, apply the regulations of Administrations concerning the scope and periodicity of surveys when they differ from those laid down in [3] and [4].

Note 3: During the surveys, the Surveyor does not check that the spare parts are kept on board, maintained in working order and suitably protected and lashed.

## **1.5 Appointment of another Surveyor**

**1.5.1** In compliance with the provisions of Ch 1, Sec 1, [2.5], should a disagreement arise between the Owner and the Surveyor during a survey, the Society may, at the request of the Owner, designate another Surveyor.

## **1.6 Access for surveys**

**1.6.1** The Rule requirements for class maintenance surveys are to be given due consideration during the unit's design and construction phases as regards all necessary arrangements for access. Arrangements of a special nature are to be brought to the attention of the Society.

**1.6.2** For secondary spaces, or small volume spaces, the Society may accept that no access is provided for inspection. When necessary, the Society may call then for additional requirements.

## **2 Certificate of Classification: issue, validity, endorsement and renewal**

### **2.1 Issue of Certificate of Classification**

**2.1.1** A Certificate of Classification, bearing the class notations assigned to the unit and an expiry date, is issued to any classed unit. This certificate is also provided with annexes supplying information necessary for the management of the certificate and for carrying out the class surveys.

**2.1.2** A Provisional Certificate of Classification may serve as a Certificate of Classification in some cases, such as after an admission to class survey, after a class renewal survey, or when the Society deems it necessary.

**2.1.3** The Certificate of Classification and relevant annexes are to be made available to the Society's Surveyors upon request.

### **2.2 Validity of Certificate of Classification, maintenance of class**

**2.2.1** According to Ch 1, Sec 1, [2.5], the Society alone is qualified to confirm the class of the unit and the validity of its Certificate of Classification.

**2.2.2** During the class period, a Certificate of Classification is valid when it is not expired.

The class is maintained during a certain period or at a given date, when during the said period or at such date the conditions for suspension or withdrawal of class are not met.

Refer also to Ch 1, Sec 1, [1.3.4].

**2.2.3** At the request of the Owner, a statement confirming the maintenance of class may be issued by the Society based on the information in its records for that unit at the time.

This statement is issued on the assumption that the Owner has complied with the Rules, in particular with [5].

Should any information which would have prevented the Society from issuing the statement and which was not available at the time subsequently come to light, the statement may be cancelled.

Attention is drawn to Pt A, Ch 2, Sec 3, [2.1] of the Ship Rules, whereby the Society, upon becoming aware of a breach of the Rules, is empowered to suspend class from the date of the breach, which may be prior to the date of the statement.

**2.2.4** According to the same conditions as in [2.2.3], a statement declaring that the class is maintained "clean and free from recommendation" may be issued by the Society when there is no pending recommendation at that date.

**2.2.5** Classification-related documents and information are liable to be invalidated by the Society whenever their object is found to differ from that on which they were based or to be contrary to the applicable requirements. The Owner is liable for any damage which may be caused to any third party from improper use of such documents and information.

### **2.3 Endorsement of Certificate of Classification**

#### **2.3.1 Text of endorsement**

When surveys are satisfactorily carried out, the Certificate of Classification is generally endorsed accordingly, with the relevant entries in the appropriate annexes.

Each endorsement normally consists of sections for the description of:

- the surveys held
- the imposed, deleted and postponed recommendations (including the assigned limit date as applicable)
- the unchanged existing recommendations (given for information only).

Where applicable, memoranda are also endorsed in the appropriate annex.

#### **2.3.2 Possible modifications to endorsements**

The Society reserves the right to modify the endorsements made by Surveyors.

### **2.4 Status of surveys and recommendations**

**2.4.1** Information given in the Certificate of Classification, associated endorsements, Rules and specific documents enables the Owner to identify the status of surveys and recommendations.

**2.4.2** The omission of such information does not absolve the Owner from ensuring that surveys are held by the limit dates and pending recommendations are cleared to avoid any inconvenience which is liable to result from the suspension or withdrawal of class; see Pt A, Ch 2, Sec 3 of the Ship Rules.

### 3 Class renewal survey

#### 3.1 General principles

**3.1.1** Class renewal surveys of hull, structure, equipment, and machinery are to be carried out at 5 year intervals to renew the Classification Certificate(s).

**3.1.2** The first class renewal survey is to be completed within 5 years from the date of the initial classification survey and thereafter within 5 years from the credited date of the previous class renewal survey. However an extension of class of 3 months maximum beyond the 5th year can be granted in exceptional circumstances. In this case the next period of class will start from the expiry date of the class renewal survey before the extension was granted.

**3.1.3** For survey completed within 3 months before the expiry date of the class renewal survey, the next period of class will start from the expiry date of the class renewal survey. For Survey completed more than three months before the expiry date of the class renewal survey, the period of class will start from the survey completion date.

**3.1.4** The class renewal survey may be commenced at the 4th Annual Survey and be progressed with a view to completion by the 5th anniversary date.

**3.1.5** When considered necessary by the Society the interval between class renewal surveys may be reduced.

**3.1.6** Class renewal survey requirements of units of unusual design, in lay-up or in unusual circumstances will be determined on individual basis.

**3.1.7** At the request of the Owner, and upon the Society's approval of the proposed arrangements, a system of Continuous Survey may be undertaken whereby the class renewal survey requirements are carried out in regular rotation in accordance with the Rules of the Society to complete all the requirements of the particular class renewal survey within a five year period. Any defects that may affect classification found during the survey, are to be reported to the Society and dealt with to the satisfaction of the Surveyor.

#### 3.2 Normal survey system (SS)

**3.2.1** When the normal survey system is applied to units with a 5 year period of class, the class renewal survey may be commenced at the fourth annual survey and continued during the following year with a view to completion by its due date. In this case the survey may be carried out by partial surveys at different times. The number of checks to be performed at each partial survey and the interval between partial surveys are to be agreed by the Society.

**3.2.2** A class renewal survey may be commenced before the fourth annual survey at the request of the Owner. In this case, the survey is to be completed within fifteen months. The conditions for the execution of partial surveys are the same as those referred to in [3.2.1].

#### 3.3 Continuous survey system (CS)

**3.3.1** The request by the Owner for admission to the continuous survey system will be considered by the Society and agreement depends on the type and age of hull and machinery. This system may apply to the class renewal survey of hull (CSH), machinery (CSM) or other installations such as refrigerating installations (CSR) covered by an additional class notation.

**3.3.2** When the continuous survey system is applied, this is indicated in the Certificate of Classification and appropriate notations as indicated in [3.3.1] are entered in the Register.

**3.3.3** Units subject to the continuous survey system are provided with lists of items to be surveyed under this system; these lists are attached to the Certificate of Classification.

**3.3.4** For items inspected under the continuous survey system, the following requirements generally apply:

- the interval between two consecutive surveys of each item is not to exceed five years
- the items are to be surveyed in rotation, so far as practicable ensuring that approximately equivalent portions are examined each year
- the Society may credit for continuous survey results of inspections carried out before the admission to the continuous survey scheme
- each item is to be surveyed at one time, as far as practicable; the Society may, however, allow possible repair work to be carried out within a certain period.

**3.3.5** For units under continuous survey, items not included in the continuous survey cycle are to be inspected according to the provisions given in [3.2]. Bottom surveys, when relevant, are to be carried out according to the requirements of [4.3].

**3.3.6** Upon application by the Owner, the Society may agree, subject to certain conditions, that some items of machinery which are included in the continuous survey cycle are examined by the Chief Engineer where the Society is not represented. The Chief Engineer is to be certified for this purpose by the Society and his examination is to be followed by a confirmatory survey carried out by a Surveyor. The conditions for the application of this procedure are given in Pt A, Ch 2, App 2 of the Ship Rules.

**3.3.7** The continuous survey system does not supersede the annual surveys and other periodical and occasional surveys.

**3.3.8** A general examination of the unit, as detailed in Pt A, Ch 3, Sec 1 of the Ship Rules for annual surveys, is to be carried out at the end of the period of class.

**3.3.9** For laid-up units, specific requirements given in [7.1] apply.

**3.3.10** The continuous survey system may be discontinued at any time at the discretion of the Society, or at the request of the Owner, and a specific arrangement devised.

### **3.4 Planned maintenance survey system for machinery (PMS)**

**3.4.1** A planned maintenance survey system may be considered as an alternative to the continuous survey system for machinery and is limited to components and systems covered by it. When such a system approved by the Society is implemented, a survey system other than those normally adopted and with intervals different from those of the continuous survey system as detailed in [3.3] may be accepted.

**3.4.2** The conditions for approval of the planned maintenance survey system, the determination of survey item intervals and the general scope of surveys are detailed in Pt A, Ch 2, App 1 of the Ship Rules.

**3.4.3** When the planned maintenance survey system is applied, this is indicated in the Certificate of Classification and notation PMS is entered in the Register.

**3.4.4** Each Chief Engineer appointed to a unit where the PMS is applied must be authorized by the Society according to the conditions given in Pt A, Ch 2, App 2 of the Ship Rules.

The conditions for the application of this procedure are given in Pt A, Ch 2, App 2 of the Ship Rules.

**3.4.5** The planned maintenance survey system does not supersede the annual surveys and other periodical and occasional surveys.

**3.4.6** A general examination of the machinery, as detailed in Pt A, Ch 3, Sec 1 of the Ship Rules for annual surveys, is to be carried out at the end of the period of class.

**3.4.7** The planned maintenance survey system may be discontinued at any time at the discretion of the Society, or at the request of the Owner, and a specific arrangement devised.

## **4 Other periodical surveys**

### **4.1 Annual surveys**

**4.1.1** Annual surveys are to be held within 3 months before or after each anniversary date from the date of the initial classification survey or of the date credited for the last class renewal survey.

### **4.2 Intermediate surveys**

**4.2.1** An intermediate survey, where applicable, is to be carried out within the window from three months before the second to three months after the third anniversary date.

**4.2.2** The intermediate survey is not applicable to units with class symbol **II**.

### **4.3 Bottom survey**

**4.3.1** Bottom survey means the examination of the outside of the ship's bottom and related items. This examination may be carried out with the unit in dry-dock (or on a slipway) or afloat: in the former case, the survey will be referred to as dry-docking survey, while in the latter case as in-water survey.

**4.3.2** The Owner is to notify the Society whenever the outside of the unit's bottom and related items can be examined in dry dock or on a slipway.

**4.3.3** For units classed with the class symbol **I**, there are to be two examinations of the outside of the unit's bottom and related items in each period of class of five years.

The interval between any two such examinations is not to exceed 36 months.

Note 1: Attention is also drawn to the relevant requirements concerning the application of national and international regulations.

**4.3.4** For permanent installations and for other units where drydocking is impracticable, the examination of the outside of the unit's underwater parts and related items may be carried out during an in-water survey, subject to the agreement of the Society.

**4.3.5** For mobile offshore drilling units operating in salt water for less than six (6) months each year, the survey interval may be increased by the Society.

The interval between examinations of the outside of unit's underwater parts and related items for units operating in fresh water or in particular site conditions may be greater, as agreed by the Society.

**4.3.6** Consideration may be given at the discretion of the Society to any special circumstances justifying an extension or a reduction of these intervals.

**4.3.7** For units under the normal survey system, one of the bottom surveys to be performed in each period of class is to be carried out in conjunction with the class renewal survey.

### **4.4 Tailshaft survey**

#### **4.4.1 Definition**

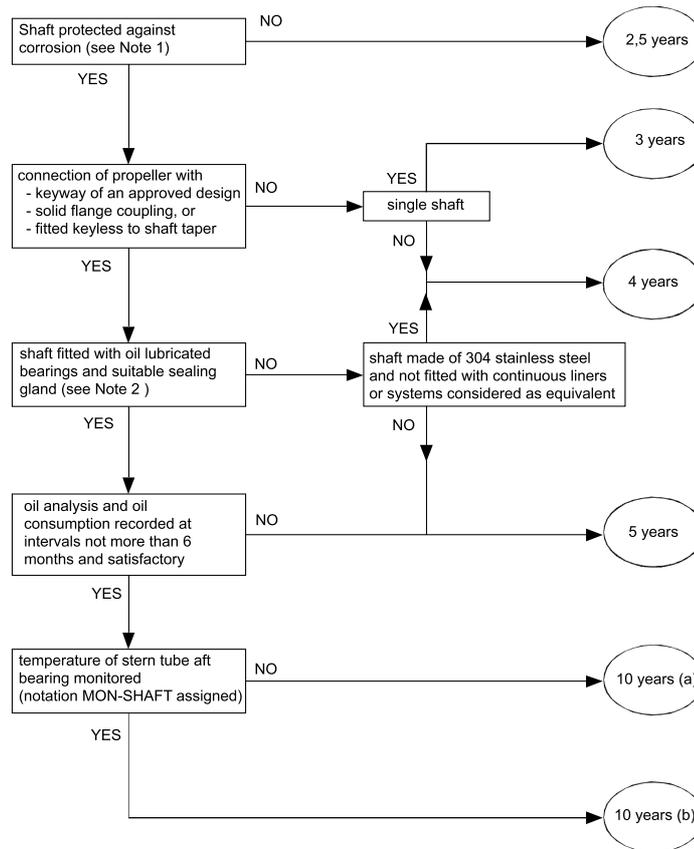
Tailshaft survey means survey of propeller shafts and tube shafts (hereafter referred to as tailshafts) as well as survey of other propulsion systems. The scope is detailed in Pt A, Ch 3, Sec 5 of the Ship Rules.

#### **4.4.2 Tailshaft complete survey**

Tailshafts are to be submitted to complete examination at the periodicity specified below and summarised in Fig 1, based on the type of shaft and its design.

- a) Where the tailshaft is fitted with continuous liners, or approved oil sealing glands, or made of corrosion-resistant material, the periodicity of complete surveys is:
- 3 years for single shafting arrangements
  - 4 years for multi-shafting arrangements.

Figure 1 : Periodicity of complete survey of tailshaft



(a) : with shaft withdrawn, subject to modified survey at 5 years plus or minus 6 months

(b) : with shaft in place, subject to modified survey at 5 years plus or minus 6 months

Note 1 :

Shafts protected against corrosion are those:

- made of corrosion resistant material, or
- fitted with continuous liners or systems considered as equivalent, or
- fitted with oil lubricated bearings and oil sealing glands.

Note 2 :

Suitable sealing glands are glands which are type approved by the Society with regard to protection of the sterntube against ingress of water.

b) These periodicities may be increased to 5 years in the following cases:

- where the propeller is fitted keyless to the shaft taper, the shaft is protected from sea water, the design details are approved, and a non-destructive examination of the forward part of the aft shaft taper is performed at each survey by an approved crack-detection method
- where the propeller is fitted to a keyed shaft taper the design details of which comply with the applicable requirements in Pt C, Ch 1, Sec 7 of the Ship Rules, and a non-destructive examination of the after end of the cylindrical part of the shaft (from the after end of the liner, if any), and of about one third of the length of the taper from the large end is performed at each survey by an approved crack-detection method
- where the propeller is fitted to a solid flange coupling at the aft end of the shaft, the shaft and its fittings are not exposed to corrosion, the design details

are approved, and a non-destructive examination of the after flange fillet area of the shaft is performed at each survey by an approved crack-detection method

c) In all other cases the periodicity of complete surveys is two years and six months (2,5 years).

#### 4.4.3 Tailshaft modified survey

A modified survey of the tailshaft is an alternate way of examination whose scope is given in Pt A, Ch 3, Sec 5 of the Ship Rules. It may be accepted for tailshafts described in [4.4.2] provided that:

- they are fitted with oil lubricated bearings and approved oil sealing glands
- the shaft and its fittings are not exposed to corrosion
- the design details are approved
- the clearances of the aft bearing are found to be in order
- the oil and the oil sealing arrangements prove effective
- lubricating oil analyses are carried out regularly at intervals not exceeding six months and oil consumption is recorded at the same intervals.

The modified survey is to be carried out five years from the last complete survey with a window period of plus or minus six months.

The next complete survey is to be carried out ten years from the last complete survey.

#### 4.4.4 Tailshaft Monitoring System (MON-SHAFT)

Where, in addition to the conditions stated in [4.4.3] for modified survey, the additional class notation **MON-SHAFT** is assigned, the tailshaft need not be withdrawn at both the complete and modified surveys provided that all condition monitoring data is found to be within permissible limits and the remaining requirements for the respective surveys are complied with.

#### 4.4.5 Other propulsion systems

Driving components serving the same purpose as the tailshaft in other propulsion systems, such as directional propellers, vertical axis propellers, water jet units, dynamic positioning systems and thruster assisted mooring systems, are to be submitted to periodical surveys at intervals not exceeding five years.

#### 4.4.6 Extension of intervals of tailshaft surveys

In the case of mobile offshore drilling unit, due to low running hours on tailshafts, extended intervals between tailshaft surveys may be considered based on:

- Satisfactory diver's external examination of stern bearing and outboard seal area including wear-down check as far as is possible.
- Internal examination of the shaft area (inboard seals) in propulsion room(s).
- Confirmation of satisfactory lubricating oil records (oil loss rate, contamination).
- Shaft seal elements are examined/replaced in accordance with seal manufacturer's recommendations.

### 4.5 Boiler survey

**4.5.1** Boilers and thermal oil heaters are to be surveyed twice in every five-year period. The periodicity of the boiler survey is two years and six months (2,5 years).

**4.5.2** For units of eight years of age and over fitted with one single boiler supplying steam for main propulsion, the interval between two boiler surveys may be specially considered.

**4.5.3** Boilers are also submitted to an external inspection as a part of the annual survey of machinery.

**4.5.4** The scope of the boiler survey is detailed in Pt A, Ch 3, Sec 6 of the Ship Rules.

### 4.6 Links between anniversary dates and annual surveys, intermediate surveys and class renewal surveys

**4.6.1** The link between the anniversary dates, the class renewal survey (when carried out according to the normal system), and the annual and intermediate surveys is given in Fig 2.

## 5 Occasional surveys

### 5.1 Damage survey

**5.1.1** It is the responsibility of the owner/operator of the unit to report to the Society without delay any damage, defect or breakdown, which could invalidate the conditions for which a classification has been assigned so that it may be examined at the earliest opportunity by the Society's Surveyor(s). All repairs found necessary by the Surveyor are to be carried out to his satisfaction.

### 5.2 Repairs

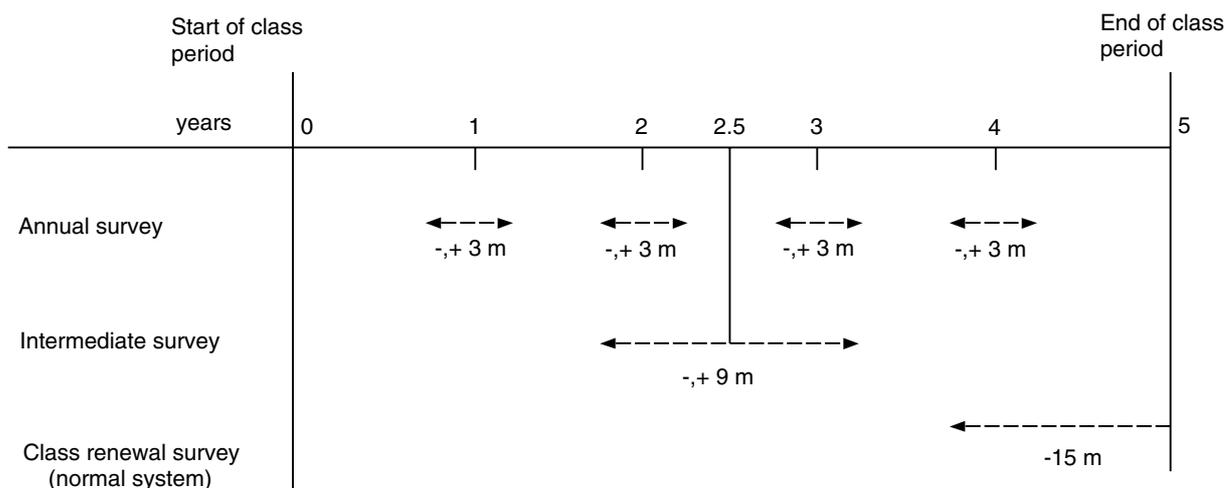
**5.2.1** Where repairs to hull, legs, columns or other structures, machinery or equipment, which affect or may affect classification, are planned in advance to be carried out, a complete repair procedure including the extend to proposed repair and the need for Surveyors attendance is to be submitted to and agreed upon by the Society reasonably in advance. Failure to notify the Society, in advance of the repairs, may result in suspension of the unit's classification until such time as the repair is redone or evidence submitted to satisfy the Surveyor that the repair was properly carried out. This applies also to repairs during voyage or on site.

**5.2.2** The above is not intended to include maintenance and overhaul to hull, other structures, machinery and equipment in accordance with recommended manufacturers procedures and established marine practice and which does not require Society approval; however, any repair as a result of such maintenance and overhauls which affects or may affect classification is to be noted in the ships log and submitted to the Surveyor.

### 5.3 Reactivation surveys

**5.3.1** In the case of units which have been out of service for an extended period, the requirements for reactivation surveys will be specially considered in each case with due regard given to the status of surveys at the time of the commencement of the lay-up period, the length of the period, and conditions under which the unit had been maintained during that period.

Figure 2 : Links between anniversary dates and annual, intermediate and class renewal surveys



## 5.4 Alterations

**5.4.1** No alterations which may affect classification are to be made to the hull or machinery of a classed unit unless plans of proposed alterations are submitted and approved by the Society before the work of alterations is commenced. Such work is to be carried out in accordance with approved plans and tested on completion as required by the Rules and to the satisfaction of the Surveyor.

## 5.5 Welding and replacement of materials

**5.5.1** Welding of steels, including high strength structural steel, is to be to the satisfaction of the Society.

**5.5.2** Welding or other fabrication performed on steels of special characteristics or repairs or renewals of such steel or in areas adjacent to such steel is to be accomplished with procedures approved by the Society considering the special materials involved. Substitution of steels differing from those originally installed is not to be made without approval by the Society.

**5.5.3** The Society may reference IACS Recommendations No. 11 - "Materials Selection Guideline for Mobile Offshore Drilling Units" when considering suitable replacement materials.

## 6 Change of ownership

### 6.1

**6.1.1** In the case of change of ownership, the unit retains its current class with the Society provided that:

- the Society is informed of the change sufficiently in advance to carry out any survey deemed appropriate, and
- the new Owner signs the appropriate request, involving acceptance of the Society's general conditions and Rules. This request covers inter alia the condition of the unit when changing ownership.

Note 1: The unit's class is maintained without prejudice to those provisions in the Rules which are to be enforced in cases likely to cause suspension or withdrawal of the class such as particular damages or repairs to the unit of which the Society has not been advised by the former or, as the case may be, new Owner.

Note 2: No information whatsoever related to the class of the unit will be provided or confirmed to any third party, unless the appropriate request for information is duly completed and signed by the party making the request and the authorisation of the current Owner is obtained.

## 7 Lay-up and re-commissioning

### 7.1 General principles

**7.1.1** A unit put out of commission may be subject to specific requirements for maintenance of class, as specified below, provided that the Owner notifies the Society of the fact.

If the Owner does not notify the Society of the laying-up of the unit or does not implement the lay-up maintenance program, the unit's class will be suspended and/or withdrawn when the due surveys are not carried out by their limit dates in accordance with the applicable requirements given in Pt A, Ch 2, Sec 3 of the Ship Rules.

**7.1.2** The lay-up maintenance program provides for a "laying-up survey" to be performed at the beginning of lay-up and subsequent "annual lay-up condition surveys" to be performed in lieu of the normal annual surveys which are no longer required to be carried out as long as the unit remains laid-up. The minimum content of the lay-up maintenance program as well as the scope of these surveys are given in Pt A, Ch 3, App 1 of the Ship Rules. The other periodical surveys which become overdue during the lay-up period may be postponed until the re-commissioning of the unit.

**7.1.3** Where the unit has an approved lay-up maintenance program and its period of class expires, the period of class is extended until it is re-commissioned, subject to the satisfactory completion of the annual lay-up condition surveys as described in [7.1.2].

**7.1.4** The periodical surveys carried out during the lay-up period may be credited, either wholly or in part, at the discretion of the Society, having particular regard to their extent and dates. These surveys will be taken into account for the determination of the extent of surveys required for the re-commissioning of the unit and/or the expiry dates of the next periodical surveys of the same type.

**7.1.5** When a unit is re-commissioned, the Owner is to notify the Society and make provisions for the unit to be submitted to the following surveys:

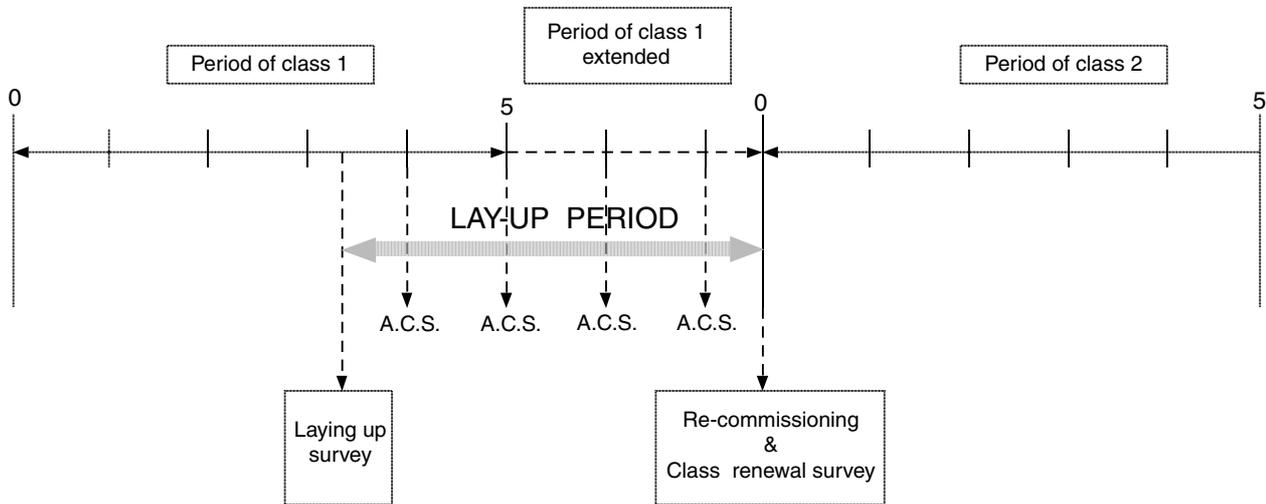
- an occasional survey prior to re-commissioning, the scope of which depends on the duration of the lay-up period
- all periodical surveys which have been postponed in accordance with [7.1.2], taking into account the provisions of [7.1.4].

**7.1.6** Where the previous period of class expired before the re-commissioning and was extended as stated in [7.1.3], in addition to the provisions of [7.1.5] a complete class renewal survey is to be carried out prior to re-commissioning. Those items which have been surveyed in compliance with the class renewal survey requirements during the 15 months preceding the re-commissioning may be credited. A new period of class is assigned from the completion of this class renewal survey.

**7.1.7** The principles of intervals or limit dates for surveys to be carried out during the lay-up period, as stated in [7.1.1] to [7.1.6], are summarised in Fig 3.

**7.1.8** The scope of the laying-up survey and annual lay-up condition surveys are described in detail in Pt A, Ch 3, App 1 of the Ship Rules.

**Figure 3 : Survey scheme of a case of a lay-up going beyond the expiry date of the period of class**



Note 1: A. C. S. means annual lay-up condition survey.

## SECTION 2

## ANNUAL SURVEY

### 1 General

#### 1.1

**1.1.1** The requirements of this Section apply to annual surveys of all units. The specific requirements for annual surveys related to service notations and additional class notations assigned to units are addressed in Ch 2, Sec 5, Ch 2, Sec 6, Ch 2, Sec 7 and Ch 2, Sec 9.

**1.1.2** At the time of annual surveys, the unit is to be generally examined. The survey is to include a visual inspection of the hull, equipment and machinery of the unit and some tests thereof, so far as necessary and practicable in order to verify that the unit is in an acceptable general condition and is properly maintained.

**1.1.3** Owners are reminded that any modification to the unit's hull, equipment and machinery affecting its classification is to be made known to the Society.

### 2 Hull

#### 2.1 Hull and hull equipment

**2.1.1** The survey is to include a general external examination and testing, where appropriate, of the following items, as applicable:

- outer shell plating above the waterline, relevant shell doors and accessible parts of the rudder(s)
- plating of freeboard deck and exposed decks, superstructures, with their openings and means of closure
- if applicable, structure in the vicinity of moon pool or other major openings or discontinuities
- cargo hatchways and other openings on exposed decks, with their coamings and their means of closure and securing arrangements
- sidescuttles and deadlights, chutes and other openings with their means of closure
- bulwarks, guard rails, freeing ports, gangways and life-lines, ladders
- scuppers and sanitary discharges, valves on discharge lines and their controls
- ventilators, air pipes, overflow pipes and gas vent pipes, with their means of closure and flame screens, where required
- all automatic air pipe heads installed on the exposed decks (i.e those extending above the freeboard deck or superstructure decks)
- freeboard marks on the unit's sides

- deck equipment such as lifeboat davit foundations, bollards, fairleads, hawse pipes, etc., masts and associated rigging, including lightning conductors
- anchoring and mooring equipment, as far as practicable, including housing, supporting equipment and connection to the unit's main structure
- watertight bulkheads, their watertight doors and associated local and remote controls, and their watertight penetrations
- main and auxiliary steering arrangements, including their associated equipment and control systems, and manoeuvring gear
- fire divisions and fire doors, dampers in ventilation ducts, means of closure of skylights and other openings
- confirmation that emergency escape routes from accommodation and service spaces are satisfactory
- confirmation that the drainage from enclosed cargo spaces situated on the freeboard deck is satisfactory
- engine room
- where fitted, helicopter deck and its supporting structure, safety net and arrangements for the prevention of sliding
- availability of loading manual or, where required, electronic loading instrument, including standard test
- availability of approved stability documentation.
- foundations of areas used for heavy lifting equipment, drilling equipment, diving equipment hoisting appliances, pipelaying stinger, jacket launching equipment (rocker arms, skid beams)

Note 1: Due attention is also to be given to fuel oil piping passing through ballast tanks, which is to be pressure tested where doubts arise.

**2.1.2** Ballast spaces are to be internally examined when required as a consequence of the results of the class renewal survey or the intermediate survey

Thickness measurements are to be carried out as considered necessary by the Surveyor.

**2.1.3** For semi-submersible units, in addition, the survey includes the following:

- general examination of accessible areas, particularly of columns and bracings
- assessment of watertightness of immersed parts
- external examination of parts and areas indicated in Ch 2, Sec 4, [2.2.1] and Ch 2, Sec 4, [2.2.3].

**2.1.4** For self-elevating units, in addition, the survey includes the following:

- external examination, as far as practicable, with due consideration for working water draughts from the last

survey, of the jackhouses and their foundations as well as the legs above the waterline

- external examination of the upper structure indicated in Ch 2, Sec 4, [2.2.1] and Ch 2, Sec 4, [2.2.3] including the visible areas of the hull in elevated position.

### 3 Machinery and systems

#### 3.1 General machinery installations

**3.1.1** The survey of general machinery installations is to cover the following items:

- general examination of machinery and boiler spaces with particular attention to the fire and explosion hazards; confirmation that emergency escape routes are practicable and not blocked
- general examination of the machinery, steam, hydraulic, pneumatic and other systems and their associated fittings, for confirmation of their proper maintenance
- testing of the means of communication and order transmission between the navigating bridge and the machinery control positions and other control stations
- confirmation that the rudder angle indicator on the bridge is in working order
- examination, as far as practicable, of the bilge pumping systems and bilge wells, including operation of the pumps, remote reach rods and level alarms, where fitted
- visual examination of the condition of any expansion joints in sea water systems
- external examination of pressure vessels other than boilers and their appurtenances, including safety devices, foundations, controls, relieving gear, high pressure piping, insulation and gauges.

**3.1.2** When the unit is equipped with a refrigerating plant (whether or not covered by an additional class notation), the annual survey is to include the external examination of:

- pressure vessels of the installation to the same extent as indicated in [3.1.1]
- refrigerant piping, as far as practicable
- for refrigerating machinery spaces using ammonia as refrigerant:
  - ventilation system including functional test
  - water-spraying fire-extinguishing system; see [3.4.2] item d)
  - bilge system including functional test
  - electrical equipment, confirming its proper maintenance
  - gas detection system
  - breathing apparatus and protective clothing.

**3.1.3** When the unit is equipped with thruster installations, the annual survey is to include:

- an external examination of the machinery installation
- an operating test of the complete installation.

#### 3.2 Boilers

**3.2.1** For main and auxiliary boilers, the annual survey consists of an external examination of boilers and their appurtenances, including safety devices, foundations, controls, relieving, high pressure and steam escape piping, insulation and gauges.

**3.2.2** For thermal oil heaters, a functional test while in operation is to be carried out, during which the following items are checked:

- the heater for detection of leakages
- the condition of the insulation
- the operation of indication, control and safety devices
- the condition of remote controls for shut-off and discharge valves

A satisfactory analysis of the quality of oil is to be made available to the Surveyor.

**3.2.3** For exhaust gas thermal oil heaters, in addition to the requirements of [3.2.2], a visual examination and a tightness testing to the working pressure of the heater tubes are to be carried out.

#### 3.3 Electrical machinery and equipment

**3.3.1** The survey of electrical machinery and equipment is to cover the following items:

- general examination, visually and in operation, as feasible, of the electrical installations for power and lighting, in particular main and emergency generators, electric motors, switchboards, switchgears, cables and circuit protective devices, indicators of electrical insulation and automatic starting, where provided, of emergency sources of power
- checking, as far as practicable, the operation of emergency sources of power and, where they are automatic, also including the automatic mode.

**3.3.2** The survey is also to cover the bridge control of propulsion machinery, and related arrangements (alarms and safety devices), when fitted.

#### 3.4 Semi-submersible units

**3.4.1** For semi-submersible units, the survey includes also the following items:

- visual examination and functional testing of the ballasting systems to the satisfaction of the Surveyor, including the tank level gauges and remote valves
- means of access, ventilation, pumping as well as the emergency lighting into the columns and lower compartments
- if dry bracings are provided with flooding detection means, testing of the plant satisfactory operation

#### 3.5 Self elevating units

**3.5.1** For self-elevating units, the survey includes also the examination of leg jacking systems including pinions, gears,

wedges, locking pins, brakes and their powering sources, or other mechanisms for self elevation.

Such survey will be performed without dismantling of jacking mechanisms, unless deemed necessary by the Surveyor.

### 3.6 Fire protection, detection and extinction

**3.6.1** The survey of fire prevention and other general arrangements is to cover the following items:

- checking that fire control plans are properly posted
- examination and testing, as feasible, of the operation of manual and/or automatic fire doors, where fitted
- checking, as far as practicable, that the remote controls for stopping fans and machinery and shutting off fuel supplies in machinery spaces and, where fitted, the remote controls for stopping fans in accommodation spaces and the means of cutting off power to the galley are in working order
- examination and testing of the closing arrangements of ventilators, funnel annular spaces, skylights, doorways and tunnel, where applicable
- examination, as far as practicable, and testing, as feasible and at random, of the fire and/or smoke detection systems.

**3.6.2** The survey requirements for all types of fire-fighting systems that are usually found on board ships related either to machinery spaces or to cargo areas and/or spaces or to accommodation spaces, irrespective of the service notation assigned, are the following:

- a) water fire system
  - examination of the fire main system and confirmation that each fire pump including the emergency fire pump can be operated separately so that the two required powerful jets of water can be produced simultaneously from different hydrants, at any part of the ship whilst the required pressure is maintained in the fire main
  - checking that fire hoses, nozzles, applicators, spanners and international shore connection (where fitted) are in satisfactory working condition and situated at their respective locations
- b) fixed gas fire-extinguishing system
  - external examination of receivers of CO<sub>2</sub> (or other gas) fixed fire-extinguishing systems and their accessories, including the removal of insulation for insulated low pressure CO<sub>2</sub> containers
  - examination of fixed fire-fighting system controls, piping, instructions and marking; checking for evidence of proper maintenance and servicing, including date of last system tests
  - test of the alarm triggered before the CO<sub>2</sub> is released
- c) sprinkler system
  - examination of the system, including piping, valves, sprinklers and header tank
  - test of the automatic starting of the pump activated by a pressure drop
  - check of the alarm system while the above test is carried out

- d) water-spraying system
  - examination of the system, including piping, nozzles, distribution valves and header tank
  - test of the starting of the pump activated by a pressure drop (applicable only for machinery spaces)
- e) fixed foam systems (low or high expansion)
  - examination of the foam system
  - test to confirm that the minimum number of jets of water at the required pressure in the fire main is obtained when the system is in operation
  - checking the supplies of foam concentrate and receiving confirmation that it is periodically tested (not later than three years after manufacture and annually thereafter) by the manufacturer or an agent
- f) dry powder system
  - examination of the dry powder system, including the powder release control devices
  - checking the supplies of powder contained in the receivers and that it has maintained its original smoothness
  - checking that the pressure of propelling inert gas contained in the relevant bottles is satisfactory.

**3.6.3** As far as other fire-fighting equipment is concerned, it is to be checked that:

- semi-portable and portable fire extinguishers and foam applicators are in their stowed positions, with evidence of proper maintenance and servicing, and detection of any discharged containers
- firemen's outfits are complete and in satisfactory condition.

**3.6.4** Where a helideck is fitted, the following is to be checked, as far as appropriate:

- drainage arrangements around the landing area
- fire fighting appliances and arrangements (to be surveyed as per [3.6.2], according to the equipment installed
- overall examination of refuelling systems and hangar facilities for cleanliness and absence of leaks, condition of gutters and drainage arrangement.

### 3.7 Hazardous areas

**3.7.1** The survey consists in:

- examination of hazardous areas including their closures and boundaries
- confirmation, as far as practicable, that the following equipment are in satisfactory condition: ventilation systems, ducting arrangements, fire dampers, fans, alarms for loss of pressure, gas detection and associated arrangements, electrical and mechanical safe equipment, arrangement for purging sequences and for black start

### 3.8 Other Safety Equipment

3.8.1 The survey consists in:

- examination of navigation lights, associated alarm and signal devices including helideck lights, if fitted.
- confirmation that other safety systems such as the alarm and communication system are in working order.

## SECTION 3

## INTERMEDIATE SURVEY

### 1 General

#### 1.1

**1.1.1** The requirements of this Section apply to intermediate surveys of all units. The specific requirements for intermediate surveys related to service notations and additional class notations assigned to units are addressed in Ch 2, Sec 6, Ch 2, Sec 7 and Ch 2, Sec 9.

**1.1.2** The intermediate survey is to include examination and checks on a sufficiently extensive part of the structure to show that the structures of the unit are in satisfactory condition so that the unit is expected to operate until the end of the current period of class, provided that the unit is properly maintained and other surveys for maintenance of class are duly carried out during this period.

### 2 Hull

#### 2.1

**2.1.1** The requirements given in Tab 1 for the survey and testing of salt water ballast spaces, cargo holds (if any) and cargo tanks are to be complied with.

#### 2.2 Units with particular structure

**2.2.1** In addition, examination will be made of particularly critical areas of the structure such as:

- inside of bracings for semi-submersible units
- leg-hull connection of self-elevating units
- structure around corners of moon pool or other large openings
- other critical areas, as found necessary by the Surveyor

**Table 1 : Intermediate survey of hull (all units)**

ITEM	Age of ship (in years at time of intermediate survey)		
	5 < age ≤ 10	10 < age ≤ 15	age > 15
SALT WATER BALLAST SPACES	Representative spaces internally examined Thickness measurements, if considered necessary by the Surveyor See (1) (2) (3)	All spaces internally examined Thickness measurements, if considered necessary by the Surveyor or when substantial corrosion is found. Tightness test of double bottom ballast spaces in ways of storage holds See (3) (4)	
CARGO HOLDS			Selected cargo holds internally examined
CARGO TANKS			Selected cargo tanks internally examined
<p>(1) If such examinations reveal no visible structural defects, the examination may be limited to a verification that the protective coating remains effective and that the sacrificial anodes, if any, are less than 50% depleted.</p> <p>(2) Where the protective coating is found to be in poor condition, where corrosion or other defects are found, where a protective coating has never been applied, i.e. neither at the time of construction nor thereafter, or where sacrificial anodes are found to be more than 50% depleted, the examination is to be extended to other ballast spaces of the same type.</p> <p>(3) For salt water ballast spaces other than double bottom tanks, where a protective coating is found to be in poor condition, and is not renewed, where soft coating has been applied or where a protective coating has never been applied, i.e. neither at the time of construction nor thereafter, maintenance of class is to be subject to the spaces in question being internally examined at annual surveys. The Society may consider waiving such internal examination at annual surveys of tanks protected with soft coating, whose size is 12 m<sup>3</sup> or less. For salt water ballast double bottom tanks, where such breakdown of coating is found and is not renewed, where soft coating has been applied or where a protective coating has never been applied, i.e. neither at the time of construction nor thereafter, maintenance of class may be subject to the tanks in question being internally examined at annual intervals.</p> <p>(4) if such examination reveals no visible structural defects, the examination may be limited to the verification that the protective coating remains efficient</p> <p><b>Note 1:</b> Due attention is also to be given to fuel oil piping passing through ballast tanks, which is to be pressure tested should doubts arise.</p>			

## 2.3 Units including hazardous areas

**2.3.1** In addition, electrical equipment in hazardous areas will be examined and tested, with particular attention to:

- protective earthing
- integrity of flame-proof enclosures
- integrity of pressurised enclosures and associated fittings
- condition of increased safety equipment
- condition of cabling (damage to outer sheath, corrosion or metal braiding)
- interlocking systems of electrical power supply to spaces protected by air locks such as electric motors rooms, storage control rooms
- operation of pressurised equipment and functioning of alarms

## SECTION 4

## CLASS RENEWAL SURVEY

### 1 General

#### 1.1

**1.1.1** The requirements of this Section apply to class renewal surveys of all units. The specific requirements for class renewal surveys related to service notations and additional class notations assigned to units are addressed in Ch 2, Sec 5, Ch 2, Sec 6, Ch 2, Sec 7 and Ch 2, Sec 9.

**1.1.2** The class renewal survey is to include sufficiently extensive examination and checks to show that the structures, main and auxiliary machinery, systems, equipment and various arrangements of the unit are in satisfactory condition or restored to such condition as to allow the unit to operate for the new period of class to be assigned, provided that the unit is properly maintained and other surveys for maintenance of class are duly carried out during this period. The examinations of the hull are to be supplemented by thickness measurements and testing as deemed necessary, to ensure that the structural integrity remains effective and sufficient to discover substantial corrosion, significant deformation, fractures, damages or other structural deterioration.

**1.1.3** The Owner is to provide the necessary facilities to enable this class renewal survey.

**1.1.4** When the ship is under the continuous survey system for hull or machinery, the scope of the class renewal survey as described in this Section is carried out on a continuous basis over the period of class.

When the machinery installation is surveyed under the Planned Maintenance System, a specific program of survey replaces the scope of the class renewal survey of machinery and systems as laid down in [3].

**1.1.5** Upon completion of the class renewal survey, or at the end of the period of class (if the relevant part of the unit is surveyed under the continuous survey system), a general examination of the unit having the same scope as that of an annual survey is to be carried out.

### 2 Hull and hull equipment

#### 2.1 Bottom survey

**2.1.1** A bottom survey in dry condition, including anchoring and mooring equipment, is to be carried out, unless underwater surveys have been accepted by the Society in lieu of dry-docking, as detailed in Ch 2, Sec 8.

#### 2.2 Decks, hatch covers and equipment

**2.2.1** Decks are to be examined, particular attention being given to the areas where stress concentration or increased

corrosion are likely to develop, such as hatch corners and other discontinuities of structure.

Deck erections such as hatch coamings, deckhouses and superstructures are to be examined.

Deck and corresponding equipment inducing important loads such as heavy lifting equipment, helideck, drilling equipment, diving equipment hoisting appliances, pipelaying stinger, jacket launching equipment (rocker arms, skid beams)

Examination is also made of the connections of equipment and attachments to load carrying structural elements.

Due attention is to be given to the examination in way of end and side openings and related shell and inner doors.

**2.2.2** The survey of hatch covers and coamings is to include:

- checking of the satisfactory operation of all mechanically operated hatch covers: stowage and securing in open condition, proper fit, locking and efficiency of sealing in closed position, operational testing of hydraulic and power components, wires, chains and link drives
- checking of the effectiveness of sealing arrangements of all hatch covers by means of hose testing or equivalent
- thickness measurements of coaming and attached stiffeners, hatch cover plating and stiffeners (see Tab 3 or Tab 4 or Tab 5).

**2.2.3** The survey of hull equipment is also to cover the following points:

- steering arrangements, including steering gear, control and indication devices, operational tests and disassembly as deemed necessary; in the case of chain and rod gears, chains, rods, sheaves, pins and rollers are to be examined for wear
- connection of masts and standing rigging to the hull structure as well as condition of structure underneath.

**2.2.4** Piping systems outside tanks and compartments are to be visually examined and pressure tested as necessary, as per the requirements laid down for the class renewal survey of machinery and systems; see [3.5].

**2.2.5** Automatic air pipe heads installed on the exposed decks (i.e. those extending above the freeboard deck or superstructure decks) are to be completely examined, both externally and internally, in accordance with the requirements given in Tab 1.

**2.2.6** For surface units, thorough examination is to be made of outside plating, particularly bottom, side shells and main deck as well as to the structure in way of the drill well or moon pool, or other similar openings. Special attention is

to be given to plating damages due to wave slam, impact resulting from surface craft or other causes.

Examination is to be made of the fore and aft structures, particularly of the supporting structures of rudder, line shafting, fixed or steerable nozzles.

**2.2.7** For semi-submersible units, examination is to be made of the lower hulls, columns and bracings, giving particular attention to the connections of columns to the upper and lower hulls and to the intersections between columns, bracings and diagonals.

Examination is to be made of the upper hull including girders, bulkheads, decks and stiffeners with particular attention being paid to areas subject to high local loadings, vibrations due to machinery or equipment or stress concentrations.

**2.2.8** For self-elevating units, examination is to be made of the lower mats and spud cans, particularly of the connections with the legs.

Examination is to be made of the entire length of all legs, supplemented, if deemed necessary by the Surveyor, with non-destructive testing of sensitive areas. For truss legs, the examination is to include all chords with jacking racks and a representative percentage of vertical, horizontal and diagonal truss members to be selected with the agreement of the Surveyor.

Examination is to be made of the upper structure, particularly in way of jack houses, leg wells, substructure and skid beams, including the deck, side and bottom platings.

### 2.3 Internal spaces

**2.3.1** Holds, 'tweendecks, cofferdams, pipe tunnels and duct keels, void spaces and other dry compartments which are integral to the hull structure are to be internally examined, ascertaining the condition of the structure, bilges and drain wells, sounding, venting, pumping and drainage arrangements

**2.3.2** Machinery and boiler spaces, pump rooms and other spaces containing machinery are to be internally examined, ascertaining the condition of the structure. Particular attention is to be given to tank tops, shell plating in way of tank tops, brackets connecting side shell frames and tank tops, and bulkheads in way of tank tops and bilge wells. Particular attention is to be given to the sea suctions, sea water cooling pipes and overboard discharge valves and their connections to the shell plating. Where wastage is evident or suspected, thickness measurements are to be carried out, and renewals or repairs effected when wastage exceeds allowable limits.

Piping systems inside these spaces are to be dealt with according to [3.5].

**2.3.3** For semi-submersible units, examination is to be made of bulkheads and internal stiffeners, of the lower hulls, columns and bracings, particular attention being given to the connections of the columns to the upper and

lower hulls and to the intersections between columns, bracings and diagonals.

**2.3.4** For self-elevating units, examination is to be made of the lower mats, spud cans and hull compartments, particularly of the connections with the legs to be non destructively tested if deemed necessary by the Surveyor.

Examination of cylindrical type legs includes the internal plating, vertical frames, bulkheads and ring stiffeners.

Examination is to be made of the upper structure, particularly in way of jack houses, leg wells, substructure and skid beams, including the deck, side and bottom platings, bulkheads, girders and internal stiffeners.

### 2.4 Tanks

**2.4.1** The type and number of tanks to be internally examined at each class renewal survey are detailed in Tab 2, according to the age of the unit.

This internal examination is to ascertain the condition of the structure, bilges and drain wells, sounding, venting, pumping and drainage arrangements, including piping systems and their fittings. Due attention is to be given to plating or double plates below the lower end of sounding and suction pipes.

Where the inner surface of the tanks is covered with cement or other compositions, the removal of coverings may be waived provided they are examined, found sound and adhering satisfactorily to the steel structures.

Note 1: For examination of independent (non-structural) tanks, refer to [3.5.9].

Note 2: Due attention is also to be given to fuel oil piping passing through ballast tanks, which is to be pressure tested when the ship is more than 10 years old.

**2.4.2** For salt water ballast spaces other than double bottom tanks, where a protective coating is found to be in poor condition, and is not renewed, where soft coating has been applied or where a protective coating has never been applied, i.e. neither at the time of construction nor thereafter, maintenance of class is to be subject to the spaces in question being internally examined at annual surveys. The Society may consider waiving such internal examination at annual surveys of tanks protected with soft coating, whose size is 12 m<sup>3</sup> or less.

For salt water ballast double bottom tanks, where such breakdown of coating is found and is not renewed, where soft coating has been applied or where a protective coating has never been applied, i.e. neither at the time of construction nor thereafter, maintenance of class may be subject to the tanks in question being internally examined at annual intervals.

**2.4.3** Boundaries of double bottom, deep, ballast, peak and other tanks, both integral and independant tanks, including holds adapted for the carriage of salt water ballast, are to be tested with a head of liquid to the top of air pipes or to the top of hatches for ballast/cargo holds.

**Table 1 : Requirements for internal and external examination of automatic air pipe heads at class renewal survey**

Age of unit (in years at time of class renewal survey )		
age ≤ 5	5 < age ≤ 10	10 < age
Two air pipe heads, one port and one star-board, located on the exposed decks in the forward 0,25 L, preferably air pipes serving ballast tanks. See (1) and (2)	All air pipe heads located on the exposed decks in the forward 0,25 L. See (1) and (2)	All air pipe heads located on the exposed decks. See (3)
Two air pipe heads, one port and one star-board, on the exposed decks, serving spaces aft of 0,25 L, preferably air pipes serving ballast tanks. See (1) and (2)	At least 20% of air pipe heads on the exposed decks serving spaces aft of 0,25 L, preferably air pipes serving ballast tanks. See (1) and (2)	
<p>(1) The selection of air pipe heads to be examined is left to the attending Surveyor.</p> <p>(2) According to the results of this examination, the Surveyor may require the examination of other air pipe heads located on the exposed decks.</p> <p>(3) Exemption may be considered for air pipe heads where there is substantiated evidence of replacement within the previous five years.</p> <p><b>Note 1:</b> For designs where the inner parts cannot be properly examined from outside, the examination is to include removal of the head from the air pipe.</p> <p><b>Note 2:</b> Particular attention is to be paid to the condition of the zinc coating in heads constructed from galvanised steel.</p>		

**Table 2 : Requirements for internal examination of integral (structural) tanks at class renewal survey**

Tank	Age of ship (in years at time of class renewal survey )			
	age ≤ 5	5 < age ≤ 10	10 < age ≤ 15	age > 15
Peaks (all use)	all	all	all	all
Salt water ballast tanks (all types)	all	all	all	all
Fresh water	none	one	all	all
Fuel oil bunkertanks:				
• Engine room	none	none	one	one
• Cargo area	none	one	two (1)	half, minimum 2 (1)
Lubricating oil tanks	none	none	none	one
Cargo tanks	all	all	all	all
<p>(1) One deep tank is to be included, if fitted.</p> <p><b>Note 1:</b> Independent non-structural tanks are to be surveyed according to [3.5.9].</p> <p><b>Note 2:</b> The extent of the survey of tanks dedicated to liquids other than those indicated in this table will be considered by the Society on a case by case basis according to the nature of the liquids.</p> <p><b>Note 3:</b> If a selection of tanks is accepted to be examined, then different tanks are to be examined at each class renewal survey, on a rotational basis. Tanks not internally examined may be examined externally from accessible boundaries.</p>				

**2.4.4** Boundaries of fuel oil, lube oil and fresh water tanks are to be tested with a head of liquid to the maximum filling level of the tank. Tank testing of fuel oil, lube oil and fresh water tanks may be specially considered based on a satisfactory external examination of the tank boundaries, and a confirmation from the Master stating that the pressure testing has been carried out according to the requirements with satisfactory results.

**2.4.5** Other testing procedures, such as the procedure used for the initial survey during construction, may be accepted. For integral tanks which are intended to contain liquid cargoes such as edible oil, the Surveyor may waive the requirement specified in [2.4.4] subject to a satisfactory internal examination.

## 2.5 Thickness measurements

**2.5.1** The extent of thickness measurements is detailed in Tab 3 for surface units or Tab 4 for semi-submersible units or Tab 5 for self-elevating units, according to the age of the unit. Additionally, for any part of the unit where wastage is evident or suspect, the Surveyor may require thickness measurements in order to ascertain the actual thickness of the material.

**2.5.2** When the structure is coated and the coating is found to be in good condition, the Surveyor may, at his discretion, accept a reduced program of thickness measurements in the corresponding areas. Other effective protective arrangements may also be considered.

**Table 3 : Requirements for thickness measurements at class renewal survey for surface units**

Age of unit (in years at time of class renewal survey)			
age ≤ 5	5 < age ≤ 10	10 < age ≤ 15	age > 15
Suspect areas	Suspect areas	Suspect areas	Suspect areas
	Within the cargo area or 0,5 L amidships: - selected deck plates - selected bottom plates - selected tank top plates - selected plates in splash zone <b>(4)</b>	Within the cargo area or 0,5 L amidships: - each deck plate - selected tank top plates - selected bottom plates - selected plates in splash zone <b>(4)</b>	Within the cargo area or 0,5 L amidships: - each deck plate - each tank top plate - each bottom plate - all plates in splash zone <b>(4)</b>
	One transverse section abreast a cargo space within the amidships 0,5L <b>(5)</b>	Two transverse sections abreast of two different cargo spaces within the amidships 0,5L <b>(5)</b>	Three transverse sections in way of cargo spaces within the amidships 0,5L <b>(3) (5)</b>
	Outside the cargo area or 0,5 L amidships: - selected deck plates - selected bottom plates - selected plates in splash zone <b>(4)</b>	Outside the cargo area or 0,5 L amidships: - selected deck plates - selected bottom plates - selected plates in splash zone <b>(4)</b>	- all exposed main deck plating full length - representative exposed superstructure deck plating (poop, bridge and forecastle decks) - all plates in splash zone <b>(4)</b> - all keel plates full length - all bottom plates in way of cofferdams, machinery space and aft end of tanks
	Hatch covers and coamings of the two foremost cargo holds <b>(1)</b>	All hatch covers and coamings <b>(1)</b>	
	Collision bulkhead, forward machinery space bulkhead, aft peak bulkhead <b>(1) (2)</b>		All transverse and longitudinal bulkheads (plates and stiffeners)
	- sea water manifold in engine room - plating of sea chests - shell plating in way of overboard discharges as considered necessary by the attending Surveyor		
		Internals in forepeak tank	Internals in forepeak and aft tanks
		Selected internal structure such as floors and longitudinals, transverse frames, web frames, deck beams, 'tweendecks, girders, etc. Measurements may be increased if the Surveyor deems it necessary	
<p><b>(1)</b> Including plates and stiffeners.</p> <p><b>(2)</b> Measurements may be waived or reduced after satisfactory visual examination, when such bulkheads form the boundaries of dry (void) spaces.</p> <p><b>(3)</b> The number of transverse sections may be reduced at the Surveyor's discretion for ships of length under 90 m.</p> <p><b>(4)</b> The splash zone includes areas around water line, for the range of working draughts.</p> <p><b>(5)</b> One being chosen in the vicinity of moon pool or other similar opening, if any.</p>			

**2.5.3** When thickness measurements indicate substantial corrosion, the number of thickness measurements is to be increased to determine the extent of substantial corrosion. Tab 6 may be used as guidance for additional thickness measurements.

**2.5.4** Special attention is to be paid to free flooding structural members and sea water compartments.

## 2.6 Deadweight survey

**2.6.1** A deadweight survey is to be carried out during each class renewal survey. The Society may also require that an

inclining test be carried out and that the allowable variable loads be adjusted by an appropriate amount.

## 3 Machinery and systems

### 3.1 General

**3.1.1** The survey items listed below are to be covered to the satisfaction of the Surveyor. However, other survey alternatives deemed equivalent by the Surveyor in relation to the characteristics and general condition of the unit concerned may also be accepted.

**Table 4 : Requirements of thickness measurements at class renewal survey (semi-submersible units)**

Age of the unit (years)			
age ≤ 5	5 < age ≤ 10	10 < age ≤ 15	age > 15
Main structural parts plates and stiffeners showing signs of wear and tear	Main structural parts plates and stiffeners showing signs of wear and tear In floaters: <ul style="list-style-type: none"> <li>• selected deck plates</li> <li>• 1 transverse section</li> <li>• selected bottom plates</li> </ul> In tanks: selected tank top plates In upper hull/deck: <ul style="list-style-type: none"> <li>• selected deck plates</li> <li>• 1 transverse section (2) (3)</li> <li>• selected bottom plates</li> </ul> Column and bracings: selected plates and stiffeners in splash zone (1) Forward and aft machinery space bulkheads, peak bulkheads	Main structural parts plates and stiffeners showing signs of wear and tear In floaters: <ul style="list-style-type: none"> <li>• selected deck plates</li> <li>• 2 transverse sections</li> <li>• selected bottom plates</li> </ul> In tanks: selected tank top plates In upper hull/deck: <ul style="list-style-type: none"> <li>• selected deck plates</li> <li>• 2 transverse sections (2) (3)</li> <li>• selected bottom plates</li> </ul> Column and bracings: selected plates and stiffeners in splash zone (1) Forward and aft machinery space bulkheads, peak bulkheads Selected internal structure such as floors and longitudinals, transverse frames, web frames, deck beams, etc.	Main structural parts plates and stiffeners showing signs of wear and tear In floaters: <ul style="list-style-type: none"> <li>• each deck plate</li> <li>• 3 transverse sections</li> <li>• each bottom plate</li> </ul> In tanks: each tank top plate In upper hull/deck: <ul style="list-style-type: none"> <li>• each deck plate</li> <li>• 3 transverse sections (2) (3)</li> <li>• each bottom plate</li> </ul> Column and bracings: all plates and stiffeners in splash zone (1) All transverse and longitudinal bulkheads (plates and stiffeners) Selected internal structure as for units with 10 < age ≤ 15, number of measurements may be increased as the Surveyor finds it necessary
(1) The splash zone includes areas around water line, for the range of working draughts (2) One being chosen in the vicinity of the connection with a column (3) One being chosen in the vicinity of moon pool or other similar openings, if any.			

**Table 5 : Requirements of thickness measurements at class renewal survey (self-elevating units)**

Age of the unit (years)			
age≤5	5<age≤10	10<age≤15	age>15
Main structural parts plates and stiffeners showing signs of wear and tear	Main structural parts plates and stiffeners showing signs of wear and tear  In upper pontoon: <ul style="list-style-type: none"> <li>selected deck plates</li> <li>1 transverse section (1) (3)</li> <li>selected bottom plates</li> <li>selected tank top plates machinery space bulkheads, other selected bulkheads</li> </ul>	Main structural parts plates and stiffeners showing signs of wear and tear  In upper pontoon: <ul style="list-style-type: none"> <li>selected deck plates</li> <li>2 transverse sections (1) (3)</li> <li>selected bottom plates</li> <li>selected tank top plates</li> <li>machinery space bulkheads, other selected bulkheads</li> <li>selected internal structure such as floors and longitudinals, frames, beams, etc.</li> </ul>	Main structural parts plates and stiffeners showing signs of wear and tear  In upper pontoon: <ul style="list-style-type: none"> <li>each deck plate</li> <li>3 transverse sections (1) (3)</li> <li>each bottom plate</li> <li>each tank top plate</li> <li>all transverse and longitudinal bulkheads (plates and stiffeners)</li> <li>selected internal structure as for units with 10 &lt; age ≤ 15, number of measurements may be increased as the Surveyor finds it necessary</li> </ul>
	In truss legs: selected chords, bracings and other truss members in splash zone (2) and in the vicinity of mat or spud can	In truss legs: selected chords, bracings and other truss members in splash zone (2) and in the vicinity of mat or spud can	In truss legs: all chords, bracings and other truss members in splash zone (2) and in the vicinity of mat or spud can
	In cylindrical legs: selected plates and stiffeners in splash zone (2) and in the vicinity of mat or spud can	In cylindrical legs: selected plates and stiffeners in splash zone (2) and in the vicinity of mat or spud can	In cylindrical legs: all plates and stiffeners in splash zone (2) and in the vicinity of mat or spud can
	Mat and spud cans: selected plates and stiffeners	Mat and spud cans: selected plates and stiffeners	Mat and spud cans: all plates and stiffeners
	Forward and aft machinery space bulkheads, peak bulkheads	Forward and aft machinery space bulkheads, peak bulkheads  Selected internal structure such as floors and longitudinals, transverse frames, web frames, deck beams, etc.	All transverse and longitudinal bulkheads (plates and stiffeners)  Selected internal structure as for units with 10 < age ≤ 15, number of measurements may be increased as the Surveyor finds it necessary
<p>(1) One being chosen in the vicinity of moon pool or other similar opening, if any                  (2) The splash zone includes areas around water line, for the range of working draughts                  (3) One being chosen in the vicinity of a leg opening</p>			

**Table 6 : Guidance for additional thickness measurements in way of substantial corrosion areas**

Structural member	Extent of measurements	Pattern of measurements
Plating	Suspect area and adjacent plates	5 point pattern over 1 square metre
Stiffeners	Suspect area	3 measurements each in line across web and flange

**3.2 Main and auxiliary engines and turbines**

**3.2.1 General**

Depending on the type of machinery, the following parts are to be opened up as necessary for inspection. Parts and components are to be pressure tested as appropriate or as deemed necessary by the Surveyor. A working test is also to be carried out, including testing of alarms and safety devices.

**3.2.2 Internal combustion engines**

- a) Columns and entablature
- b) Cylinders with their liners, cylinder covers (together with valves and valve gear), pistons with their rods, crossheads, slippers and guides (or gudgeon pins), connecting rods (with their top and bottom end bearings), control gear, driven scavenge pumps, driven air compressors, driven fuel pumps, supercharging blowers, fuel injection pumps, turning gear, etc.

- c) Crankshafts (together with their main bearings)
- d) Reverse gear, reduction gear and clutches, if fitted.

### 3.2.3 Steam turbines

- a) Condensers and their cooling water and condensate extraction pumps
- b) Casings and rotors (including their blading), impulse wheels (including guide blading and diaphragms), nozzles and nozzle boxes, journals and bearings, dummy pistons, labyrinths, external glands, etc.
- c) Shafts, including their flexible couplings.

Where the propulsion steam turbines are of a well-known type, and fitted with rotor position indicators and vibration indicators of an approved type, as well as measuring equipment of steam pressure at proper locations along the steam flow, and the arrangements for change-over in the event of emergency operation of the plant are readily operable, the first class renewal survey may be limited to the examination of rotor bearings, thrust bearings and flexible couplings, provided the Surveyor is satisfied from operation service records and power trials subsequent to the survey, that the turbine plant is in good working condition.

### 3.2.4 Gas turbines

- a) Casings, rotors and disks, impellers and blading of all turbines and compressors, combustion chambers, burners, heat exchangers, gas piping, compressed air piping with fittings, starting and reverse arrangements
- b) Shafts and their flexible couplings.

### 3.2.5 Electric propulsion

Where the propulsion machinery consists of an electrical system, the propulsion motors, generators, cables and all ancillary electrical gear, exciters and ventilating plant (including coolers) associated therewith are to be examined and the insulation resistance to earth tested. Due attention is to be given to windings, commutations and sliprings. The operation of protective gear and alarm devices is to be checked, as far as practicable. Interlocks intended to prevent unsafe operations or unauthorised access are to be checked to verify that they are functioning correctly.

### 3.2.6 Thruster installations

When the unit is equipped with thruster installations, the class renewal survey is also to include:

- an examination of the machinery and electrical installation, as applicable
- an external examination of the propulsive part of the installation to be carried out at the dry dock survey due as part of the class renewal survey. During this examination other checks such as clearance readings, tightness of hub and blade sealing for controllable pitch propellers are to be verified. Locking arrangements for bolts, if fitted, are to be checked. Results of lubricating oil analysis to detect possible deterioration of internal gears and bearings or the presence of water are to be confirmed as acceptable. The Manufacturer's requirements may be taken into account. Dismantling of the assembly for the examination of internal parts may be required if the foregoing checks are not satisfactory
- a running test of the system under operating conditions.

## 3.3 Reduction gears, main thrust and intermediate shaft(s)

**3.3.1** Reduction gears complete with all wheels, pinions, shafts, couplings, bearings and gear teeth, including incorporated clutch arrangements, are to be opened up, as deemed necessary by the Surveyor, for visual inspection. For complicated assemblies, gears and roller bearings may be inspected without dismantling.

**3.3.2** All shafts, thrust blocks and bearings are to be examined.

## 3.4 Pumps and other machinery items

### 3.4.1 General

The items listed in [3.4.2] are to be opened up, as deemed necessary by the Surveyor, for visual inspection. Their parts and components are to be pressure tested as appropriate and considered necessary by the Surveyor. A working test is also to be carried out, including testing of alarms and safety devices if deemed necessary by the Surveyor.

### 3.4.2 Items to be surveyed

- a) Air compressors with their intercoolers, filters and/or oil separators and safety devices
- b) Heat exchangers, ventilation fans for boilers and other equipment used for essential services
- c) Piston pumps and centrifugal pumps for sea water, bilge and salt water ballast
- d) Screw pumps, gear pumps and centrifugal pumps other than those listed in c) above (opening up is not required).

## 3.5 Systems in machinery spaces

**3.5.1** Valves, cocks and strainers of the bilge and ballast systems are to be opened up, as deemed necessary by the Surveyor, for visual inspection, and, together with the piping and safety devices, examined and tested under working conditions.

**3.5.2** The fuel oil, lubricating oil, hydraulic oil, thermal oil, and feed and cooling water systems, together with pressure filters, heaters and coolers used for essential services, are to be opened up and examined or tested, as considered necessary by the Surveyor. Safety devices for the foregoing items are to be examined.

**3.5.3** The compressed air system together with its valves, fittings and safety devices is to be examined, as considered necessary by the Surveyor.

**3.5.4** Compressed air receivers and other pressure vessels for essential services are to be cleaned internally and examined internally and externally. Their fittings, valves and safety devices are to be opened up, as deemed necessary by the Surveyor, for visual inspection and pressure tested as appropriate.

**3.5.5** Steel pipes for superheated steam having a temperature of the steam at the superheater outlet exceeding 450°C are to be examined and tested in accordance with [3.5.7] to [3.5.8] at each class renewal survey.

**3.5.6** Steel pipes for saturated steam or superheated steam having a temperature of the steam at the superheater outlet not exceeding 450°C are to be examined and tested in accordance with [3.5.7] to [3.5.8] at each class renewal survey for units over 5 years of age. When the unit is 5 years of age or less, the inspection may be limited to a check of the satisfactory general condition of pipes.

**3.5.7** The examination and hydrostatic test of steel pipes for main steam machinery, and steel pipes for auxiliary steam machinery having internal diameter 75 mm and over, are to be carried out on a number of pipes selected by the Surveyor after the lagging in way is removed.

**3.5.8** Representative pipe lengths connected with bolted flanges are to be internally and externally examined, and hydrostatically tested to 1,1 times the working pressure at ambient temperature. Bolts and butt-welded joints between flanges and pipes are to be submitted to a non-destructive test for crack detection.

**3.5.9** Non-structural tanks located in machinery spaces are to be externally examined; the relevant fittings, with particular regard to the remote control shut-off valves under hydrostatic head, are to be externally examined to check the efficiency of manoeuvres and the absence of cracks or leakage.

**3.5.10** When the unit is equipped with a refrigerating plant, the class renewal survey is to include:

- examination and test at the design pressure of the parts of the plant under pressure
- for refrigerating machinery spaces using ammonia as refrigerant:
  - examination and test of the water-spraying fire-extinguishing system to the same extent as indicated in [3.8.3] item d)
  - examination of valves and pumps of the bilge system to the same extent as indicated in [3.4]
  - examination and test of the electrical equipment to the same extent as indicated in [3.6.11]
  - test of the gas detection system.

## **3.6 Electrical equipment and installations**

**3.6.1** An electrical insulation resistance test is to be performed on the electrical equipment and cables. If needed, for the purpose of this test, the installation may be subdivided or equipment which may be damaged disconnected.

**3.6.2** The following minimum values, when performing the insulation test, are to be considered:

- for main and emergency switchboards, feeder circuit breakers being open, busbar circuit closed, measuring and monitoring instruments disconnected, the resistance of insulation measured across each insulated busbar and the hull, and across insulated busbars, should not be less than 1 megohm
- for generators, the equipment and circuits normally connected between the generator and the first circuit breaker being connected, the resistance of insulation (preferably at working temperature whenever possible), in ohms, is to be greater than 1 000 times the rated volt-

age, in volts. If appropriate, the Surveyor checks also that the insulation resistance of generators separate exciter gear is not less than 250 000 ohms

- the insulation resistance of the entire electrical system is to be checked with all circuit breakers and protective devices closed, except for generators; in general, the resistance should not be less than 100 000 ohms. However, the variation of the resistance with time is to be checked, comparing the current figure with previous readings. If the insulation resistance was to drop suddenly or be insufficient, the defective circuits are to be traced, disconnecting the circuits as much as necessary.

**3.6.3** The prime movers of generators are to be surveyed in accordance with [3.2] and their governors tested. All generators are to be presented for inspection, clean and with covers opened and examined under working conditions.

**3.6.4** Main and emergency switchboards, section boards and distribution boards are to be cleaned and doors or covers opened for examination of their fittings. The condition of overcurrent protective devices and fuses is to be checked. Circuit-breakers of generators are to be tested, as far as practicable, to verify that protective devices including preference tripping relays, if fitted, operate satisfactorily. The tightening of busbar connections is to be checked.

**3.6.5** Electrical cables and cable runs are to be examined at random, in particular in places where deterioration is likely to occur; terminal boxes of essential services are also to be subjected to a random check.

**3.6.6** The motors and starters concerning essential services together with associated control and switchgear are to be examined and, if considered necessary by the Surveyor, checked, as far as practicable, under working conditions.

**3.6.7** Navigation light indicators are to be tested under working conditions, and correct operation on the failure of supply or failure of navigation lights verified.

**3.6.8** The emergency sources of electrical power, their automatic arrangements and associated circuits are to be tested.

**3.6.9** Emergency lighting, transitional emergency lighting, supplementary emergency lighting, general emergency alarm and public address systems are to be tested as far as practicable.

**3.6.10** The visible condition of electrical equipment and installations is also to be checked as regards precautions against shock, fire and other hazards of electrical origin.

**3.6.11** A general examination of the electrical equipment in areas where there may be flammable gas or vapour and/or combustible dust is to be carried out to ensure that the integrity of the electrical equipment of a safety type has not been impaired owing to corrosion, missing bolts, etc., and that there is not an excessive build-up of dust on or in dust-protected electrical equipment. Cable runs are to be examined for sheath and armouring defects, where practicable, and to ensure that the means of supporting the cables are in satisfactory condition. The proper condition of bond-

ing straps for the control of static electricity is to be checked. Alarms and interlocks associated with pressurised equipment or spaces are to be tested for correct operation.

### 3.7 Controls

**3.7.1** Where remote and/or automatic controls, not covered by an additional class notation related to automated installation, are fitted for essential machinery, they are to be tested to demonstrate that they are in satisfactory condition.

### 3.8 Fire protection, detection and extinction

**3.8.1** The Owner or his representative is to declare to the attending Surveyor that no significant changes have been made to the arrangement of structural fire protection.

Note 1: Attention is drawn to the provisions of Ch 1, Sec 1, [3.1.1] regarding compliance with any additional and/or more stringent requirements issued by the Administration of the State whose flag the ship is entitled to fly.

**3.8.2** The class renewal survey of fire prevention arrangements is to cover the following items.

- a) Visible parts of items forming part of structural fire protection arrangements in accommodation spaces and in machinery spaces such as bulkheads, decks, doors, stairways, crew and service lift trunks, and light and air trunks are to be examined, due attention being given to their integrity and that of the insulating material.
- b) The operation of manual/automatic fire doors, where fitted, is to be checked.
- c) Remote controls for stopping fans and machinery and shutting off fuel supplies in machinery spaces and, where fitted, remote controls for stopping fans in accommodation spaces and means of cutting off power to the galley are to be tested.
- d) Closing arrangements of ventilators, funnel annular spaces, skylights, doorways and tunnels, where applicable, are to be tested.
- e) Fire and/or smoke detection and alarm systems are to be tested.

**3.8.3** The survey requirements for all types of fire-fighting systems that are usually found on board ships related either to machinery spaces or to cargo areas and/or spaces or to accommodation spaces, irrespective of the service notation assigned, are the following:

- a) water fire system
  - the associated pumps are to be opened up and examined at the Surveyor's discretion
  - the fire main is to be hydrostatically tested to the working pressure at the Surveyor's discretion
- b) fixed gas fire-extinguishing system

Receivers of CO<sub>2</sub> (or other gas) fixed fire-extinguishing systems are to be externally examined together with all stationary fittings and devices. In addition, the following applies:

- the total loss of CO<sub>2</sub> is not to exceed 10% of the installed quantity (5% for Halon)

- after being repaired or discharged, containers are to be subjected to a hydrostatic test
- hydrostatic testing of high pressure CO<sub>2</sub> containers is to be carried out at intervals not exceeding 10 years; the number of the tested containers is to be not less than 10% of the total number
- low pressure CO<sub>2</sub> containers are to be internally inspected if the content has been released and the container is older than five years; depending upon the result of the internal examination, the Surveyor may require the container to be hydrostatically tested.

It is to be checked that the distribution pipework is proved clear

- c) sprinkler system
  - the associated pumps are to be opened up and examined at the Surveyor's discretion
- d) water spraying system
  - the associated pumps are to be opened up and examined at the Surveyor's discretion
  - a working test is to be carried out as far as reasonable and appropriate
- e) fixed foam systems (low or high expansion)
  - the associated pumps are to be opened up and examined at the Surveyor's discretion
- f) dry powder system
  - it is to be verified that the propelling inert gas bottles have been hydrostatically tested. The same applies to bottles disembarked for refilling or embarked for replacement.

**3.8.4** As far as other fire-fighting equipment is concerned, the following items are to be hydrostatically tested :

- any CO<sub>2</sub> bottles of extinguishers
- shells of foam extinguishers
- shells of powder extinguishers
- air or gas bottles associated with fire extinguishers whose shells are not kept under pressure (if internally examined, the test need not be performed).

**3.8.5** Where a helideck is fitted, the following is to be checked, as far as appropriate:

- drainage arrangements around the landing area
- fire fighting appliances and arrangements (to be surveyed as per [3.8.3] and [3.8.4], according to the equipment installed)
- other arrangements for helicopter refuelling and hangar facilities (fuel system, ventilation, fire protection and detection).

### 3.9 Other systems

**3.9.1** For units including piping systems containing corrosive substances, such as not degassed drilling mud, the survey includes:

- examination of corresponding gauging devices, high level alarms, valves associated with overflow control and gas detectors

- confirmation that the remote operation of the corresponding pump room bilge is satisfactory
- confirmation that corresponding pump room rescue arrangements are in order
- confirmation that corresponding ventilation system is satisfactory

**3.9.2** For self-elevating units, the Surveyor satisfies himself of the condition of the leg jacking systems including pin-

ions, gears, wedges, locking pins, brakes and their powering sources, or other mechanisms for self-elevation and for leg securing (rack choke), that they are surveyed, opened up as deemed necessary and functionally tested.

Electrical equipment for the jacking system is to be externally examined, opened up if deemed necessary and functionally tested.

## SECTION 5

# SCOPE OF SURVEYS FOR MOBILE OFFSHORE DRILLING UNITS

## 1 General

### 1.1 Application

**1.1.1** The requirements of this Section apply to all Mobile Offshore Drilling Units after their construction.

**1.1.2** The requirements apply to surveys of the hull, structure, equipment, and machinery subject to classification.

## 2 Annual survey

### 2.1 Scope

**2.1.1** The survey consists of an examination for the purpose of ensuring, as far as practicable, that the hull, structure, equipment, and machinery are maintained in a satisfactory condition.

### 2.2 Hull, structure and equipment

#### 2.2.1 General

At each annual survey the exposed parts of the hull, deck, deck house, structures attached to the deck, derrick sub-structure, including supporting structure, accessible internal spaces, and the applicable parts listed in [2.2.2] to [2.2.5] are to be generally examined and placed in satisfactory condition as found necessary.

The Surveyors are to be satisfied at each annual survey that no material alterations have been made to the unit, its structural arrangements, subdivision, superstructure, fittings, and closing appliances upon which the stability calculations or the load line assignment is based.

#### 2.2.2 All drilling units

The following items are to be examined:

- Accessible hatchways, manholes and other openings.
- Machinery casings and covers, companionways, and deck houses protecting openings.
- Portlights together with deadcovers, cargo ports and similar openings in hull sides, ends, or in enclosed superstructures.
- Ventilators, tank vent pipes together with flame screens, and overboard discharges from enclosed spaces.
- Watertight bulkheads and end bulkheads of enclosed superstructures.
- Closing appliances for all the above, including hatchcovers, doors check valves, together with their respective securing devices, dogs, sill, coamings and supports.
- Freeing ports together with bars, shutters and hinges.

- Windlass and attachment of anchor racks and anchor cables.
- Protection of the crew, guard rails, lifelines, gangways, and deck houses accommodating crew.

#### 2.2.3 Surface units

The hull and deck structure around the drilling well (moon-pool) and in vicinity of any other structural changes in section, slots, steps, or openings in the deck or hull and the back-up structure in way of structural members or sponsons connecting to the hull are to be examined.

#### 2.2.4 Self elevating units

The following items are to be examined:

- Jack-house structures and attachments to upper hull or platform.
- Jacking or other elevating systems and leg guides, externally.
- Legs as accessible above the waterline.
- Plating and supporting structure in way of leg wells.

#### 2.2.5 Column stabilised units

Columns, diagonal and horizontal braces together with any other parts of the upper hull supporting structure as accessible above the waterline are to be examined.

Note 1: At the 1st annual survey after construction, column stabilized and self elevating units may be subject to examination of major structural components including non-destructive testing, as deemed necessary by the Society. If the Society deems such survey to be necessary, the extent should be agreed to by the Society and the Owner or operator prior to commencement of the Survey.

## 2.3 Machinery

### 2.3.1 Self propelled units

A general examination of main and auxiliary engines, boilers, steering machinery, pumps, pipings, electrical installation including those in hazardous areas, and fire extinguishing apparatus is to be carried out.

### 2.3.2 Non-self propelled units

A general examination of items required for classification such as auxiliary machinery, pumps, piping, electrical installation in hazardous areas and fire extinguishing apparatuses is to be carried out.

## 2.4 Electrical equipment

**2.4.1** A general examination of electrical machinery, the emergency sources of electrical power, the switchgear, and other electrical equipment, including operation of same is to be carried out. The operation of the emergency sources

of power, including their automatic operation, is to be confirmed as far as practicable.

## 2.5 Shipboard automatic and remote control systems

**2.5.1** A general examination of the automatic and remote control system is to be made to the Surveyor's satisfaction. The machinery-space fire-detection and bilge water-level alarms are to be tested to confirm satisfactory operation.

## 2.6 Special features

**2.6.1** A general examination of hazardous areas, remote shutdown arrangements, fire fighting apparatus where included in the Societies' Rules, self-elevating systems, piping systems, and bilge systems is to be made.

# 3 Class renewal survey

## 3.1 Scope

**3.1.1** The class renewal surveys shall include, in addition to annual survey and drydocking survey (or equivalent) requirements, the following examinations, tests, and checks of sufficient extent to ensure that the hull, structure, equipment, and machinery are in satisfactory condition and that the offshore unit is fit for its intended purpose for the new period of class of 5 years to be assigned subject to proper maintenance and operation and the periodical surveys carried out at the due dates.

## 3.2 Scope of class renewal survey n°1

### 3.2.1 All drilling units

- The hull or platform structure including tanks, watertight bulkheads and deck, cofferdams, void spaces, sponsons, chain lockers, duct keels, helicopter deck and its supporting structure, machinery spaces, peak spaces, steering gear spaces, and all other internal spaces are to be examined externally and internally for damage, fractures, or excessive wastage. Thickness measurements of plating and framing may be required where wastage is evident or suspected.
- All tanks, compartments and free-flooding spaces throughout the unit are to be examined externally and internally for excess wastage or damage.
- Internal examinations of spud cans and mats are to be specially considered.
- Watertight integrity of tanks, bulkheads, hull, decks and other compartments is to be verified by visual inspection.
- Suspect areas may be required to be tested for tightness, non-destructive tested or thickness gauged.
- Tanks and other normally closed compartments are to be ventilated, gas freed and cleaned as necessary to expose damages and allow meaningful examination and thickness measured in case of excessive wastage.
- Internal examination and testing of void spaces, compartments filled with foam or corrosion inhibitors, and tanks used only for lube oil, light fuel oil, diesel oil, or

other non-corrosive products may be waived provided that upon a general examination the Surveyor considers their condition to be satisfactory. External thickness measurement may be required to confirm corrosion control.

- Structures such as derrick substructure and supporting structure, jack-houses, deck houses, superstructures, helicopter landing areas, raw water (sea water intake) towers and their respective attachments to the deck or hull.
- Windlass and attachments of anchor racks and anchor cable fairleads.
- Foundations and supporting headers, brackets, and stiffeners for drilling related apparatus, where attached to hull, deck, superstructure or deck house.
- Thickness measurements are to be carried out where wastage is evident or suspect.

### 3.2.2 Surface-type units

Structural appendages and ducts for positioning units.

### 3.2.3 Self-elevating units

- All legs, including chords, diagonal and horizontal braces, gussets, racks, joints, together with leg guides are to be examined. Tubular or similar type legs are to be examined externally and internally, together with internal stiffeners and pinholes as applicable.
- Structure in, around and under jack-house and leg walls. Non-destructive testing of suspect areas may be required.
- Leg jacking or other elevating systems externally.
- Leg connections to bottom mats or spud cans, including non-destructive testing of leg connections to mats or spud cans.
- Jetting piping systems or other external piping, particularly where penetrating mats or spud cans.
- Spud cans or mats. Where the spud cans or mats are partly or entirely obscured below the mud line where the class renewal survey is otherwise being completed, consideration will be given to postponement of the examinations until the next rig move.

### 3.2.4 Column-stabilised units

Connections of columns and diagonals to upper hull, structure or platform and lower hull, structure or pontoons. Joints of supporting structure including diagonals, braces and horizontals, together with gussets and brackets. Internal continuation or back-up structure for the above. Non-destructive examination may be required of suspect areas.

## 3.3 Scope of class renewal survey n°2

**3.3.1** These Surveys are to be at least as comprehensive as class renewal survey n°1, with special attention being given to the condition and thickness of material in high corrosion areas. Representative measurements will be required. These measurements will be specified in advance by the Society. Special attention should be paid to splash zones on structure, legs or related structure, and in ballast tanks, pre-load tanks, free-flooding spaces, spud cans and mats.

### 3.4 Machinery

#### 3.4.1 General

Machinery installations of all types of units are to undergo class renewal surveys at intervals similar to those for class renewal survey on the hull, in order that both may be recorded at approximately the same time.

#### 3.4.2 Non-self propelled units

In addition to the requirements for annual surveys, at each class renewal survey, special attention is to be given to the following items, as applicable:

- All openings to the sea, including sanitary and other overboard discharges, together with cocks and valves connected therewith are to be examined internally and externally while the unit is in drydock, or at the time of underwater examination in lieu of drydocking, and the fastenings to the shell plating are to be renewed when considered necessary by the Surveyor.
- Pumps and pumping arrangements, including valves, cocks, pipes and strainers are to be examined. Non-metallic flexible expansion pieces in the main salt water circulating system are to be examined internally and externally. The Surveyor is to be satisfied with the operation of the bilge and ballast systems. Other systems are to be tested as considered necessary.
- The foundations of machinery are to be examined.
- Heat exchangers and other unfired pressure vessels within the scope of classification are to be examined, opened out or thickness measured and pressure tested as considered necessary, and associated relief valves proved operable. Evaporators that operate with a vacuum on the shell need not be opened, but may be accepted on basis of satisfactory external examination and operational test or review of operating records.

#### 3.4.3 Self-propelled units

In addition to the requirements for non-propelled units, the main and auxiliary propulsion machinery, including associated pressure vessels should be surveyed. In addition, examination of the steering machinery is to be carried out, including an operational test and checking or relief-valve settings. The machinery may be required to be opened for further examination as considered necessary by the Surveyor.

#### 3.4.4 Units with propulsion - Assist or dynamic position

Propulsion-assist and dynamic positioning equipment should be surveyed on the basis of class renewal survey for machinery.

### 3.5 Electrical equipment

**3.5.1** In addition to the requirements for annual surveys, at each class renewal survey, special attention is to be given to the following items as applicable:

- Fittings and connections on main switchboards and distribution panels are to be examined, and care is to be taken to see that no circuits are overfused.
- Cables are to be examined as far as practicable without undue disturbance of fixtures.
- All generators are to be run under load, either separately or in parallel. Switches and circuit breakers are to be tested.
- All equipment and circuits are to be inspected for possible development of physical changes or deterioration. The insulation resistance of the circuits is to be measured between conductors and between conductors and ground and these values compared with those previously measured.
- Electrical auxiliaries installed for vital purposes, generators and motors are to be examined and their prime movers opened for inspection. The insulation resistance of each generator and motor is to be measured.
- The windings of main propulsion generators and motors are to be thoroughly examined and found or made dry and clean. Particular attention is to be paid to the ends of all windings of stators and rotors.

### 3.6 Shipboard automatic and remote control systems

**3.6.1** In addition to the requirements of Annual Surveys the following parts are to be examined:

- Control Actuators: All mechanical, hydraulic, and pneumatic control actuators and their power systems are to be examined and tested as considered necessary.
- Electrical equipments: The insulation resistance of the windings of electrical control motors or actuators is to be measured, with all circuits of different voltages above ground being tested separately to the Surveyor's satisfaction.
- Unattended Plants: Control systems for unattended machinery spaces are to be subjected to dock trials at reduced power on the propulsion engine to ensure the proper performance of all automatic functions, alarms, and safety systems.

### 3.7 Special features (all types)

#### 3.7.1 General

Offshore units may have many items of machinery and electrical equipment not found on conventional vessels. Certain of these items are required for classification even if the unit is without propulsion machinery. Items to be especially examined and reported upon at all class renewal surveys are as given in [4.7.2] to [4.7.7].

#### 3.7.2 Hazardous areas

Enclosed hazardous areas such as those containing open active mud tanks, shale shakers, degassers and desanders are to be examined and doors and closures in boundary

bulkheads verified as effective. Electric lighting, electrical fixtures, and instrumentation are to be examined, proven satisfactory and verified as explosion-proof or intrinsically safe. Ventilating systems including ductwork, fans, intake and exhaust locations for enclosed restricted areas are to be examined, tested and proven satisfactory. Ventilating air alarm systems to be proven satisfactory. Electrical motors are to be examined including closed-loop ventilating systems for large D-C motors. Automatic power disconnect to motors in case of loss of ventilating air is to be proved satisfactory.

### 3.7.3 Remote shutdown arrangements

Remote shutdown for fuel-oil transfer service pumps and ventilating equipment, together with oil tank outlet valves where required to be capable of being remotely closed are to be proved satisfactory. Emergency switch(es) for all electrical equipment including main and emergency generators, except alarm and communication systems and lighting in vital areas such as escape routes and landing platforms, are to be proved satisfactory.

### 3.7.4 Fire fighting apparatus

A general examination of the fire detection and extinguishing apparatus is to be made in order that the Surveyor may be satisfied with its efficient state.

The following items are to be especially examined:

- Fire hoses, nozzles, and spanners at each fire station.
- Servicing of all portable soda-acid and foam extinguishers.
- Weighing and re-charging as necessary of all dry chemical and CO<sub>2</sub> extinguishers.
- Fire pumps and piping including operation and capacity.
- Alarm systems.

### 3.7.5 Self elevating systems

On self elevating type units, the elevating systems are to be examined and reported on. Pinions and gears of the climbing pinion gear train of rack and pinion systems are to be examined, as far as practicable, to the Surveyor's satisfaction by an effective crack detection method.

### 3.7.6 Piping systems

Piping systems used solely for drilling operations and complying either with the Society's requirements or a recognised standard are to be examined, as far as practical, operationally or hydrostatically tested to working pressure, to the satisfaction of the Surveyor.

### 3.7.7 Miscellaneous

Bilge alarm systems, if fitted, are to be tested.

## 4 Bottom survey

### 4.1 Survey Preplanning and record keeping

#### 4.1.1 Plans and Procedures

Plans and procedures for the bottom survey are to be submitted for review in advance of the survey and made availa-

ble on board. These should include drawings or forms for identifying the areas to be surveyed, the extent of hull cleaning, non-destructive testing locations (including NDT methods), nomenclature, and for the recording of any damage or deterioration found. Submitted data, after review by the Society, will be subject to revision if found to be necessary in light of experience.

### 4.2 Parts to be examined

#### 4.2.1 Surface units

- External surfaces of the hull, keel, stem, stern frame, rudder, nozzles, and sea strainers are to be selectively cleaned to the satisfaction of the attending Surveyor and examined together with appendages, the propeller, exposed parts of stern bearing assembly, rudder pintle and gudgeon securing arrangements, sea chest and strainers, and their fastenings.
- Propeller shaft bearing, rudder bearing, and steering nozzle clearances are to be ascertained and reported upon.

#### 4.2.2 Self-elevating units

- External surfaces of the upper hull or platform, spud cans, mat, underwater areas of legs, together with their connections as applicable, are to be selectively cleaned to the satisfaction of the attending Surveyor and examined.
- At each drydocking survey or equivalent, after class renewal survey No. 2, the Surveyor is to be satisfied with the condition of the internal structure of the mat or spud cans. Leg connections to mat and spud cans are to be examined at each drydock survey or equivalent. Non-destructive testing may be required of areas considered to be critical by the Society or found to be suspect by the Surveyor.

#### 4.2.3 Column stabilised units

External surfaces of the upper hull or platform, footings, pontoons or lower hulls, underwater areas of columns, bracing and their connections, sea chests, and propulsion units as applicable, are to be selectively cleaned and examined to the satisfaction of the attending Surveyor. Non-destructive testing may be required of areas considered to be critical by the Society or found to be suspect by the Surveyor.

### 4.3 Ballast spaces

#### 4.3.1 General

In conjunction with drydocking surveys (or equivalent) after class renewal survey No. 1 and between subsequent class renewal surveys, the ballast spaces mentioned in [5.2.2] to [5.2.5] are to be internally examined, thickness gauged, placed in satisfactory condition as found necessary, and reported upon. If such examination reveals no visible structural defects, the examination may be limited to a verification that the corrosion control arrangements remain effective.

#### 4.3.2 All drilling units

Particular attention is to be given to corrosion control systems in ballast spaces, free-flooding areas and other locations subjected to sea water from both sides.

#### 4.3.3 Surface units

One peak tank and at least two other representative ballast tanks between the peak bulkheads used primarily for water ballast are to be examined by the attending Surveyor in accordance with [4.3.1].

#### 4.3.4 Self-elevating units

Representative ballast tanks or free-flooding compartments in mat or spud cans, if accessible, and at least two representative hull pre-load tanks are to be examined by the attending Surveyor in accordance with [4.3.1].

#### 4.3.5 Column-stabilised units

Representative ballast tanks in footings, lower hulls, or free-flooding compartments as accessible, and at least two ballast tanks in columns or upper hull, if applicable, are to be examined by the attending Surveyor in accordance with [4.3.1].

### 4.4 Specific requirements for in-water survey in lieu of drydocking survey for mobile offshore drilling units

#### 4.4.1 General

Following are the procedures and conditions under which a properly conducted in-water inspection may be credited as equivalent to a Drydocking Survey for a mobile offshore drilling unit.

#### 4.4.2 Conditions

##### a) Limitations

Underwater Inspection in lieu of Drydocking Survey may not be acceptable where there is record of abnormal deterioration or damage to the underwater structure; or where damage affecting the fitness of the unit is found during the course of the survey.

##### b) Thickness Gauging and Non-Destructive Testing

Underwater of internal thickness measurements of suspect areas may be required in conjunction with the underwater inspection. Means for underwater non-destructive testing may also be required for fracture detection.

##### c) Plans and Data

Plans and procedures for the Drydocking Survey (Underwater Inspection) are to be submitted for review in advance of the survey and made available on board. These should include drawings or forms for identifying the areas to be surveyed, the extent of underwater cleaning, non-destructive testing locations (including NDT methods), nomenclature, and for the recording of any damage or deterioration found.

##### d) Underwater Conditions

The areas to be surveyed are to be sufficiently clean and the sea water clear enough to permit meaningful examination and photograph (if necessary) by diver. Overall or spot cleaning may be required.

#### 4.4.3 Physical features

##### a) General

The physical features mentioned in b) to e) are to be incorporated into the unit's design in order to facilitate the underwater inspection. When verified they will be noted in the unit's classification for reference at subsequent surveys.

##### b) Stern Bearing

For self-propelled units, means are to be provided for ascertaining that the seal assembly on oil-lubricated bearings is intact and for verifying that the clearance or wear-down of the stern bearing is not excessive. For use of the wear-down gauges, up-to-date records of the base depths are to be maintained on board. Whenever the stainless-steel seal sleeve is renewed or machined, the base readings for the wear-down gauge are to be re-established and noted in the vessel's records and in the survey report.

##### c) Rudder Bearings

For self-propelled units with rudders, means and access are to be provided for determining the condition and clearance of the rudder bearings, and for verifying that all parts of the pintle and gudgeon assemblies are intact secure. This may require bolted access plates and a measuring arrangement.

##### d) Sea Suctions

Means are to be provided to enable the diver to confirm that the sea suction openings are clear. Hinged sea suction grids would facilitate this operation.

##### e) Sea Valves

For the Drydocking Survey (Underwater Inspection) associated with the class renewal survey, means must be provided to examine any sea valve.

#### 4.4.4 Procedures

##### a) Exposed Areas

An examination of the outside of the structure above the waterline is to be carried out by the Surveyor. Means and access are to be provided to enable the Surveyor to accomplish visual inspection and non-destructive testing as necessary.

##### b) Underwater Areas

An examination of the entire unit below the waterline is to be carried out by an approved firm.

##### c) Damage Areas

Damage areas are to be photographed. Internal examination, measurements, marking and thickness measurements of such locations may be necessary as determined by the attending Surveyor. Means are to be provided for location, orienting and identifying underwater surfaces in photographs or on video tapes.

#### 4.4.5 Alternatives

The Society is prepared to consider alternatives to the above guidelines including remotely operated vehicles, provided means and details for accomplishing results are not less effective.

## 5 Boiler surveys

### 5.1

**5.1.1** At each boiler survey the boilers, superheaters, and economizers are to be examined internally (water-steam side) and externally (fire side).

**5.1.2** Boiler mountings and safety valves are to be examined at each boiler survey and opened as considered necessary by the Surveyor.

**5.1.3** The proper operation of the safety valves is to be confirmed at each survey.

**5.1.4** When considered necessary by the Surveyor, the boilers and superheaters are to be subjected to hydrostatic pressure test.

## 6 Drilling equipment

### 6.1 Application

**6.1.1** Requirements given in the present Section for drilling equipment are additional to those given in the relevant Sections of the present Chapter.

These requirements are applicable only when the corresponding equipment are included in the scope of classification, as defined by the service notation and the additional class notation(s) granted to the unit.

### 6.2 Annual survey

**6.2.1** The survey will consist of:

- examination of drilling and production hoisting equipment
- examination of drawwork
- examination of lifting ropes
- examination of mud system (mud pumps, mud tanks, shah shaker,...)
- examination of dry pressure storage and transfer piping
- examination of heave compensation system
- examination of Blow Out Preventer (BOP) and diverter system
- examination of BOP handling system
- examination of cementing equipment
- examination of well test equipment
- examination of flare boom
- examination of pipes rack and pipe handling system

### 6.3 Class renewal survey

**6.3.1** In addition to the annual survey, the class renewal survey will mainly consist in internal examination of equipment, and testing of the operation of systems and safety devices.

In case of doubt, pressure or resistance tests may be requested at the satisfaction of the Surveyor.

## SECTION 6

## SURVEYS RELATED TO STORAGE AREA OF OIL STORAGE UNITS

### 1 General

#### 1.1 Application

**1.1.1** The requirements of this Section apply after construction to all oil storage units, with or without production installations on board.

**1.1.2** The requirements for hull surveys apply to the surveys of the hull structure and piping systems in way of storage tanks, pump rooms, cofferdams, pipe tunnels and void spaces within the storage area and all salt water ballast tanks. They are additional to the requirements applicable to the remainder of the unit, given in Ch 2, Sec 2 to Ch 2, Sec 4 according to the relevant surveys. For survey of inert gas installations, refer to Ch 2, Sec 9

**1.1.3** The requirements contain the minimum extent of examination, thickness measurements and tank testing. When substantial corrosion, and/or structural defects are found, the survey is to be extended and is to include additional close-up surveys when necessary.

**1.1.4** Prior to the commencement of any part of the class renewal survey and intermediate survey, a survey planning meeting is to be held between the attending Surveyor(s), the Owner's representative in attendance and the thickness measurement company representative, where involved.

**1.1.5** The requirements for machinery surveys apply to surveys of the machinery and equipment in the storage area or dedicated to storage service systems and are additional to those given in Ch 2, Sec 2 to Ch 2, Sec 4 for all units.

#### 1.2 Documentation on board

**1.2.1** The Owner is to supply and maintain documentation on board as specified in [1.2.2] and [1.2.3], which is to be readily available for examination by the Surveyor. The documentation is to be kept on board for the lifetime of the unit.

**1.2.2** A survey report file is to be a part of the documentation on board consisting of:

- reports of structural surveys
- thickness measurement reports.

The survey report file is also to be available in the Owner's management office.

**1.2.3** The following additional supporting documentation is to be available on board:

- main structural plans of crude oil storage and ballast tanks
- previous repair history
- crude oil and ballast history
- extent of use of inert gas system and tank cleaning procedures
- ship's personnel reports on:
  - structural deterioration/defects in general
  - leakage in bulkheads and piping systems
  - condition of coatings or cathodic protection system, if any
- any other information that may help to identify suspect areas requiring inspection.

**1.2.4** Prior to survey, the Surveyor examines the documentation on board and its contents, which are used as a basis for the survey.

### 2 Annual survey - Hull items

#### 2.1 Weather decks

**2.1.1** The survey is to include:

- examination of crude oil storage tank openings, including gaskets, covers, coamings and screens
- examination of crude oil storage tank pressure/vacuum valves and flame screens
- examination of flame screens on vents to all bunker, oily ballast and slop tanks and void spaces, as far as practicable
- examination of crude oil, crude oil washing, bunker, ballast and vent piping systems, including remote control valves, safety valves and various safety devices, as well as vent masts and headers
- confirmation that wheelhouse doors and windows, side-scuttles and windows in superstructure and deckhouse ends facing the cargo area are in satisfactory condition

#### 2.2 Crude oil pump rooms

**2.2.1** The survey is to include:

- examination of all pump room bulkheads for signs of oil leakage or fractures and, in particular, the sealing arrangements of penetrations in these bulkheads
- examination of the condition of all piping systems

## 2.3 Ballast tanks

**2.3.1** Ballast tanks are to be internally examined when required as a consequence of the results of the class renewal survey or the intermediate survey.

**2.3.2** When considered necessary by the Surveyor, thickness measurements are to be carried out and if the results indicate that substantial corrosion is present, the extent of the measurements is to be increased in accordance with Tab 6 or Tab 7 for double sided units. These extended thickness measurements are to be carried out before the survey is credited as completed.

Suspect areas identified at previous class renewal surveys are to be examined.

Areas of Substantial Corrosion identified at previous class renewal or intermediate survey are to have thickness measurements taken.

## 3 Annual survey - Crude oil storage machinery items

### 3.1 Storage area and crude oil pump rooms

**3.1.1** The Owner or his representative is to declare to the attending Surveyor that no modifications or alterations which might impair safety have been made to the various installations in dangerous zones without prior approval from the Society.

The survey is to include:

- confirmation that potential sources of ignition in or near the crude oil pump rooms, such as loose gear, excessive product in bilge, excessive vapours, combustible materials, etc., are eliminated and that access ladders are in satisfactory condition
- examination, as far as practicable, of crude oil, bilge, ballast and stripping pumps for excessive gland seal leakage, verification of proper operation of electrical and mechanical remote operating and shutdown devices and operation of the pump room bilge system, and checking that pump foundations are intact
- confirmation that the ventilation system, including portable equipment, if any, of all spaces in the storage area (including crude oil pump rooms) is operational, ducting is intact, dampers are operational and screens are clean
- confirmation that electrical equipment in dangerous zones, crude oil pump rooms and other spaces is in satisfactory condition and has been properly maintained
- confirmation that the remote operation of the crude oil pump room bilge system is satisfactory
- examination of the heating system
- examination of the transfer arrangement and confirmation that the unit's hoses are suitable for their intended purpose and in satisfactory condition
- confirmation that any special arrangement made for bow or stern loading/unloading is in satisfactory condition and test of the means of communication and remote shutdown of the crude oil pumps.

## 3.2 Instrumentation and safety devices

**3.2.1** The survey is to include:

- examination of crude oil storage tank gauging devices, high level alarms and valves associated with overflow control
- verification that installed pressure gauges on crude oil discharge lines are properly operational
- confirmation that the required gas detection instruments are on board and satisfactory arrangements have been made for the supply of any required vapour detection tubes
- confirmation that devices provided for measuring the temperature of the crude oil, if any, operate satisfactorily.

## 3.3 Fire-fighting systems in cargo area

**3.3.1** The survey is to include:

- external examination of piping and cut-out valves of fixed fire-fighting systems related to crude oil storage tanks and crude oil pump rooms
- confirmation, as far as practicable and when appropriate, that the remote means for closing the various openings are operable
- examination of the appropriate portable fire-extinguishing equipment
- examination of fire-fighting systems of any type fitted on board such as deck foam, water-spraying, etc., as applicable

## 4 Intermediate survey - Hull items

### 4.1 Ships 15 years of age or less

**4.1.1** The survey of weather decks is to include:

- examination, as far as applicable, of crude oil, crude oil washing, bunker, ballast, steam and vent piping systems as well as vent masts and headers. If upon examination there is any doubt as to the condition of the piping, pressure testing, thickness measurement or both may be required
- confirmation that storage pipes are electrically bonded to the hull
- examination of vent line drainage arrangements.

**4.1.2** The requirements for survey of crude oil storage and salt water ballast tanks given in Tab 1 or Tab 2 for double sided units are to be complied with.

### 4.2 Ships over 15 years of age

**4.2.1** The scope of intermediate survey of units over 15 years of age is the scope of the preceding class renewal survey of hull, as detailed in [6], except that testing of ballast and crude oil storage tanks as detailed in [6.5] is not required unless deemed necessary by the Surveyor.

**Table 1 : Intermediate survey of crude oil storage and salt water ballast tanks**

Age of unit (in years at time of intermediate survey)	
5 < age ≤ 10	10 < age ≤ 15
Overall survey of representative salt water ballast tanks, selected by the attending Surveyor See (1), (2) and (3)	Overall survey of all salt water ballast tanks, including combined crude oil storage/ballast tanks See (1) and (3)
	Overall survey of at least two representative crude oil storage tanks
	Close-up survey in salt water ballast tanks of: <ul style="list-style-type: none"> <li>• all web frame rings in a wing tank</li> <li>• one deck transverse in each remaining tank</li> <li>• both transverse bulkheads (complete) in a wing tank</li> <li>• one transverse bulkhead (lower part) in each remaining tank</li> </ul> Close-up survey of two combined crude oil storage/ballast tanks (4) See (5) and (6)
Thickness measurements of those areas found to be suspect areas, at the previous class renewal survey See (7)	Thickness measurements of those areas found to be suspect areas, at the previous class renewal survey. See (8). Areas of substantial corrosion, identified at the previous class renewal or intermediate survey are to have thickness measurements taken. Suspect areas identified at previous class renewal surveys are to be examined.
<p>(1) If such survey reveals no visible structural defects, then the examination may be limited to verification that the protective coating remains efficient and that the sacrificial anodes, if any, are less than 50% depleted.</p> <p>(2) Where poor coating condition, corrosion or other defects are found in salt water ballast tanks or where a protective coating has never been applied i.e. neither at the time of construction nor thereafter, or where the sacrificial anodes are found to be more than 50% depleted, the examination is to be extended to other ballast tanks of the same type.</p> <p>(3) In salt water ballast tanks, where a protective coating is found to be in poor condition, and is not renewed, where soft coating has been applied, or where a protective coating has never been applied i.e. neither at the time of construction nor thereafter, the tanks in question are to be internally examined and thickness measurement carried out as considered necessary at annual surveys.</p> <p>(4) The extent of survey is to be based on the record of the previous class renewal surveys and repair history of the tanks.</p> <p>(5) The extent of close-up surveys may be increased in accordance with the requirements in [6.3.3].</p> <p>(6) For areas in tanks where protective coating and cathodic protection is found to be in good condition, the extent of close-up survey may be specially considered.</p> <p>(7) Where substantial corrosion, is found, the extent of thickness measurements is to be increased in accordance with the requirements in Tab 6.</p> <p>(8) Where substantial corrosion, is found, the extent of thickness measurements is to be increased in accordance with the requirements in Tab 6. These extended thickness measurements are to be carried out before the survey is credited as completed.</p>	

## 5 Intermediate survey - Crude oil storage machinery items

### 5.1 Storage area and crude oil pump rooms

**5.1.1** A general examination of the electrical equipment and cables in dangerous zones such as crude oil pump rooms and areas adjacent to crude oil storage tanks is to be carried out for defective and non-certified safe type electrical equipment and fixtures, non-approved lighting and fixtures, and improperly installed or defective or dead-end wiring.

**5.1.2** The electrical insulation resistance of the electrical equipment and circuits terminating in or passing through the dangerous zones is to be tested; however, in cases

where a proper record of testing is maintained, consideration may be given to accepting recent test readings effected by the ship's personnel.

**5.1.3** The satisfactory condition of the crude oil heating system is to be verified.

## 6 Class renewal survey - Hull items

### 6.1 Survey program and preparation for hull survey

**6.1.1** In advance of the class renewal survey, not less than twelve months as far as possible, a specific survey program is to be worked out by the Owner in cooperation with the Society. The survey program is to be in a written format.

**Table 2 : Intermediate survey of crude oil storage and salt water ballast tanks for double sided units**

Age of unit (in years at time of class renewal survey)	
5 < age ≤ 10	10 < age ≤ 15
Overall survey of representative salt water ballast tanks, selected by the attending Surveyor (the selection is to include fore and aft peak tanks and three other tanks). See (1), (2) and (3)	Overall survey of all salt water ballast tanks, including combined crude oil storage/ballast tanks, where fitted See (1) and (3)
	Overall survey of at least two representative crude oil storage tanks
	Close-up survey in salt water ballast tanks of: <ul style="list-style-type: none"> <li>• all web frames (9) in one complete tank (8)</li> <li>• the knuckle area (10) and the upper part (5 meters approximately) of one web frame in each remaining ballast tank</li> <li>• one transverse bulkhead (11) in each complete tank (8)</li> </ul> Close-up survey in two crude oil storage tanks (or two combined crude oil storage/ballast tanks, where fitted (4) See (5) and (6)
Thickness measurements of those areas found to be suspect areas, at the previous class renewal survey See (7)	Thickness measurements of those areas found to be suspect areas, at the previous class renewal survey. See (12). Areas of substantial corrosion, identified at the previous class renewal or intermediate survey are to have thickness measurements taken. Suspect areas identified at previous class renewal surveys are to be examined.

- (1) If such survey reveals no visible structural defects, then the examination may be limited to verification that the protective coating remains efficient and that the sacrificial anodes, if any, are less than 50% depleted.
- (2) Where poor coating condition, corrosion or other defects are found in salt water ballast tanks or where a protective coating has never been applied i.e. neither at the time of construction nor thereafter, or where the sacrificial anodes are found to be more than 50% depleted, the examination is to be extended to other ballast tanks of the same type.
- (3) In salt water ballast tanks, where a protective coating is found to be in poor condition, and is not renewed, where soft coating has been applied, or where a protective coating has never been applied i.e. neither at the time of construction nor thereafter, the tanks in question are to be internally examined and thickness measurement carried out as considered necessary at annual surveys.
- (4) The extent of survey is to be based on the record of the previous class renewal surveys and repair history of the tanks.
- (5) The extent of close-up surveys may be increased in accordance with the requirements in [6.3.3].
- (6) For areas in tanks where protective coating and cathodic protection is found to be in good condition, the extent of close-up survey may be specially considered.
- (7) Where substantial corrosion, is found, the extent of thickness measurements is to be increased in accordance with the requirements in Tab 7.
- (8) Complete ballast tank means double bottom plus double side plus double deck tank, as applicable, even if these tanks are separate.
- (9) Web frame means vertical web in side tank, hopper web in hopper tank, floor in double bottom tank and deck transverse in double deck tank (where fitted), including adjacent structural members. In fore and aft peak tank, web frame means a complete transverse web frame ring including adjacent structural members.
- (10) Knuckle area is the area of the web frame around the connections of the slope hopper plating to the inner hull bulkhead and the inner bottom plating, up to 2 meters from the corners both on the bulkhead and the double bottom.
- (11) transverse bulkhead complete in ballast tanks, including girder system and adjacent structural members, such as longitudinal bulkheads, girders in double bottom tanks, inner bottom plating, hopper side, inner hull longitudinal bulkhead, connecting brackets.
- (12) Where substantial corrosion, is found, the extent of thickness measurements is to be increased in accordance with the requirements in Tab 7. These extended thickness measurements are to be carried out before the survey is credited as completed.

Table 3 : Close-up survey at class renewal survey

Age of unit (in years at time of class renewal survey)			
age ≤ 5	5 < age ≤ 10	10 < age ≤ 15	age > 15
One web frame ring, in a wing ballast tank, if any, or a wing crude oil storage tank used primarily for water ballast (1)	All web frame rings, in a wing ballast tank, if any, or a wing crude oil storage tank used primarily for water ballast (1)	All web frame rings in all ballast tanks (1) All web frame rings in a crude oil storage wing tank (1) A minimum of 30% of all web frame rings in each remaining crude oil storage wing tank (1) (6)	As class renewal survey for ships between 10 and 15 years of age
One deck transverse, in a crude oil storage tank (2)	One deck transverse (2): - in each remaining ballast tank - in a crude oil storage wing tank - in two crude oil storage centre tanks		Additional transverse areas as deemed necessary by the Society
	Both transverse bulkheads, in a wing ballast tank, if any, or a crude oil storage wing tank used primarily for water ballast (3)	All transverse bulkheads, in all crude oil storage and ballast tanks (3)	
One transverse bulkhead in a ballast tank (4) One transverse bulkhead in a crude oil storage wing tank (4) One transverse bulkhead in a crude oil storage centre tank (4)	One transverse bulkhead in each remaining ballast tank (4) One transverse bulkhead in a crude oil storage wing tank (4) One transverse bulkhead in two crude oil storage centre tanks (4)		
		A minimum of 30% of deck and bottom transverses in each crude oil storage centre tank (5) (6)	
		Additional web frame ring(s) (1), as considered necessary by the Surveyor	
<p>See Fig 1 or Fig 2 for areas (1), (2), (3), (4) and (5).</p> <p>(1) Complete transverse web frame ring including adjacent structural member.</p> <p>(2) Deck transverse including adjacent deck structural members.</p> <p>(3) Transverse bulkhead complete, including girder system and adjacent structural members.</p> <p>(4) Transverse bulkhead lower part, including girder system and adjacent structural members.</p> <p>(5) Deck and bottom transverse, including adjacent structural members.</p> <p>(6) The 30 % is to be rounded up to the next whole integer.</p> <p><b>Note 1:</b> Ballast tanks include peak tanks.</p>			

## 6.2 Scope of survey

**6.2.1** In addition to the requirements of annual surveys, the class renewal survey is to include examination, tests and checks of sufficient extent to ensure that the hull and related piping are in satisfactory condition for the new period of class to be assigned, subject to proper maintenance and operation and to periodical surveys being carried out at the due dates.

**6.2.2** All storage tanks, slop tanks, salt water ballast tanks, including double bottom tanks, pump rooms, pipe tunnels, cofferdams and void spaces bounding crude oil storage tanks, decks and outer hull are to be examined, and this examination is to be supplemented by thickness measure-

ment and testing as deemed necessary, to ensure that the structural integrity remains effective. The examination is to be directed at discovering substantial corrosion, significant deformation, fractures, damages or other structural deterioration and, if deemed necessary by the Surveyor, may include suitable non-destructive inspection.

**6.2.3** The survey extent of combined ballast/crude oil storage tanks is to be evaluated based on the records of ballast history, the extent of the corrosion prevention system provided and the extent of corrosion found.

**6.2.4** The survey extent of ballast tanks converted to void spaces will be specially considered by the Society in relation to the requirements for ballast tanks.

**Table 4 : Close-up survey at class renewal survey of double sided units**

Age of unit (in years at time of class renewal survey)			
age ≤ 5	5 < age ≤ 10	10 < age ≤ 15	age > 15
One web frame (1), in a complete ballast tank (see Note 1)	All web frames (1), in a complete ballast tank (see Note 1) The knuckle area (6) and the upper part (5 meters approximately) of one web frame in each remaining ballast tank	All web frames (1) in all ballast tanks	As class renewal survey for ships between 10 and 15 years of age
One deck transverse, in a crude oil storage tank (2)	One deck transverse (2) in two crude oil storage tanks	All web frames (7) including deck transverse and cross ties, if fitted, in a crude oil storage tank One web frame (7) including deck transverse and cross ties, if fitted, in each remaining crude oil storage tank	Additional transverse areas as deemed necessary by the Society
One transverse bulkhead (4) in a complete ballast tank (see Note 1)	One transverse bulkhead (4) in each complete ballast tank (see Note 1)	All transverse bulkheads, in all crude oil storage (3) and ballast tanks (4)	
One transverse bulkhead in a crude oil storage wing tank (5)	One transverse bulkhead in a crude oil storage wing tank (5)		
One transverse bulkhead in a crude oil storage centre tank (5)	One transverse bulkhead in two crude oil storage centre tanks (5)		
See Fig 3 for areas (1), (2), (3), (4), (5), (6) and (7).			
<p>(1) Web frame in a ballast tank means vertical web in side tank, hopper web in hopper tank, floor in double bottom tank and deck transverse in double deck tank (where fitted), including adjacent structural members. In fore and aft peak tank, web frame means a complete transverse web frame ring including adjacent structural members.</p> <p>(2) Deck transverse including adjacent deck structural members (or external structure on deck in way of the tank, where applicable).</p> <p>(3) Transverse bulkhead complete in crude oil storage tanks, including girder system adjacent structural members (such as longitudinal bulkheads) and internal structure of lower and upper stools, where fitted.</p> <p>(4) transverse bulkhead complete in ballast tanks, including girder system and adjacent structural members, such as longitudinal bulkheads, girders in double bottom tanks, inner bottom plating, hopper side, inner hull longitudinal bulkhead, connecting brackets.</p> <p>(5) Transverse bulkhead lower part in crude oil storage tank, including girder system, adjacent structural members (such as longitudinal bulkheads) and internal structure of lower stool where fitted.</p> <p>(6) Knuckle area is the area of the web frame around the connections of the slope hopper plating to the inner hull bulkhead and the inner bottom plating, up to 2 meters from the corners both on the bulkhead and the double bottom.</p> <p>(7) Web frame in a crude oil storage tank means deck transverse, longitudinal bulkhead vertical girder and cross ties, where fitted, including adjacent structural members.</p> <p><b>Note 1:</b> Complete ballast tank means double bottom plus double side plus double deck tank, as applicable, even if these tanks are separate.</p> <p><b>Note 2:</b> Where no centre crude oil storage tank is fitted (as in the case of centre longitudinal bulkhead), transverse bulkheads in wing tanks are to be surveyed.</p>			

**Figure 1 : Areas subject to close-up surveys and thickness measurements**

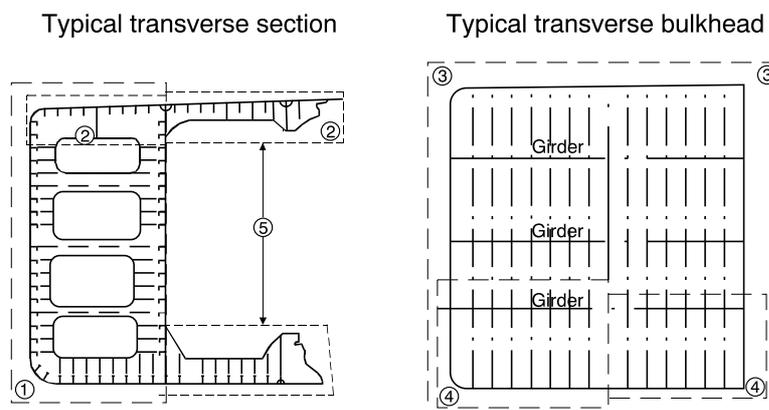
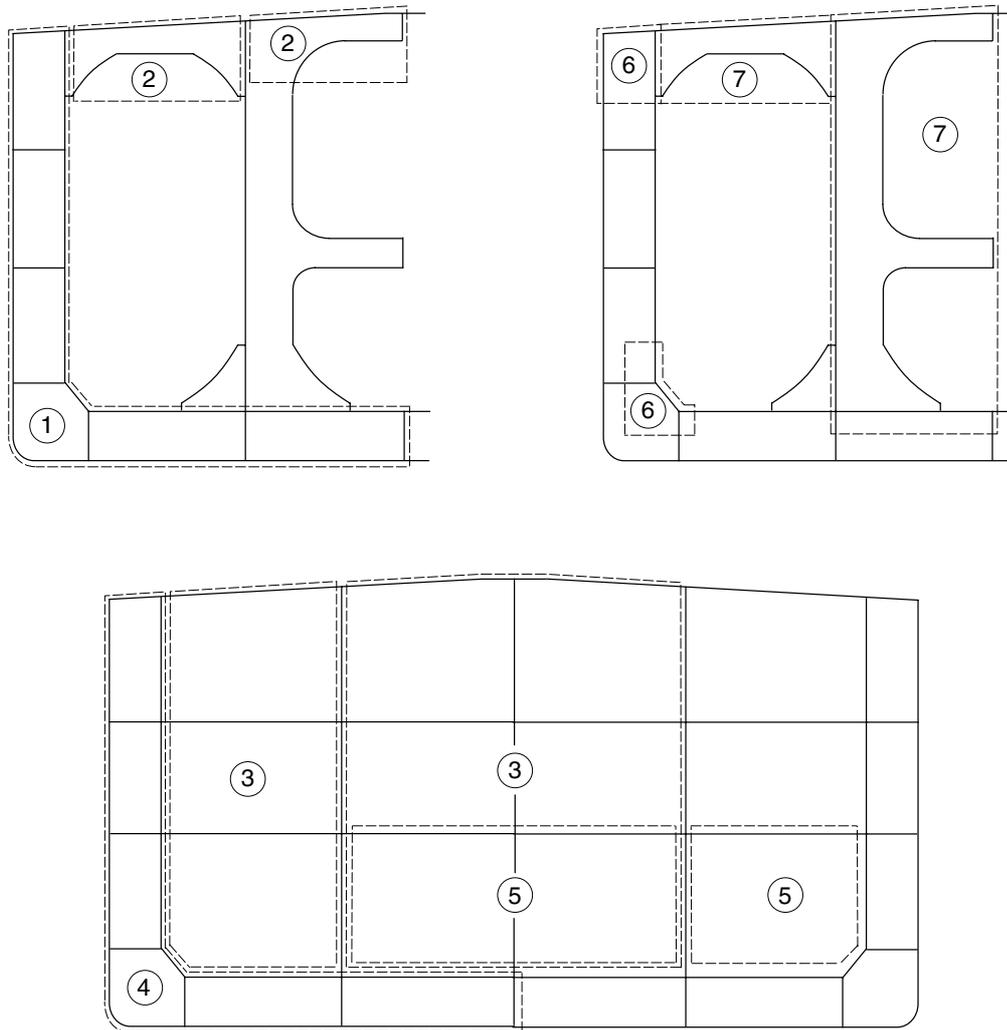


Figure 2 : Areas subject to close-up surveys and thickness measurements - double sided units



**6.2.5** Where provided, the condition of the corrosion prevention system of crude oil storage and ballast tanks is to be examined.

For tanks used for salt water ballast, where a protective coating is found to be in poor condition, and is not renewed, where soft coating has been applied, or where a protective coating has never been applied i.e. neither at the time of construction nor thereafter, the tanks in question are to be internally examined at annual surveys. Thickness measurement is to be carried out as considered necessary.

### 6.3 Overall and close-up surveys

**6.3.1** Each class renewal survey is to include an overall survey of all tanks and all spaces. For fuel oil tanks, however, the requirements given in Ch 2, Sec 4, Tab 2 are to be complied with.

**6.3.2** Each class renewal survey is to include a close-up examination of sufficient extent to establish the condition of storage tanks and salt water ballast tanks. The minimum requirements for close-up surveys are given in Tab 3 or Tab 4 for double sided units.

**6.3.3** The Surveyor may extend the close-up survey as deemed necessary, taking into account the maintenance of the tanks under survey, the condition of the corrosion prevention system and also in the following cases:

- where tanks have structural arrangements or details which have suffered defects in similar spaces or on similar ships according to available information
- where tanks have structures approved with reduced scantlings.

**6.3.4** For areas in tanks where coatings are found to be in good condition, the extent of close-up surveys required according to Tab 3 or Tab 4 may be specially considered by the Society.

**Table 5 : Thickness measurements at class renewal survey**

Age of unit (in years at time of class renewal survey)			
age ≤ 5	5 < age ≤ 10	10 < age ≤ 15	age > 15
Suspect areas	Suspect areas	Suspect areas	Suspect areas
One section of deck plating for the full beam of the unit within the storage area (in way of a ballast tank, if any, or a crude oil storage tank used primarily for water ballast)	Within the storage area: <ul style="list-style-type: none"> <li>• each deck plate</li> <li>• 1 transverse section</li> </ul>	Within the storage area: <ul style="list-style-type: none"> <li>• each deck plate</li> <li>• 2 transverse sections</li> <li>• selected bottom plates</li> <li>• all wind and water strakes</li> </ul>	Within the storage area: <ul style="list-style-type: none"> <li>• each deck plate</li> <li>• 3 transverse sections</li> <li>• each bottom plate</li> <li>• all wind and water strakes</li> </ul>
Measurements, for general assessment and recording of corrosion pattern, of those structural members subject to close-up survey according to Tab 3 and Tab 4	Measurements, for general assessment and recording of corrosion pattern, of those structural members subject to close-up survey according to Tab 3 and Tab 4	Measurements, for general assessment and recording of corrosion pattern, of those structural members subject to close-up survey according to Tab 3 and Tab 4	Measurements, for general assessment and recording of corrosion pattern, of those structural members subject to close-up survey according to Tab 3 and Tab 4
	Selected wind and water strakes outside the storage area	Selected wind and water strakes outside the storage area	Selected wind and water strakes outside the storage area
(1) Transverse sections are to be chosen where the largest reductions are likely to occur or as revealed by deck plating measurements.			
(2) At least one section is to be within 0,5L amidships and, where applicable, in way of a ballast tank.			

## 6.4 Thickness measurements

**6.4.1** The minimum requirements for thickness measurements at class renewal survey are given in Tab 5.

**6.4.2** The Surveyor may extend the thickness measurements as deemed necessary. Provisions for extended measurements for areas with substantial corrosion are given in Tab 6 or Tab 7 for double sided units and as may be additionally specified in the survey program as required in [6.1] to determine the full extent of the corrosion pattern. These extended thickness measurements are to be carried out before the survey is credited as completed.

Suspect areas identified at previous class renewal surveys are to be examined.

Areas of Substantial Corrosion identified at previous class renewal or intermediate survey are to have thickness measurements taken.

**6.4.3** When pitting is found on bottom plating and its intensity is 20% or more, thickness measurements are to be extended in order to determine the actual plate thickness out of the pits and the depth of the pits. Where the wastage is in the substantial corrosion range or the average depth of pitting is 1/3 or more of the actual plate thickness, the pitted plate is to be considered as a substantially corroded area.

**6.4.4** For areas in spaces where coatings are found to be in good condition, the extent of thickness measurements according to Tab 5 may be specially considered by the Society.

## 6.5 Tank testing

**6.5.1** The requirements for tank testing at class renewal survey are given in Tab 8.

**6.5.2** The Surveyor may extend the tank testing as deemed necessary.

**6.5.3** Tanks are to be tested with a head of liquid to the top of access hatches for crude oil storage tanks, or the top of air pipes for ballast tanks, if the latter gives a higher pressure.

## 6.6 Storage area and crude oil pump rooms

**6.6.1** Crude oil storage and crude oil washing piping on deck and crude oil, stripping, venting and ballast piping systems within the storage area are to be examined and operationally tested to working pressure to the attending Surveyor's satisfaction to ensure that their tightness and condition remain satisfactory. Special attention is to be given to any ballast piping in crude oil storage tanks and crude oil storage piping in ballast tanks and void spaces. Surveyors are to be advised on all occasions when this piping, including valves and fittings, is opened during repair periods and can be examined internally.

The surveyor may require dismantling and/or thickness measurements of piping. A hydraulic test is to be carried out in the event of repair or dismantling or crude oil, crude oil washing, or ballast piping, or where doubts arise.

Table 6 : Extended thickness measurements at those areas of substantial corrosion

<b>BOTTOM STRUCTURE</b>		
Structural member	Extent of measurement	Pattern of measurement
Bottom plating	Minimum of 3 bays across tank, including aft bay Measurements around and under all suction bell mouths	5-point pattern for each panel between longitudinals and webs
Bottom longitudinals	Minimum of 3 longitudinals in each bay where bottom plating measured	3 measurements in line across flange and 3 measurements on vertical web
Bottom girders and brackets	At fore and aft transverse bulkhead, bracket toes and in centre of tanks	Vertical line of single measurements on web plating with one measurement between each panel stiffener, or a minimum of three measurements. Two measurements across face flat. 5-point pattern on girder/bulkhead brackets.
Bottom transverse webs	3 webs in bays where bottom plating measured, with measurements at both ends and middle	5-point pattern over 2 square metre area. Single measurements on face flat.
Panel stiffening	Where provided	Single measurements

<b>DECK STRUCTURE</b>		
Structural member	Extent of measurement	Pattern of measurement
Deck plating	Two bands across tank	Minimum of three measurements per plate per band
Deck longitudinals	Minimum of 3 longitudinals in each of two bays	3 measurements in line vertically on webs and 2 measurements on flange (if fitted)
Deck girders and brackets	At fore and aft transverse bulkhead, bracket toes and in centre of tanks	Vertical line of single measurements on web plating with one measurement between each panel stiffener, or a minimum of three measurements. Two measurements across face flat. 5-point pattern on girder/bulkhead brackets.
Deck transverse webs	Minimum of 2 webs, with measurements at both ends and middle of span	5-point pattern over 2 square metre area. Single measurements on face flat.
Panel stiffening	Where provided	Single measurements

<b>SIDE SHELL AND LONGITUDINAL BULKHEADS</b>		
Structural member	Extent of measurement	Pattern of measurement
Deckhead and bottom strakes and strakes in way of stringer platforms	Plating between each pair of longitudinals in a minimum of 3 bays	Single measurement
All other strakes	Plating between every third pair of longitudinals in same 3 bays	Single measurement
Longitudinals on deckhead and bottom strakes	Each longitudinal in same 3 bays	3 measurements across web and 1 measurement on flange
All other longitudinals	Every third longitudinal in same 3 bays	3 measurements across web and 1 measurement on flange
Longitudinal brackets	Minimum of 3 at top, middle and bottom of tank in same 3 bays	5-point pattern over area of bracket
Web frames and cross ties	3 webs with minimum of three locations on each web, including in way of cross tie connections	5-point pattern over approximately 2 square metre area, plus single measurements on web frame and cross tie face flats

TRANSVERSE BULKHEADS AND SWASH BULKHEADS		
Structural member	Extent of measurement	Pattern of measurement
Deckhead and bottom strakes, and strakes in way of stringer platforms	Plating between pair of stiffeners at three locations: approximately 1/4, 1/2 and 3/4 width of tank	5-point pattern between stiffeners over 1 metre length
All other strakes	Plating between pair of stiffeners at middle location	Single measurement
Strakes in corrugated bulkheads	Plating for each change of scantling at centre of panel and at flange of fabricated connection	5-point pattern over about 1 square metre of plating
Stiffeners	Minimum of three typical stiffeners	For web, 5-point pattern over span between bracket connections (2 measurements across web at each bracket connection and one at centre of span). For flange, single measurements at each bracket toe and at centre of span
Brackets	Minimum of three at top, middle and bottom of tank	5-point pattern over area of bracket
Deep webs and girders	Measurements at toe of bracket and at centre of span	For web, 5-point pattern over about 1 square metre. Three measurements across face flat
Stringer platforms	All stringers with measurements at both ends and middle	5-point pattern over 1 square metre of area plus single measurements near bracket toes and on face flats

**6.6.2** All safety valves on crude oil piping and of crude oil storage tanks are to be dismantled for examination, adjusted and, as applicable, resealed.

**6.6.3** All crude oil storage pump room boundaries are to be generally examined. All gas-tight shaft sealing devices are to be examined. The bottom of crude oil storage pump rooms is to be presented clean for the examination of stripping devices and gutters.

## 7 Class renewal survey - Cargo machinery items

### 7.1 Cargo area and cargo pump rooms

**7.1.1** Crude oil, ballast and stripping pumps are to be internally examined and prime movers checked. A working test is to be carried out, as far as practicable.

Maintenance records of crude oil pumps are to be made available to the Surveyor.

**7.1.2** Where a crude oil washing system is fitted, piping, pumps, valves and deck-mounted washing machines are to be examined and tested for signs of leakage, and anchoring devices of deck-mounted washing machines are to be checked to the Surveyor's satisfaction.

**7.1.3** The satisfactory condition of the crude oil heating system is to be verified and, if deemed necessary by the Surveyor, the system is to be pressure tested.

**7.1.4** An operating test of the remote control of pumps and valves and of automatic closing valves is to be carried out.

**7.1.5** A general examination of the electrical equipment and cables in dangerous zones such as crude oil pump rooms and areas adjacent to crude oil storage tanks is to be carried out for defective and non-certified safe type electrical equipment and fixtures, non-approved lighting and fixtures, and improperly installed or defective or dead-end wiring.

The electrical insulation resistance of the electrical equipment and circuits terminating in or passing through the dangerous zones is to be tested; however, in cases where a proper record of testing is maintained, consideration may be given to accepting recent test readings effected by the ship's personnel.

### 7.2 Fire-fighting systems in crude oil storage area

**7.2.1** The survey is to include the examination of fire-fighting systems of any type fitted on board for the protection of the storage area, crude oil pump room and other dangerous spaces, such as deck foam, water-spraying systems, etc., as applicable.

Table 7 : Extended thickness measurements at those areas of substantial corrosion for double sided units

BOTTOM, INNER BOTTOM (if any) AND HOPPER STRUCTURE		
Structural member	Extent of measurement	Pattern of measurement
Bottom, inner bottom and hopper structure plating	Minimum of 3 bays across double bottom tank, including aft bay Measurements around and under all suction bell mouths	5-point pattern for each panel between longitudinal and floors
Bottom, inner bottom and hopper structure longitudinals	Minimum of 3 longitudinals in each bay where bottom plating measured	3 measurements in line across flange and 3 measurements on vertical web
Bottom girders, including the watertight ones	At fore and aft watertight floors and in centre of tanks	Vertical line of single measurements on girder plating with one measurement between each panel stiffener, or a minimum of three measurements
Bottom floors, including the watertight ones	3 floors in bays where bottom plating measured, with measurements at both ends and middle	5-point pattern over 2 square metre area
Hopper structure web frame ring	3 floors in bays where bottom plating measured	5-point pattern over about 1 square metre of plating. Single measurements on flange.
Hopper structure transverse watertight bulkhead or swash bulkhead	• lower 1/3 of bulkhead	5-point pattern over about 1 square metre of plating
	• upper 2/3 of bulkhead	5-point pattern over 2 square metre of plating
	• stiffeners (minimum of 3)	For web, 5-point pattern over span (2 measurements across web at each end and one at centre of span). For flange, single measurements at each end and centre of span.
Panel stiffening	Where provided	Single measurements

DECK STRUCTURE		
Structural member	Extent of measurement	Pattern of measurement
Deck plating	Two transverse bands across tank	Minimum of three measurements per plate per band
Deck longitudinals	Every third longitudinal in each of two bands with a minimum of one longitudinal	3 measurements in line vertically on webs and 2 measurements on flange (if fitted)
Deck girders and brackets (usually in cargo tanks only)	At fore and aft transverse bulkhead, bracket toes and in centre of tanks	Vertical line of single measurements on web plating with one measurement between each panel stiffener, or a minimum of three measurements. Two measurements across flange. 5-point pattern on girder/bulkhead brackets.
Deck transverse webs	Minimum of 2 webs, with measurements at both ends and middle of span	5-point pattern over 1 square metre area. Single measurements on flange.
Vertical web and transverse bulkhead in wing ballast tank (2 metres from deck)	Minimum of 2 webs, and both transverse bulkheads	5-point pattern over 1 square metre area
Panel stiffening	Where provided	Single measurements

STRUCTURE IN WING BALLAST TANKS		
Structural member	Extent of measurement	Pattern of measurement
Side shell and longitudinal bulk-head plating: <ul style="list-style-type: none"> <li>• upper strake and strakes in way of horizontal girders</li> <li>• all other strakes</li> </ul>	Plating between each pair of longitudinals in a minimum of 3 bays (along the tank) Plating between every third pair of longitudinals in same three bays	Single measurement Single measurement
Side shell and longitudinal bulk-head longitudinals on: <ul style="list-style-type: none"> <li>• upper strake</li> <li>• all other strakes</li> </ul>	Each longitudinal in same 3 bays Every third longitudinal in same 3 bays	3 measurements across web and 1 measurement on flange 3 measurements across web and 1 measurement on flange
Longitudinal brackets	Minimum of 3 at top, middle and bottom of tank in same 3 bays	5-point pattern over area of bracket
Vertical web and transverse bulk-heads (excluding deckhead area): <ul style="list-style-type: none"> <li>• strakes in way of horizontal girders</li> <li>• other strakes</li> </ul>	Minimum of 2 webs and both transverse bulk-heads Minimum of 2 webs and both transverse bulk-heads	5-point pattern over 2 square metre area 2 measurements between each pair of vertical stiffeners
Horizontal girders	Plating on each girder in a minimum of three bays	2 measurements between each pair of longitudinal girder stiffeners
Panel stiffening	Where provided	Single measurements

LONGITUDINAL BULKHEADS IN CRUDE OIL STORAGE TANKS		
Structural member	Extent of measurement	Pattern of measurement
Deckhead and bottom strakes and strakes in way of the horizontal stringers of transverse bulkheads	Plating between each pair of longitudinals in a minimum of 3 bays	Single measurement
All other strakes	Plating between every third pair of longitudinals in same 3 bays	Single measurement
Longitudinals on deckhead and bottom strakes	Each longitudinal in same 3 bays	3 measurements across web and 1 measurement on flange
All other longitudinals	Every third longitudinal in same 3 bays	3 measurements across web and 1 measurement on flange
Longitudinal brackets	Minimum of 3 at top, middle and bottom of tank in same 3 bays	5-point pattern over area of bracket
Web frames and cross ties	3 webs with minimum of three locations on each web, including in way of cross tie connections	5-point pattern over approximately 2 square metre area of webs, plus single measurements on flanges of web frame and cross ties
Lower end brackets (opposite side of web frame)	Minimum of 3 brackets	5-point pattern over approximately 2 square metre area of brackets, plus single measurements on bracket flanges

TRANSVERSE WATERTIGHT AND SWASH BULKHEADS IN CRUDE OIL STORAGE TANKS		
Structural member	Extent of measurement	Pattern of measurement
Upper and lower stool, where fitted	<ul style="list-style-type: none"> <li>• Transverse band within 25mm of welded connection to inner bottom/deck plating</li> <li>• Transverse band within 25mm of welded connection to shelf plate</li> </ul>	5-point pattern between stiffeners over 1 metre length
Deckhead and bottom strakes, and strakes in way of horizontal stringers	Plating between pair of stiffeners at three locations: approximately 1/4, 1/2 and 3/4 width of tank	5-point pattern between stiffeners over 1 metre length
All other strakes	Plating between pair of stiffeners at middle location	Single measurement
Strakes in corrugated bulkheads	Plating for each change of scantling at centre of panel and at flange of fabricated connection	5-point pattern over about 1 square metre of plating
Stiffeners	Minimum of three typical stiffeners	For web, 5-point pattern over span between bracket connections (2 measurements across web at each bracket connection and one at centre of span). For flange, single measurements at each bracket toe and at centre of span
Brackets	Minimum of three at top, middle and bottom of tank	5-point pattern over area of bracket
Horizontal stringers	All stringers with measurements at both ends and middle	5-point pattern over 1 square metre of area plus single measurements near bracket toes and on flange

**Table 8 : Tank testing at class renewal survey**

Age of unit (in years at time of class renewal survey)		
age ≤ 5	5 < age ≤ 10	10 < age
All ballast tank boundaries	All ballast tank boundaries	All ballast tank boundaries
Crude oil storage tank boundaries facing ballast tanks, void spaces, pipe tunnels, representative fuel oil tanks, pump rooms or cofferdams	Crude oil storage tank boundaries facing ballast tanks, void spaces, pipe tunnels, representative fuel oil tanks, pump rooms or cofferdams	Crude oil storage tank boundaries facing ballast tanks, void spaces, pipe tunnels, representative fuel oil tanks, pump rooms or cofferdams
	All crude oil storage tank bulkheads which form the boundaries of segregated stored products	All remaining crude oil storage tank bulkheads

## SECTION 7

# SURVEYS RELATED TO STORAGE AREA OF GAS STORAGE UNITS

### 1 General

#### 1.1 Application

**1.1.1** The requirements of this Section apply after construction to all gas storage units.

**1.1.2** The requirements apply to the surveys of the hull structure and piping systems in way of storage tanks, cofferdams, pipe tunnels and void spaces within the storage area and all salt water ballast tanks. They are additional to the requirements applicable to the remainder of the unit, given in Ch 2, Sec 2, Ch 2, Sec 3 and Ch 2, Sec 4 and according to the relevant surveys. For surveys of inert gas installations, reference is made to Ch 2, Sec 9.

**1.1.3** The requirements contain the minimum extent of examination, thickness measurements and tank testing. When substantial corrosion, and/or structural defects are found, the survey is to be extended and is to include additional close-up surveys when necessary.

### 2 Annual survey - Hull items

#### 2.1 General

**2.1.1** The annual survey of storage containment and storage handling systems is preferably carried out during loading or unloading operations. Access to storage tanks and/or inerted hold spaces is normally not required.

**2.1.2** Gas plant operational record (log) entries since the last survey are to be examined in order to check the past performance of the system and to establish whether certain parts have shown any irregularities in operation. The evaporation rate and the inert gas consumption are also to be considered.

#### 2.2 Weather decks and storage handling rooms

**2.2.1** The survey is to include:

- examination of all accessible gas-tight bulkhead penetrations including gas-tight shaft sealings
- examination of the sealing arrangements for tanks or tank domes penetrating decks or tank covers
- examination of vapour and gas tightness devices of the wheelhouse windows and doors, sidescuttles and windows in way of ends of superstructures and deckhouses facing the storage area or bow or stern loading/unloading arrangements, and closing devices of air intakes and openings into accommodation, service and machinery spaces and control stations
- examination of storage, fuel, ballast, venting and process piping, including the expansion arrangements, insulation from the hull structure, pressure relief and drainage arrangements
- examination of venting systems, including vent masts and protective screens, for storage tanks, interbarrier spaces, hold spaces, fuel tanks and ballast tanks
- examination of storage tank and interbarrier space relief valves and associated safety systems and alarms
- examination of drip trays or insulation for deck protection against storage leakage
- examination of the storage pump room, storage compressor room and storage control room
- confirmation of proper maintenance of arrangements for the airlocks
- confirmation that all accessible storage piping systems are electrically bonded to the hull.
- examination of closing and other arrangements of any special enclosed space provided for the crew in case of major storage leakage.

#### 2.3 Other arrangements or devices

**2.3.1** The survey is to include:

- confirmation that the unit's storage hoses are suitable for their intended purpose and in satisfactory condition
- confirmation that any special arrangement made for bow or stern loading/unloading is satisfactory
- confirmation that relevant instruction and information material such as storage handling plans, filling limit information, cooling down procedures, etc., is on board

#### 2.4 Ballast tanks

**2.4.1** Ballast tanks are to be internally examined when required as a consequence of the results of the class renewal survey or the intermediate survey.

**2.4.2** When considered necessary by the Surveyor or where extensive corrosion exists, thickness measurements are to be carried out. Where substantial corrosion, is found, the extent of thickness measurements is to be increased to the satisfaction of the Surveyor.

### 3 Annual survey - Storage machinery items

#### 3.1 Storage area and pump rooms

3.1.1 The survey is to include:

- examination of mechanical ventilation fans in gas-dangerous spaces and zones
- examination and confirmation of the satisfactory operation of mechanical ventilation of spaces normally entered during operation
- examination, as far as possible during operation, of storage heat exchangers, vaporisers, pumps, compressors and hoses
- confirmation that fixed and/or portable ventilation arrangements provided for spaces not normally entered are satisfactory
- examination of the gas detection safety arrangements for storage control rooms and of the measures taken to exclude ignition sources when such spaces are not gas-safe
- examination of storage (if accessible), bilge, ballast and stripping pumps for excessive gland seal leakage
- confirmation that electrical equipment in gas-dangerous spaces and zones is in satisfactory condition and has been properly maintained
- examination, as far as possible, of arrangements for the use of storage as fuel, and associated instrumentation and safety devices
- confirmation that, if fitted, storage reliquefaction or refrigeration equipment is in satisfactory condition
- confirmation that relevant instruction and information material such as storage handling plans, filling limit information, cooling down procedures, etc., is available on board.

#### 3.2 Instrumentation and safety devices

3.2.1 The survey is to include:

- confirmation that installed pressure gauges on storage discharge lines are operational
- confirmation that storage tank liquid level gauges are operational and that high level alarms as well as automatic shut-off systems are satisfactory
- confirmation that the temperature indicating equipment of the storage containment system and associated alarms are satisfactory
- confirmation that the automatic shutdown of storage pumps and compressors are satisfactory.
- examination of the logbooks for confirmation that the emergency shutdown system has been tested

- confirmation that storage tank, hold and insulation space pressure gauging systems and associated alarms are satisfactory
- examination, and testing as appropriate, of fixed gas detection equipment
- confirmation of the availability and suitability of the portable gas detection equipment and instruments for measuring oxygen levels.
- confirmation that storage leakage detection system has been tested and calibrated using gas span and that alarms have been tested.

#### 3.3 Fire-fighting systems in storage area

3.3.1 The survey is to include the examination of fire-fighting systems of any type fitted on board for the protection of the storage area, storage pump room, storage compressor room and other dangerous spaces, such as deck foam, water-spraying and dry powder systems.

### 4 Intermediate survey - Hull items

#### 4.1 General

4.1.1 The aim of the intermediate survey is to supplement the annual survey by testing storage handling installations with related automatic control, alarm and safety systems for correct functioning.

4.1.2 The intermediate survey is preferably to be carried out with the unit in a gas-free condition. In fact, the extent of the testing required for the intermediate survey will normally be such that the survey cannot be carried out during a loading or discharging operation.

#### 4.2 Weather decks and storage installation

4.2.1 The survey is to include:

- examination, as far as applicable, of storage and process, liquid nitrogen (if any), ballast, stripping and vent piping systems as well as vent masts and headers. If upon examination there is any doubt as to the condition of the piping, pressure testing, thickness measurement or both may be required.
- examination of vent line drainage arrangements
- confirmation that storage pipes and independent storage tanks, where applicable, are electrically bonded to the hull.

#### 4.3 Storage tanks and salt water ballast tanks

4.3.1 The requirements for survey of storage and salt water ballast tanks given in Tab 1 are to be complied with.

**Table 1 : Intermediate survey of storage and salt water ballast tanks**

Age of unit (in years at time of intermediate survey)		
5 < age ≤ 10	10 < age ≤ 15	age > 15
Overall survey of representative salt water ballast tanks, selected by the attending Surveyor See (1), (2) and (3)	Overall survey of all salt water ballast tanks See (3) and (7)	Overall survey of all salt water ballast tanks See (3) and (7)
	Close-up survey in two representative salt water ballast tanks of: - all plating and internal structures in one tank - one deck transverse and one transverse bulkhead (lower part) in the other tank See (4) and (5)	Close-up survey of all plating and internal structures in two representative salt water ballast tanks  See (4) and (5)
Thickness measurements, if considered necessary by the Surveyor	Thickness measurements, if considered necessary by the Surveyor See (6)	Thickness measurements, if considered necessary by the Surveyor See (6)
<p>(1) If such survey reveals no visible structural defects, then the examination may be limited to verification that the protective coating remains efficient.</p> <p>(2) Where poor coating condition, corrosion or other defects are found in salt water ballast tanks or where a protective coating has never been applied, i.e. neither at the time of construction nor thereafter, or where sacrificial anodes where fitted are found to be more than 50% depleted, the examination is to be extended to other ballast tanks of the same type.</p> <p>(3) For salt water ballast spaces other than double bottom tanks, where a protective coating is found in poor condition, and is not renewed, where soft coating has been applied or where a protective coating has never been applied, i.e. neither at the time of construction nor thereafter, maintenance of class is to be subject to the spaces in question being internally examined and thickness measurement carried out as considered necessary at annual surveys. For salt water ballast double bottom tanks, where such breakdown of coating is found and is not renewed, where soft coating has been applied or where a protective coating has never been applied, i.e. neither at the time of construction nor thereafter, maintenance of class may be subject to the tanks in question being internally examined and thickness measurement carried out as considered necessary at annual surveys.</p> <p>(4) The extent of close-up surveys may be increased in accordance with the requirements in [6.3.3].</p> <p>(5) For areas in tanks where protective coating is found to be in good condition, the extent of close-up survey may be specially considered.</p> <p>(6) Where substantial corrosion, is found, the extent of thickness measurements is to be increased to the satisfaction of the Surveyor.</p> <p>(7) If such survey reveals no visible structural defects, then the examination may be limited to verification that the protective coating remains efficient and that the sacrificial anodes, if any, are less than 50% depleted.</p>		

## 5 Intermediate survey - Storage machinery items

### 5.1 Storage area and pump rooms

**5.1.1** Electrical equipment and cables in dangerous zones such as storage pump rooms, storage compressor rooms and spaces adjacent to and areas above storage tanks are to be examined as far as practicable and tested with particular regard to:

- protective earthing (spot check)
- integrity of flameproof enclosures
- damage of outer sheath of cables
- function test of pressurised equipment and associated alarms
- test of systems for de-energising non-certified safe electrical equipment located in spaces protected by airlocks, such as electric motor rooms, storage control rooms, etc.

**5.1.2** The electrical insulation resistance of the electrical equipment and circuits in dangerous zones is to be measured. These measurements are only to be effected when the unit is in a gas-free or inerted condition and are to be carried out within an acceptable time period. Where a proper record of testing is maintained, consideration may be given to accepting recent readings by the unit's personnel.

**5.1.3** In addition to the requirements of [5.1.1] and [5.1.2], the survey also consists of:

- confirmation that the storage heating/cooling system is in satisfactory condition
- confirmation that spares are provided for storage area mechanical ventilation fans
- confirmation that the heating system of the hull structure is in satisfactory working condition
- general examination and test of leakage detection systems in interbarrier and hold spaces.

**Table 2 : Requirements for close-up survey**

Age of unit (in years at time of class renewal survey)			
age ≤ 5	5 < age ≤ 10	10 < age ≤ 15	age > 15
One transverse section (1), in a ballast wing tank or ballast double hull tank	All plating and internal structures (4), in a ballast wing tank or ballast double hull tank	All plating and internal structures (4), in all ballast tanks	As class renewal survey for ships between 10 and 15 years of age
	One deck transverse (2), in each remaining ballast tank or on deck		
One transverse bulkhead (3), in a ballast tank	One transverse bulkhead (3), in each remaining ballast tank		
<p>(1) Complete transverse web frame ring including adjacent structural members</p> <p>(2) Deck transverse including adjacent deck structural members</p> <p>(3) Transverse bulkhead lower part, including girder system and adjacent structural members</p> <p>(4) Complete tank, including all tank boundaries and internal structure, and external structure on deck in way of the tank where applicable.</p> <p><b>Note 1:</b> Salt water ballast tanks include peak tanks.</p> <p><b>Note 2:</b> Double hull tank includes double bottom and side tank even if these tanks are separate.</p>			

## 5.2 Instrumentation and safety devices

5.2.1 The survey is to include:

- examination of the installed pressure gauging systems on storage discharge lines, storage tanks, holds and insulation spaces and associated alarms
- examination of the storage tank liquid level gauges and high level alarms as well as automatic shut-off systems
- examination of the temperature indicating equipment of the storage containment system and associated alarms
- test of the above-mentioned instrumentation by changing pressure, level and temperature as applicable and comparing with test instruments. Simulated tests may be accepted for sensors which are not accessible or located within storage tanks or inerted hold spaces. The test is to include alarm and safety functions.
- examination, as far as practicable, of the piping of the gas detection system for corrosion and damage. The integrity of the suction lines between suction points and analysing units is to be verified as far as possible.
- calibration of gas detectors or verification thereof with sample gases
- confirmation of the availability and suitability of the portable gas detection equipment and instruments for measuring oxygen levels
- test of the manually operated emergency shutdown system (without flow in the pipelines) to verify that the system will cause the storage pumps and compressors to stop.

5.2.2 The instrumentation and safety systems for burning storage as fuel are to be examined in accordance with the requirements indicated in [5.2.1].

## 6 Class renewal survey - Hull items

### 6.1 Survey programme

6.1.1 A specific survey programme should be worked out in advance of the class renewal survey by the Owner in cooperation with the Society.

6.1.2 The survey programme is to include conditions for survey, access to structures and equipment for surveys, taking into account the minimum requirements of Tab 2 and Tab 3 for close-up survey and thickness measurements, and [6.4] for tank testing.

### 6.2 Scope of survey

6.2.1 In addition to the requirements of annual surveys, the class renewal survey is to include examination, tests and checks of sufficient extent to ensure that the hull and related piping are in satisfactory condition for the new period of class to be assigned, subject to proper maintenance and operation and to periodical surveys being carried out at the due dates.

6.2.2 All storage tanks, salt water ballast tanks, including double bottom tanks, pump rooms, pipe tunnels, cofferdams and void spaces bounding storage tanks, decks and outer hull are to be examined, and this examination is to be supplemented by thickness measurement and testing as deemed necessary, to ensure that the structural integrity remains effective. The examination is to be directed at discovering substantial corrosion, significant deformation, fractures, damages or other structural deterioration and, if deemed necessary by the Surveyor, may include suitable non-destructive inspection.

6.2.3 The condition of the coating or corrosion prevention system of ballast tanks is to be examined.

For salt water ballast spaces other than double bottom tanks, where a protective coating is found in poor condition and is not renewed, where soft coating has been applied, or where a protective coating has never been applied, i.e. nei-

ther at the time of construction nor thereafter, maintenance of class is to be subject to the spaces in question being internally examined and thickness measurement carried out as considered necessary at annual intervals.

For salt water ballast double bottom tanks, where such breakdown of coating is found and is not renewed, where soft coating has been applied or where a protective coating has never been applied, i.e. neither at the time of construction nor thereafter, maintenance of class may be subject to the tanks in question being internally examined and thickness measurement carried out as considered necessary at annual intervals.

### 6.3 Overall and close-up surveys

**6.3.1** Each class renewal survey is to include an overall survey of all tanks and spaces. For fuel oil tanks, however, the requirements given in Ch 2, Sec 4, Tab 2 are to be complied with.

**6.3.2** Each class renewal survey is to include a close-up examination of sufficient extent to establish the condition of storage tanks and salt water ballast tanks. The minimum requirements for close-up surveys are given in Tab 2 for salt water ballast tanks and in [6.6.3] for storage tanks.

**6.3.3** The Surveyor may extend the close-up survey as deemed necessary, taking into account the maintenance of the tanks under survey, the condition of the corrosion prevention system and also in the following cases:

- in particular, in tanks having structural arrangements or details which have suffered defects in similar tanks, or on similar ships according to available information
- in tanks having structures approved with reduced scantlings.

**6.3.4** For areas in tanks where coatings are found to be in good condition, the extent of close-up surveys required according to Tab 2 may be specially considered by the Society.

For units having independent tanks of type C, with a midship section similar to that of a general cargo ship, the extent of close-up surveys of salt water ballast tanks may be specially considered by the Society.

### 6.4 Thickness measurements

**6.4.1** The minimum requirements for thickness measurements at class renewal survey are given in Tab 3.

**6.4.2** The Surveyor may extend the thickness measurements as deemed necessary. Where substantial corrosion is found, the extent of thickness measurements is to be increased to the satisfaction of the Surveyor. Where substantial corrosion is identified and is not rectified, this will be subject to re-examination at intermediate surveys.

**6.4.3** For areas in spaces where coatings are found to be in good condition the extent of thickness measurements according to Tab 3 may be specially considered by the Society.

**6.4.4** For ships having independent tanks of type C, with a midship section similar to that of a general cargo ship, the extent of thickness measurements may be increased to the tank top plating to the satisfaction of the Surveyor.

### 6.5 Tank testing

**6.5.1** All boundaries of salt water ballast tanks are to pressure tested. For fuel oil tanks, only representative tanks are to be pressure tested. For storage tanks, refer to [6.6].

**Table 3 : Requirements for thickness measurements at class renewal survey**

Age of unit (in years at time of class renewal survey)			
age ≤ 5	5 < age ≤ 10	10 < age ≤ 15	age > 15
Suspect areas	Suspect areas	Suspect areas	Suspect areas
One section of deck plating for the full beam of the unit within the storage area	Within the storage area: <ul style="list-style-type: none"> <li>• each deck plate</li> <li>• one transverse section (1)</li> <li>• selected bottom plates</li> <li>• selected strakes in splash zone</li> </ul>	Within the storage area: <ul style="list-style-type: none"> <li>• each deck plate</li> <li>• two transverse sections (1) (2)</li> <li>• selected bottom plates</li> <li>• all strakes in splash zone</li> </ul>	Within the storage area: <ul style="list-style-type: none"> <li>• each deck plate</li> <li>• three transverse sections (1) (2)</li> <li>• each bottom plate</li> <li>• all strakes in splash zone</li> </ul>
Measurements, for general assessment and recording of corrosion pattern, of those structural members subject to close-up survey according to Tab 2	Measurements, for general assessment and recording of corrosion pattern, of those structural members subject to close-up survey according to Tab 2	Measurements, for general assessment and recording of corrosion pattern, of those structural members subject to close-up survey according to Tab 2	Measurements, for general assessment and recording of corrosion pattern, of those structural members subject to close-up survey according to Tab 2
	Selected strakes in the splash zone outside the storage area	Selected strakes in splash zone outside the storage area	Selected strakes in the splash zone outside the storage area
(1) Transverse sections are to be chosen where the largest reductions are likely to occur or as revealed by deck plating measurements. (2) At least one section is to be within 0,5 L amidships and, where applicable, in way of a ballast tank.			

**6.5.2** The Surveyor may extend the tank testing as deemed necessary.

**6.5.3** Salt water ballast tanks and fuel oil tanks are to be tested with a head of liquid to the top of air pipes.

## 6.6 Storage tank structure

**6.6.1** All storage tanks are to be cleaned and examined internally.

**6.6.2** When accessible, the outer surface of uninsulated storage tanks or the outer surface of storage tank insulation together with any vapour or protective barrier is to be examined. Special attention is to be given to the tank and insulation in way of chocks, supports and keys. Removal of insulation, in part or entirely, may be required in order to verify the condition of the tank or the insulation itself if deemed necessary by the Surveyor.

Where the arrangement is such that the insulation cannot be examined entirely, the surrounding structures of wing tanks, double bottom tanks and cofferdams are to be examined for cold spots when the storage tanks are in the cold condition, unless voyage records together with the instrumentation give sufficient evidence of the integrity of the insulation system.

**6.6.3** Thickness measurements may be required if deemed necessary by the Surveyor.

Close-up surveys are to be carried out in independent cargo tanks of type B and C at those areas where corrosion may develop.

**6.6.4** Non-destructive testing is to supplement storage tank inspection with special attention to be given to the integrity of the main structural members, tank shell and highly stressed parts, including welded connections as deemed necessary by the Surveyor.

The following items are, inter alia, considered highly stressed areas:

- storage tank supports and anti-rolling or anti-pitching devices
- web frames or stiffening rings
- Y-connection of shell plates and longitudinal bulkhead of bilobe tanks
- swash bulkhead boundaries
- dome and sump connections to the shell plating
- foundations for pumps, towers, ladders, etc.
- pipe connections.

**6.6.5** For independent tanks of type B, the extent of non-destructive testing is to be as given in a program specially prepared for the storage tank design.

**6.6.6** The tightness of all storage tanks is to be verified by an appropriate procedure. Provided that the effectiveness of the unit's gas detection equipment has been confirmed, it will be acceptable to utilise this equipment for the tightness test of independent tanks below deck.

**6.6.7** Where the results of the examinations dealt with in [6.6.1] to [6.6.6] or the examination of the voyage records

raise doubts as to the structural integrity of a storage tank, a hydraulic or hydropneumatic test is to be carried out.

For integral tanks and for independent tanks of type A and B, the test pressure is not to be less than the MARVS.

For independent tanks of type C, the test pressure is not to be less than 1,25 times the MARVS.

**6.6.8** When the ship is 10 years old, at every alternate class renewal survey, independent storage tanks of type C are to be either:

- hydraulically tested to 1,25 times the MARVS, and thereafter non-destructively tested in accordance with [6.6.4], or
- subjected to thorough non-destructive testing in accordance with a program specially prepared for the tank design.

If a special program of non-destructive testing does not exist, special attention is to be given to the detection of surface cracks in welded connections in highly stressed areas as listed in [6.6.4].

At least 10% of the length of the welded connections in each of the above-mentioned areas is to be tested. This testing is to be carried out internally and externally, as applicable. Insulation is to be removed as necessary for the required non-destructive testing.

Where hold space atmosphere control is permanently maintained, the scope of external examination of the tanks and their supports may be reduced at the Surveyor's discretion.

**6.6.9** As far as accessible, hold spaces and hull insulation (if provided), secondary barriers and tank supporting structures are to be visually examined. The secondary barrier of tanks is to be checked for its effectiveness by means of a pressure/vacuum test, a visual examination or any other acceptable method.

**6.6.10** For membrane, semi-membrane and internal insulation tank systems, inspection or testing is to be carried out in accordance with a program specially prepared for the tank system concerned.

**6.6.11** All gas-tight bulkheads are to be examined and the effectiveness of gas-tight shaft sealing is to be verified.

**6.6.12** It is to be verified that independent storage tanks are electrically bonded to the hull.

**6.6.13** The pressure relief valves for the storage tanks are to be opened for examination, adjusted, function tested and sealed. If the storage tanks are equipped with relief valves with non-metallic membranes in the main or pilot valves, these non-metallic membranes are to be replaced. Where a proper record of continuous overhaul and re-testing of individually identifiable relief valves is maintained, consideration may be given to acceptance on the basis of opening, internal examination and testing of a representative sample of valves, including each size and type of liquefied gas or vapour relief valves in use, provided there is evidence in the log-book that the remaining valves have been overhauled and tested since crediting of the previous class renewal survey.

## 6.7 Weather decks and storage handling rooms

**6.7.1** Piping for storage and process, liquid nitrogen (if any), ballast, stripping and venting systems is to be examined to the Surveyor's satisfaction. Insulation is to be removed as deemed necessary to ascertain the condition of the pipes. If the visual examination raises doubts as to the integrity of the pipelines, a pressure test at 1,25 times the MARVS for the pipeline is to be carried out. After reassembly the complete piping systems are to be tested for leaks.

It is to be verified that storage piping systems are electrically bonded to the hull.

**6.7.2** The pressure relief valves on storage piping are to be function tested. A random selection of valves is to be opened for examination and adjusted.

**6.7.3** All storage pump room, compressor room and control room boundaries are to be generally examined. Gas-tight shaft sealing devices are to be examined. The bottom of storage pump rooms and storage compressor rooms is to be presented clean for the examination of stripping devices and gutters.

**6.7.4** Pressure/vacuum relief valves, rupture discs and other pressure relief devices for interbarrier spaces and/or hold spaces are to be examined and, if necessary, opened and tested in accordance with their design.

Vent line drainage arrangements are to be examined.

## 7 Class renewal survey - Storage machinery items

### 7.1 Storage area, storage pump rooms, storage compressor rooms

**7.1.1** Storage, ballast and stripping pumps are to be internally examined and prime movers checked. A working test is to be carried out.

Maintenance records of storage pumps are to be made available to the Surveyor.

**7.1.2** Electrical equipment and cables in dangerous zones such as storage pump rooms, storage compressor rooms and spaces adjacent to and areas above storage tanks are to be examined as far as practicable and tested with particular regard to:

- protecting earthing (spot check)
- integrity of flameproof enclosures
- damage of outer sheath of cables
- function testing of pressurised equipment and associated alarms
- testing of systems for de-energising non-certified safe electrical equipment located in spaces protected by air-

locks, such as electric motor rooms, cargo control rooms, etc.

**7.1.3** The electrical insulation resistance of the electrical equipment and circuits in dangerous zones is to be measured. These measurements are only to be effected when the unit is in a gas-free or inerted condition and are to be carried out within an acceptable time period. Where a proper record of testing is maintained, consideration may be given to accepting recent readings by the unit's personnel.

**7.1.4** When there is a reliquefaction or refrigeration plant, and/or arrangements for the use of storage as fuel, the corresponding machinery and equipment, such as storage pumps, compressors, heat exchangers, condensers and process pressure vessels, are to be surveyed to the same extent as required for similar equipment on board oil storage at the class renewal survey .

**7.1.5** In addition to the requirements of [7.1.1] to [7.1.4], the survey also consists of:

- confirmation that spares are provided for storage area mechanical ventilation fans
- confirmation that the installation for heating the hull structure is in satisfactory working condition
- general examination and testing of leakage detection systems in interbarrier spaces and hold spaces
- examination of gas detection piping system for corrosion or damage; checking, as far as possible, of the integrity of suction lines between suction points and analysing units
- examination and tests of systems for the removal of water from interbarrier spaces and hold spaces
- examination of portable equipment, such as hoses and spool pieces used for segregation of piping systems for storageCh 2, Sec 3Ch 2, Sec 2, inert gas and bilge pumping.

### 7.2 Fire-fighting systems in storage area

**7.2.1** The survey is to include the examination of fire-fighting systems of any type fitted on board for the protection of the storage area, storage pump room, storage compressor room and other dangerous spaces, such as deck foam, water-spraying, dry powder systems etc., as applicable in accordance with the relevant requirements.

## SECTION 8

# SURVEY OF UNDERWATER PARTS AND MOORING EQUIPMENT

### 1 Scope of survey

#### 1.1 Structure and appurtenances

**1.1.1** The underwater parts of the structure are to be examined for corrosion, or deterioration due to chaffing from anchoring equipment or supply craft or contact with the ground and for any undue unfairness or buckling. Special attention is paid to bilge keels if applicable. Plate unfairness or other deterioration which do not necessitate immediate repairs, is to be recorded.

**1.1.2** Sea chests and their gratings, sea connections and overboard discharge valves and cocks and their fastenings to the hull or sea chests are to be examined. Valves and cocks need not be opened up more than once in a period of five years unless considered necessary by the Surveyor.

**1.1.3** Particular attention is to be paid to the following areas:

- for surface units:
  - moon pool and other openings
  - turrets
- for semi-submersible units:
  - connections of columns to the lower hulls
  - intersections between bracings and diagonals
  - covers to any outside access openings
- for self-elevating units: spud cans, bracing members or trusses of legs

**1.1.4** The condition of anodes and of their attachments to the structure are ascertained at random.

**1.1.5** Anodes more than 75 % depleted are to be replaced.

**1.1.6** When a unit is in dry condition, it is to be placed on blocks of sufficient height and with the necessary staging to permit the examination of underwater parts of the structure, including, if fitted, rudder, propeller, sea chests and valves.

#### 1.2 Mooring equipment

**1.2.1** For units having received the temporary mooring symbols E or (E), the corresponding anchors, chain cables and/or wire ropes, windlasses and winches are to be examined and checked. This operation does not need to be carried out more than once in a five year period, unless considered necessary by the Surveyor. Worn out or damaged chain lengths and wire ropes are to be renewed.

**1.2.2** Housing and supporting equipment (rack, fairleads, etc.), are to be examined together with their outside and inside connection to the unit's structure.

#### 1.3 Propulsion and manoeuvring

**1.3.1** Visible parts of rudder, rudder pintles, rudder shaft and couplings and stern frames, if any, are to be examined. If considered necessary by the Surveyor, the rudder is to be lifted or the inspection plates removed for the examination of pintles. The clearance in the rudder bearings are to be ascertained and recorded.

**1.3.2** Visible parts of propeller and stern bush are to be examined. The clearances in the stern bush and the efficiency of the oil gland, if any, are to be ascertained and recorded. For controllable pitch propellers, the Surveyor is to be satisfied with the fastenings and tightness of hub and blade sealing. Dismantling is to be carried if considered necessary.

**1.3.3** Visible parts of thrusters are to be examined.

### 2 In-water surveys

#### 2.1 General

**2.1.1** The in-water survey is to provide the information normally obtained from a docking survey, as far as practicable.

During in-water survey, cathodic protection potential readings are to be taken. The amount of readings is to be representative of the whole immersed part of the structure of the unit.

**2.1.2** Proposals for in-water surveys are to be submitted in advance of the survey so that satisfactory arrangements can be agreed with the Society.

**2.1.3** The in-water survey is to be carried out with the unit floating at a suitable draught; the in-water visibility is to be sufficient and the structure below waterline is to be clean of excessive marine growth. The attending Surveyor may, if deemed necessary, require sensitive areas to be cleaned to allow a complete inspection in special circumstances.

The Society is to be satisfied with the methods of localisation of the divers underwater.

**2.1.4** The in-water survey is to be carried out, under surveillance of a Surveyor, by divers or by suitably equipped remotely operated vehicles (ROV's). The divers are to be employed by a firm agreed by the Society.

**2.1.5** For the method described in [2.1.4], the Surveyor is to be satisfied with the method of pictorial representation, and a good two-way communication between the Surveyor and divers is to be provided.

**2.1.6** If the in-water survey reveals damage or deterioration that requires early attention, the Surveyor may require that the unit be drydocked in order that a detailed survey can be undertaken and the necessary repairs carried out.

## **2.2 Arrangements for in-water surveys**

**2.2.1** It is advisable that both the Surveyor and the divers are provided with detail drawings of the structure and hull attachments below the water line, including:

- all shell openings
- stem
- rudder and fittings
- sternpost
- propeller, including the means used for identifying each blade
- anodes, including securing arrangements
- bilge keels
- welded seams and butts

The plans are to include all the necessary instructions to facilitate the divers' work, specially for taking clearance measurement when applicable.

**2.2.2** The unit is to be provided with special constructional features so as to make the underwater survey easy and efficient, that is:

- a) Markings of a water-resistant nature are to be fitted on the underwater parts of the structure to facilitate the localisation of inspected parts, showing in particular, the location of main bulkheads.
- b) Sea valves, if needed to be opened up as per [1.1.2], including valve chests, are to be provided with suitable blanking arrangements so that cocks, valves and strainers can be examined.
- c) Rudder arrangements are to be such that rudder pintle clearances and fastenings arrangements can be easily checked.
- d) Tailshaft arrangements are to be such that clearances can be easily checked.

**2.2.3** The Society is to take into consideration the units which, for specific reasons, depart from the requirements of [2.2.1] or [2.2.2].

## SECTION 9

## OTHER SURVEYS

### 1 Survey of inert gas installations

#### 1.1 General

**1.1.1** The requirements of the present Section are applicable to all inert gas installations fitted on board floating storage units, covered or not by additional service feature **IG**.

#### 1.2 Annual survey

##### 1.2.1 All units

The survey of inert gas installation, as far as applicable, consists of:

- general examination of the installation in operation condition
- external examination of the condition of piping and components for signs of corrosion or gas leakage / effluent leakage
- confirmation of the proper operation of inert gas blowers
- observation of the operation of the scrubber room ventilation system
- checking of deck water seal for automatic filling and draining; checking for presence of water carry-over and checking the condition of the non-return valve
- examination of the operation of remotely operated or automatically controlled valves and, in particular, the flue gas isolating valve(s)
- observation of a test of the interlocking feature of soot blowers
- observation that the gas pressure regulating valve automatically closes when the inert gas blowers are secured
- checking, as far as practicable, the following alarms and safety devices of the inert gas system using simulated conditions when necessary:
  - high oxygen content of gas in the inert gas main
  - low gas pressure in the inert gas main
  - low pressure in the supply to the deck water seal
  - high temperature of gas in the inert gas main
  - low water pressure to the scrubber
  - accuracy of portable and fixed oxygen measuring equipment by means of calibration gas
  - high water level in the scrubber
  - failure of inert gas blowers
  - 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
  - high pressure of gas in the inert gas main

##### 1.2.2 Additional requirements for gas storage units

Inert/drying gas systems, including the means for prevention of backflow of storage vapour to gas-safe spaces, are to be verified as being in good condition.

#### 1.3 Intermediate survey

##### 1.3.1 Inert gas installations of all storage units

Requirements of the present article are additional to those of [1.2] for annual survey, which remain applicable.

For installations covered by additional class notation **IG**, the following applies:

- main parts such as scrubbers, washing machines, blowers and deck water seals are to be overhauled for examination
- pipe sections and valves are to be dismantled for examination
- all alarms will be examined and tested

For installations other than those covered by additional class notation **IG**, main parts such as scrubbers, washing machines, blowers and deck water seals are to be overhauled for examination.

##### 1.3.2 Inert gas installations of gas storage units

In addition to requirements of [1.2] for annual survey, the following applies:

- the main equipment, such as inert gas producers, isolating valves, when fitted, are to be examined
- special attention is to be paid to low temperature nitrogen storage plant and to the associated arrangement for protection of hull structure against nitrogen leakage

#### 1.4 Class renewal survey

**1.4.1** The scope of class renewal survey of all inert gas installations is equivalent to the one laid down in [1.3] for the intermediate survey.

## 2 Survey of additional service feature **AUTO**

#### 2.1 Annual survey

**2.1.1** The annual survey of classed automated installations consists of:

- examination of the machinery and automated plant operational record (log book) entries - when such a log book exists - since the last survey in order to check the past performance of the system, and to establish if cer-

tain parts have shown any irregularities in operation and which corrective measures have been taken

- general examination of the control systems covered by the notation and random check, as far as possible taking into account operating conditions, of the proper operation of main measuring, monitoring, alarm and automatic shut-down system, in particular for essential auxiliaries
- checking the fire detectors, in particular in machinery spaces, and bilge flooding alarms
- checking a number of other alarms selected at random

## 2.2 Class renewal survey

**2.2.1** The class renewal survey of classed automated installations consists of:

- the examinations, tests and checks listed in [2.1] for the annual survey, and
- an additional program of examinations, tests and checks prepared in agreement with the Owner and based on operating data and on the experience of previous surveys.

All points which cannot be checked when the unit is in operation will be given particular consideration by this programme. All alarm and safety devices will be tested and settings adjusted if necessary, except if evidence exists of the proper operation of these installations, or if they have been subject of a systematic maintenance.

Fire smoke detectors fitted in the machinery spaces are to be tested in similar conditions as for the first certificate delivery; alternatively, written evidence of reconditioning and recalibrating by the Manufacturer or by his representative may be accepted.

## 3 Survey of additional service feature POSA

### 3.1 Annual survey

**3.1.1** The Surveyor reviews at each annual survey the records of operation of the corresponding equipment and of the examination carried out by the unit's crew at times of handling for location changes, if any.

**3.1.2** The annual survey of the mooring system of units granted with additional service feature **POSA** is normally carried out the unit being on location, no disruption of unit's operation being required.

The examination of the mooring components (chain or wire) adjacent to winches or windlasses, stoppers and fairleads is performed.

**3.1.3** In the case of significant damages revealed by the above examinations, or if the Surveyor determines that

problems have been experienced since last annual survey, a more extensive survey may be required by the Surveyor.

### 3.2 Class renewal survey of mobile units

**3.2.1** The class renewal survey of the mooring system of mobile units granted with additional service feature **POSA** will be carried out, as practicable, the unit being in sheltered waters.

This class renewal survey consists, as applicable, in the following:

- inspection of chain cables and wire ropes, consisting in:
  - close visual inspection of their whole length
  - NDT inspection of the same (by sampling)
  - dimensional checks
- examination of joining shackles and other accessories
- general examination of fairleads, including testing of free rotation capability and NDT as necessary, together with visual examination of all fairlead chain pockets
- general examination of windlasses, including testing of holding ability, together with visual examination of all windlass chain pockets
- general examination of winches, including testing of holding ability and of proper laying down of the wire on drum
- examination of the soundness of the load path from the deck appliances to the unit's structure
- functional test of the mooring system during anchor handling operation
- anchor visual examination

### 3.3 Class renewal survey of permanent installations

**3.3.1** For permanent installations having received the additional service feature **POSA**, a specific inspection programme is to be submitted to the Society, according to the nature and arrangement of the mooring system and other relevant parameters.

**3.3.2** The inspection programme is to address:

- the overall integrity of the system, e.g. by general visual inspection of selected lines, over their full lengths, and of all lines in critical areas
- the integrity of critical components with respect to corrosion, wear, overload, fatigue and other possible modes of degradation, by close visual inspection and other appropriate methods
- condition of corrosion protection systems, as applicable
- pretension setting of each line (or angle measurement)

**3.3.3** The Society reserves the right to request additional inspection and/or increased coverage, in case of novel concept or other particular circumstances.

## 4 Survey of production equipment

### 4.1 Application

**4.1.1** Requirements given in the present Section for production equipment are additional to those given in the relevant Sections of the present Chapter.

These requirements are applicable only when the corresponding equipment are included in the scope of classification, as defined by the service notation and the additional class notation(s) granted to the unit.

### 4.2 Production equipment

#### 4.2.1 Annual survey

The survey will consist of:

- external inspection of pressure vessels, heat exchangers, attached instrumentation and safety devices
- visual inspection of piping systems including drainage shut down and blowdown valves
- examination of pumps for excessive gland seal leakage
- external inspection of compressors and tests of protective devices
- examination of flare and flare pilot system or cold venting system
- examination of well control equipment
- inspection of support structure
- examination of fire and gas detection system
- examination of fire water system

#### 4.2.2 Class renewal survey

In addition to the survey performed as per [4.2.1], class renewal survey will mainly consist in internal examination of main process equipment (pressure vessels, exchangers, pumps, compressors, boilers,...) and pipings.

Safety valves setting will be checked. Safety systems will be tested for proper operation (i.e. ESD, process shutdown, fire and gas detection, fire water).

Configuration of the process system (equipment in parallel) and planned shutdowns will be taken into account to minimise production break.

In case of doubt, pressure test may be requested at the satisfaction of the Surveyor.

## 5 Survey of swivels and production riser systems

### 5.1 Application

**5.1.1** Requirements given in the present Section for swivels and production risers systems are additional to those given in the relevant Sections of the present Chapter.

These requirements are applicable only when the corresponding equipment are included in the scope of classification, as defined by the service notation and the additional class notation(s) granted to the unit.

## 5.2 Swivel systems

### 5.2.1 Annual survey

The survey will consist of:

- external inspection of pressure swivels, attached instrumentation and safety devices
- external inspection of electrical swivels, attached instrumentation and safety devices
- visual inspection of piping systems including leak drainage system
- examination of sealing systems for leakage
- tests of protective devices
- examination of electrical cables and connectors and performance of insulation resistance test of circuits
- inspection of support structure
- examination of fire and gas detection systems
- examination of fire water system

### 5.2.2 Class renewal survey

In addition to the survey performed as per [5.2.1], class renewal survey will mainly consist in internal examination of swivels and pipings.

Rotation tests will be performed with measurement of starting and running moments.

Safety systems will be tested for proper operation.

Planned shutdowns will be taken into account to minimise production break.

In case of doubt, pressure test may be requested at the satisfaction of the Surveyor.

## 5.3 Production riser systems

### 5.3.1 Annual survey

The survey will consist of:

- external examination of readily accessible parts
- external examination of riser handling system and other mechanical systems (where applicable)
- external examination of riser valve system

### 5.3.2 Class renewal survey

A specific programme of underwater survey is to be submitted to the Society, taking into account arrangement and configuration of risers.

This programme is to include, as a minimum, general visual inspection, by divers or ROV's, of selected lines, and close visual inspection of all critical areas.

Configuration of the process system (equipment in parallel) and planned shutdowns will be taken into account to minimise production break.

In case of doubt, pressure or resistance tests may be requested at the satisfaction of the Surveyor.

In addition to the survey performed as per [5.3.1], the operation of systems and the safety devices will be tested.

