



# **Rules for the Classification of Inland Navigation Vessels**

## **PART A – Classification and Surveys**

### **Chapters 1 – 2 – 3**

**NR 217.A1 DT R06 E**

**June 2021**

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## GENERAL CONDITIONS

### 1. INDEPENDENCE OF THE SOCIETY AND APPLICABLE TERMS

- 1.1 The Society shall remain at all times an independent contractor and neither the Society nor any of its officers, employees, servants, agents or subcontractors shall be or act as an employee, servant or agent of any other party hereto in the performance of the Services.
- 1.2 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.
- 1.3 The Society acts as a services provider. This cannot be construed as an obligation bearing on the Society to obtain a result or as a warranty. The Society is not and may not be considered as an underwriter, broker in Unit's sale or chartering, expert in Unit's valuation, consulting engineer, controller, naval architect, designer, manufacturer, shipbuilder, repair or conversion yard, charterer or shipowner; none of the above listed being relieved from any of their expressed or implied obligations as a result of the interventions of the Society.
- 1.4 Only the Society is qualified to apply and interpret its Rules.
- 1.5 The Client acknowledges the latest versions of the Conditions and of the applicable Rules applying to the Services' performance.
- 1.6 Unless an express written agreement is made between the Parties on the applicable Rules, the applicable Rules shall be the Rules applicable at the time of entering into the relevant contract for the performance of the Services.
- 1.7 The Services' performance is solely based on the Conditions. No other terms shall apply whether express or implied.

### 2. DEFINITIONS

- 2.1 **"Certificate(s)"** means classification or statutory certificates, attestations and reports following the Society's intervention.
- 2.2 **"Certification"** means the activity of certification in application of national and international regulations or standards ("Applicable Referential"), in particular by delegation from different governments that can result in the issuance of a Certificate.
- 2.3 **"Classification"** means the classification of a Unit that can result or not in the issuance of a classification Certificate with reference to the Rules. Classification (or Certification as defined in clause 2.2) is an appraisalment given by the Society to the Client, at a certain date, following surveys by its surveyors on the level of compliance of the Unit to the Society's Rules and/or to Applicable Referential for the Services provided. They 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.
- 2.4 **"Client"** means the Party and/or its representative requesting the Services.
- 2.5 **"Conditions"** means the terms and conditions set out in the present document.
- 2.6 **"Industry Practice"** means international maritime and/or offshore industry practices.
- 2.7 **"Intellectual Property"** means all patents, rights to inventions, utility models, copyright and related rights, trade marks, logos, service marks, trade dress, business and domain names, rights in trade dress or get-up, rights in goodwill or to sue for passing off, unfair competition rights, rights in designs, rights in computer software, database rights, topography rights, moral rights, rights in confidential information (including know-how and trade secrets), methods and protocols for Services, and any other intellectual property rights, in each case whether capable of registration, registered or unregistered and including all applications for and renewals, reversions or extensions of such rights, and all similar or equivalent rights or forms of protection in any part of the world.
- 2.8 **"Parties"** means the Society and Client together.
- 2.9 **"Party"** means the Society or the Client.
- 2.10 **"Register"** means the public electronic register of ships updated regularly by the Society.
- 2.11 **"Rules"** means the Society's classification rules (available online on [veristar.com](http://veristar.com)), guidance notes and other documents. The Society's Rules take into account at the date of their preparation the state of currently available and proven technical minimum requirements but are not a standard or a code of construction neither a guide for maintenance, a safety handbook or a guide of professional practices, all of which are assumed to be known in detail and carefully followed at all times by the Client.
- 2.12 **"Services"** means the services set out in clauses 2.2 and 2.3 but also other services related to Classification and Certification such as, but not limited to: ship and company safety management certification, ship and port security certification, maritime labour certification, training activities, all activities and duties incidental thereto such as documentation on any supporting means, software, instrumentation, measurements, tests and trials on board. The Services are carried out by the Society according to the Rules and/or the Applicable Referential and to the Bureau Veritas' Code of Ethics. The Society shall perform the Services according to the applicable national and international standards and Industry Practice and always on the assumption that the Client is aware of such standards and Industry Practice.
- 2.13 **"Society"** means the classification society 'Bureau Veritas Marine & Offshore SAS', a company organized and existing under the laws of France, registered in Nanterre under number 821 131 844, or any other legal entity of Bureau Veritas Group as may be specified in the relevant contract, and whose main activities are Classification and Certification of ships or offshore units.
- 2.14 **"Unit"** means any ship or vessel or offshore unit or structure of any type or part of it or system 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.

### 3. SCOPE AND PERFORMANCE

- 3.1 Subject to the Services requested and always by reference to the Rules, and/or to the Applicable Referential, the Society shall:
- review the construction arrangements of the Unit as shown on the documents provided by the Client;
  - conduct the Unit surveys at the place of the Unit construction;
  - class the Unit and enter the Unit's class in the Society's Register;
  - survey the Unit periodically in service to note whether the requirements for the maintenance of class are met.
- The Client shall inform the Society without delay of any circumstances which may cause any changes on the conducted surveys or Services.
- 3.2 The Society will not:
- declare the acceptance or commissioning of a Unit, nor its construction in conformity with its design, such activities remaining under the exclusive responsibility of the Unit's owner or builder;
  - engage in any work relating to the design, construction, production or repair checks, neither in the operation of the Unit or the Unit's trade, neither in any advisory services, and cannot be held liable on those accounts.

### 4. RESERVATION CLAUSE

- 4.1 The Client shall always: (i) maintain the Unit in good safety condition after surveys; (ii) present the Unit for surveys; and (iii) inform the Society in due time of any circumstances that may affect the given appraisalment of the Unit or cause to modify the scope of the Services.
- 4.2 Certificates are only valid if issued by the Society.
- 4.3 The Society has entire control over the Certificates issued and may at any time withdraw a Certificate at its entire discretion including, but not limited to, in the following situations: where the Client fails to comply in due time with instructions of the Society or where the Client fails to pay in accordance with clause 6.2 hereunder.
- 4.4 The Society may at times and at its sole discretion give an opinion on a design or any technical element that would 'in principle' be acceptable to the Society. This opinion shall not presume on the final issuance of any Certificate nor on its content in the event of the actual issuance of a Certificate. This opinion shall only be an appraisalment made by the Society which shall not be held liable for it.

### 5. ACCESS AND SAFETY

- 5.1 The Client shall give to the Society all access and information necessary for the efficient performance of the requested Services. The Client shall be the sole responsible for the conditions of presentation of the Unit for tests, trials and surveys and the conditions under which tests and trials are carried out. Any information, drawing, etc. required for the performance of the Services must be made available in due time.
- 5.2 The Client shall notify the Society of any relevant safety issue and shall take all necessary safety-related measures to ensure a safe work environment for the Society or any of its officers, employees, servants, agents or subcontractors and shall comply with all applicable safety regulations.

### 6. PAYMENT OF INVOICES

- 6.1 The provision of the Services by the Society, whether complete or not, involves, for the part carried out, the payment of fees thirty (30) days upon issuance of the invoice.
- 6.2 Without prejudice to any other rights hereunder, in case of Client's payment default, the Society shall be entitled to charge, in addition to the amount not properly paid, interest equal to twelve (12) months LIBOR plus two (2)

per-cent as of due date calculated on the number of days such payment is delinquent. The Society shall also have the right to withhold Certificates and other documents and/or to suspend or revoke the validity of Certificates.

- 6.3 In case of dispute on the invoice amount, the undisputed portion of the invoice shall be paid and an explanation on the dispute shall accompany payment so that action can be taken to resolve the dispute.

### 7. LIABILITY

- 7.1 The Society bears no liability for consequential loss. For the purpose of this clause consequential loss shall include, without limitation:
- Indirect or consequential loss;
  - Any loss and/or deferral of production, loss of product, loss of use, loss of bargain, loss of revenue, loss of profit or anticipated profit, loss of business and business interruption, in each case whether direct or indirect.
- The Client shall defend, release, save, indemnify, defend and hold harmless the Society from the Client's own consequential loss regardless of cause.
- 7.2 Except in case of wilful misconduct of the Society, death or bodily injury caused by the Society's negligence and any other liability that could not be, by law, limited, the Society's maximum liability towards the Client is limited to one hundred and fifty per-cent (150%) of the price paid by the Client to the Society for the Services having caused the damage. This limit applies to any liability of whatsoever nature and howsoever arising, including fault by the Society, breach of contract, breach of warranty, tort, strict liability, breach of statute.
- 7.3 All claims shall be presented to the Society in writing within three (3) months of the completion of Services' performance or (if later) the date when the events which are relied on were first discovered by the Client. Any claim not so presented as defined above shall be deemed waived and absolutely time barred.

### 8. INDEMNITY CLAUSE

- 8.1 The Client shall defend, release, save, indemnify and hold harmless the Society from and against any and all claims, demands, lawsuits or actions for damages, including legal fees, for harm or loss to persons and/or property tangible, intangible or otherwise which may be brought against the Society, incidental to, arising out of or in connection with the performance of the Services (including for damages arising out of or in connection with opinions delivered according to clause 4.4 above) except for those claims caused solely and completely by the gross negligence of the Society, its officers, employees, servants, agents or subcontractors.

### 9. TERMINATION

- 9.1 The Parties shall have the right to terminate the Services (and the relevant contract) for convenience after giving the other Party thirty (30) days' written notice, and without prejudice to clause 6 above.
- 9.2 The Services shall be automatically and immediately terminated in the event the Client can no longer establish any form of interest in the Unit (e.g. sale, scrapping).
- 9.3 The Classification granted to the concerned Unit and the previously issued Certificates shall remain valid until the date of effect of the termination notice issued, or immediately in the event of termination under clause 9.2, subject to compliance with clause 4.1 and 6 above.
- 9.4 In the event where, in the reasonable opinion of the Society, the Client is in breach, or is suspected to be in breach of clause 16 of the Conditions, the Society shall have the right to terminate the Services (and the relevant contracts associated) with immediate effect.

### 10. FORCE MAJEURE

- 10.1 Neither Party shall be responsible or liable for any failure to fulfil any term or provision of the Conditions if and to the extent that fulfilment has been delayed or temporarily prevented by a force majeure occurrence without the fault or negligence of the Party affected and which, by the exercise of reasonable diligence, the said Party is unable to provide against.
- 10.2 For the purpose of this clause, force majeure shall mean any circumstance not being within a Party's reasonable control including, but not limited to: acts of God, natural disasters, epidemics or pandemics, wars, terrorist attacks, riots, sabotages, impositions of sanctions, embargoes, nuclear, chemical or biological contaminations, laws or action taken by a government or public authority, quotas or prohibition, expropriations, destructions of the worksite, explosions, fires, accidents, any labour or trade disputes, strikes or lockouts.

### 11. CONFIDENTIALITY

- 11.1 The documents and data provided to or prepared by the Society in performing the Services, and the information made available to the Society, will be treated as confidential except where the information:
- is properly and lawfully in the possession of the Society;
  - is already in possession of the public or has entered the public domain, other than through a breach of this obligation;
  - is acquired or received independently from a third party that has the right to disseminate such information;
  - is required to be disclosed under applicable law or by a governmental order, decree, regulation or rule or by a stock exchange authority (provided that the receiving Party shall make all reasonable efforts to give prompt written notice to the disclosing Party prior to such disclosure).
- 11.2 The Parties shall use the confidential information exclusively within the framework of their activity underlying these Conditions.
- 11.3 Confidential information shall only be provided to third parties with the prior written consent of the other Party. However, such prior consent shall not be required when the Society provides the confidential information to a subsidiary.
- 11.4 Without prejudice to sub-clause 11.1, the Society shall have the right to disclose the confidential information if required to do so under regulations of the International Association of Classifications Societies (IACS) or any statutory obligations.

### 12. INTELLECTUAL PROPERTY

- 12.1 Each Party exclusively owns all rights to its Intellectual Property created before or after the commencement date of the Conditions and whether or not associated with any contract between the Parties.
- 12.2 The Intellectual Property developed by the Society for the performance of the Services including, but not limited to drawings, calculations, and reports shall remain the exclusive property of the Society.

### 13. ASSIGNMENT

- 13.1 The contract resulting from these Conditions cannot be assigned or transferred by any means by a Party to any third party without the prior written consent of the other Party.
- 13.2 The Society shall however have the right to assign or transfer by any means the said contract to a subsidiary of the Bureau Veritas Group.

### 14. SEVERABILITY

- 14.1 Invalidity of one or more provisions does not affect the remaining provisions.
- 14.2 Definitions herein take precedence over other definitions which may appear in other documents issued by the Society.
- 14.3 In case of doubt as to the interpretation of the Conditions, the English text shall prevail.

### 15. GOVERNING LAW AND DISPUTE RESOLUTION

- 15.1 These Conditions shall be construed in accordance with and governed by the laws of England and Wales.
- 15.2 Any dispute shall be finally settled under the Rules of Arbitration of the Maritime Arbitration Chamber of Paris ("CAMP"), which rules are deemed to be incorporated by reference into this clause. The number of arbitrators shall be three (3). The place of arbitration shall be Paris (France). The Parties agree to keep the arbitration proceedings confidential.
- 15.3 Notwithstanding clause 15.2, disputes relating to the payment of the Society's invoices may be submitted by the Society to the *Tribunal de Commerce de Nanterre*, France, or to any other competent local Court, at the Society's entire discretion.

### 16. PROFESSIONAL ETHICS

- 16.1 Each Party shall conduct all activities in compliance with all laws, statutes, rules, economic and trade sanctions (including but not limited to US sanctions and EU sanctions) and regulations applicable to such Party including but not limited to: child labour, forced labour, collective bargaining, discrimination, abuse, working hours and minimum wages, anti-bribery, anti-corruption, copyright and trademark protection, personal data protection (<https://personaldataprotection.bureauveritas.com/privacypolicy>).
- Each of the Parties warrants that neither it, nor its affiliates, has made or will make, with respect to the matters provided for hereunder, any offer, payment, gift or authorization of the payment of any money directly or indirectly, to or for the use or benefit of any official or employee of the government, political party, official, or candidate.
- 16.2 In addition, the Client shall act consistently with the Bureau Veritas' Code of Ethics and, when applicable, Business Partner Code of Conduct both available at <https://group.bureauveritas.com/group/corporate-social-responsibility/operational-excellence>.



# RULES FOR INLAND NAVIGATION VESSELS

## Part A Classification and Surveys

### Chapters **1 2 3**

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Chapter 1	PRINCIPLES OF CLASSIFICATION
Chapter 2	CLASSIFICATION
Chapter 3	SURVEYS FOR MAINTENANCE OF CLASS

**These Rules enter into force on June 1st, 2021.**

**The English version of these Rules takes precedence over editions in other languages.**

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Part A

**Classification and Surveys**

Chapter 1

**PRINCIPLES OF CLASSIFICATION**

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<b>SECTION 1</b>	<b>GENERAL PRINCIPLES OF CLASSIFICATION</b>
<b>SECTION 2</b>	<b>CLASS DESIGNATION</b>
<b>SECTION 3</b>	<b>CLASSIFICATION NOTATIONS</b>



## SECTION 1

## GENERAL PRINCIPLES OF CLASSIFICATION

### 1 Principles of classification

#### 1.1 Purpose of the Rules

**1.1.1** These Rules give the requirements for the assignment and the maintenance of class for inland navigation vessels as well as vessels operated in restricted maritime stretches of water.

**1.1.2** Class assigned to a vessel reflects the discretionary opinion of the Society that the vessel, for declared conditions of use and within the relevant time frame, complies with the Rules applicable at the time the service is rendered.

**1.1.3** General Conditions valid at the time of signing of the contract with the Owner or Prospective vessel Owner, the Building Yard or Other Interested party apply.

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

- Part A - Classification and Surveys,  
applies to all vessels
- Part B - Hull Design and Construction,  
applies to all vessels, but needs to be complemented by applicable requirements of the Society's Rule Notes:
  - NR561 Hull in Aluminium alloys, for vessels assigned additional service feature **A**
  - NR546 Hull in Composite Materials and Plywood, for vessels assigned additional service feature **C** or **W**
- Part C - Machinery, Systems and Electricity,  
applies to all vessels
- Part D - Additional Requirements for Notations,  
applies to specific vessel types.

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

**1.1.5** Classification according to these Rules applies primarily to new buildings constructed under survey of the Society. Classification may also be applied to existing vessels by a survey for admission to class after construction, if sufficient documentation is available, see Ch 2, Sec 4, [2].

**1.1.6** The Society's Rules for the classification of inland navigation vessels (see [1.1.4]) will be applied for structural elements of the hull and for components of the machinery and

electrical installations of vessels, subject to agreement between the Prospective vessel Owner, the Other Interest Party and the Building Yard for the classification order to the Society.

#### 1.2 General definitions

**1.2.1** The following general definitions are used in these Rules.

##### 1.2.2 Administration/Authorities

Administration/Authorities means the Government of the state whose flag the vessel is entitled to fly or the state under whose authority the vessel is operating in the specific case.

##### 1.2.3 Building specification

The building specification is part of the building contract between the Prospective vessel Owner, Other Interested Party and the Building Yard which specifies the technical parameters and all other details for the construction of the vessel.

##### 1.2.4 Building Yard

The Building Yard is the contractual partner of the Prospective vessel Owner or Other Interested Party, entrusted with managing the design, construction and equipment of the vessel, generally together with a series of subcontractors and manufacturers.

##### 1.2.5 Hull

The hull is the structural body of a vessel including all strength components, i.e. shell plating, walls, framing, decks, bulkheads, etc. of the main hull, superstructures and deckhouses. The hull also includes:

- all portions of the vessel extending beyond the main hull outline (appendages) such as rudder and rudder stock, shafting pipes, struts, bossing, bilge keels, bowsprit, anchors and anchor chain cables, etc
- river chests
- structures permanently connected by weld to the vessel's hull such as guard rails, bitts, fixed parts of lifting appliances, machinery bedding, etc
- tanks integrated to the hull structure
- independent cargo tanks.

##### 1.2.6 Inland navigation

Inland navigation covers operation of vessels on inland waterways, including estuaries, rivers, tributaries, canals and lakes.

##### 1.2.7 Other Interested Party

Other Interested Party means other ordering subcontractors such as the Broker, the Designer, the Engine and components Manufacturer, or the Supplier of parts to be tested, etc.

### 1.2.8 Owner or Prospective vessel Owner

Owner or Prospective vessel Owner means the Registered Owner or the Disponent Owner or the Manager or any other party responsible for the definition, purchase and/or operation of the vessel and having the responsibility to keep the vessel seaworthy, having particular regard to the provisions relating to the maintenance of class.

### 1.2.9 Restricted maritime stretches of water

Inland navigation vessels may operate in coastwise restricted maritime stretches of water complying with the range of navigation specified in Ch 1, Sec 3, [12.2] where allowed by the competent National Authorities. Possible specific requirements of National Authorities for operation in maritime stretches are to be complied with and take precedence on the present Rules in case of conflict.

### 1.2.10 Significant wave height

The significant wave height considered in the Rules corresponds to  $H_{1/3}$  which means the average of 33% of the total number of waves having the greater heights between wave trough and wave crest, observed over a short period.

### 1.2.11 Society

Society means the classification Society with which the vessel is classed.

### 1.2.12 Society head office

Society head office means the head office or designated head office department in charge of dealing with Rules and classification particulars.

### 1.2.13 Statutory Rules

Statutory Rules are the national and international Rules and Regulations which apply to the vessel but which are not covered by the classification.

### 1.2.14 Survey

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.

### 1.2.15 Surveyor

Surveyor means technical staff acting on behalf of the Society to perform tasks in relation to classification and survey duties.

### 1.2.16 Type approval

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.

### 1.2.17 Date of “contract for construction”

The date of “contract for construction” of a vessel is the date on which the contract to build the vessel is signed between the Prospective vessel Owner or the Other Interested Party and the Building Yard. This date is normally to be declared to the Society by the ordering client applying for the assignment of class to a new building, see Ch 2, Sec 4.

The date of “contract for construction” of a series of vessels, including specified optional vessels for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the Prospective vessel Owner or Other Interested Party and the Building Yard.

For the purpose of this definition, vessels built under a single “contract for construction” are considered a “series of vessels” if they are built to the same reviewed plans for classification purposes. However, vessels within a series may have design alterations from the original design provided:

- such alterations do not affect matters related to classification, or
- if the alterations are subject to classification requirements, these alterations comply with the classification requirements in effect on the date on which the alterations are contracted between the Prospective vessel Owner or Other Interested Party and the Building Yard or, in the absence of the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to the Society for review.

The optional vessels will be considered part of the same series of vessels if the option is exercised not later than 1 year after the contract to build the series was signed.

If a “contract for construction” is later amended to include additional vessels or additional options, the date of “contract for construction” for such vessels is the date on which the amendment to the contract is signed between the Prospective vessel Owner or Other Interested Party and the Building Yard. The amendment to the contract is to be considered as a “new contract” to which the above applies.

If a “contract for construction” is amended to change the vessel type, the date of “contract for construction” of this modified vessel or vessels, is the date on which the revised contract or new contract is signed between the Prospective vessel Owner, or Prospective vessel Owners, and the Building Yard.

## 1.3 Essential service

**1.3.1** Essential service is intended to mean a service necessary for a vessel to proceed at waterway, be steered or manoeuvred, or undertake activities connected with its operation, and for the safety of life, as far as class is concerned. Essential service is subdivided in primary and secondary essential services.

### 1.3.2 Primary essential services

Primary essential services are those which need to be in continuous operation to maintain propulsion and steering.

Examples of equipment for primary essential services:

- steering gear
- actuating systems for controllable pitch propellers
- scavenging air blowers, fuel oil supply pumps, lubricating oil pumps and cooling water pumps for main and auxiliary engines and turbines necessary for the propulsion
- azimuth thrusters which are the sole means for propulsion/steering with lubricating oil pumps, cooling water pumps

- electrical equipment for electric propulsion plant with lubricating oil pumps and cooling water pumps
- electric generators and associated power sources supplying the above equipment
- hydraulic pumps supplying the above equipment
- control, monitoring and safety devices/systems for equipment for primary essential services
- speed regulators dependent on electrical energy for main or auxiliary engines necessary for propulsion.

The main lighting system for those parts of the vessel normally accessible to and used by personnel and passengers is also considered (included as) a primary essential service.

### 1.3.3 Secondary essential services

Secondary essential services are those services which need not necessarily be in continuous operation.

Examples of equipment for secondary essential services:

- thrusters
- starting air and control air compressors
- bilge pumps
- fire pumps and other fire-extinguishing medium pumps
- ventilation fans for engine rooms
- services considered necessary to maintain dangerous cargo in a safe condition
- navigation lights, aids and signals
- internal safety communication equipment
- fire detection and alarm systems
- electrical equipment for watertight closing appliances
- electric generators and associated power supplying the above equipment
- hydraulic pumps supplying the above equipment
- control, monitoring and safety for cargo containment systems
- control, monitoring and safety devices/systems for equipment for secondary essential services
- cooling system of environmentally controlled spaces
- windlasses.

Services for habitability are those intended for minimum comfort conditions for people on board.

Examples of equipment for maintaining conditions of habitability:

- cooking
- heating
- domestic refrigeration
- mechanical ventilation
- sanitary and fresh water
- electric generators and associated power sources supplying the above equipment.

## 1.4 Meaning of classification, scope and limits

**1.4.1** The classification process consists of:

- the development of Rules, guidance notes and other documents relevant to the vessel, 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 vessel meets the Rules (refer to Ch 2, Sec 1)
- the assignment of class (see Ch 2, Sec 1) 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 vessel in service meets the conditions for maintenance of class (see Ch 2, Sec 2).

**1.4.2** 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, Building Yard, Manufacturers, Repairers, Suppliers, Contractors or Subcontractors, 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 vessel, 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 and service of vessel or additional class notation assigned.

**1.4.3** 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, heavy load lifting or workshops, except for their effect on the classification-related matters, such as the vessel's general strength.

During periods of construction, modification or repair, the vessel 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 vessel 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 vessel in relation to the maintenance of class.

**1.4.4** The class assigned to a vessel by the Society following its interventions is embodied in a Certificate of Classification and noted in the Register of vessels.

At a certain date the class of a vessel 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 vessel holding a valid Certificate of Classification may be in an irregular class position.

## 1.5 Limitation of classification to hull

**1.5.1** When it is agreed to limit the classification to the vessel's hull only, the parts of the vessel which must comply with the Rules are those mentioned in [1.2.5]. In such a case, the applicable stability requirements must be also complied with and the classification notations defined in Ch 1, Sec 2 will be assigned only to the hull. Machinery, systems and electrical installations which are normally matters for classification must be proven to be in compliance with the applicable relevant Regulations.

## 1.6 Request for services

**1.6.1** Requests for interventions by the Society, such as request for classification, surveys during construction, surveys of vessels in service, tests, etc. are, in principle, to be submitted in writing and signed by the Other Interested Party, the Owner, the Prospective vessel Owner or the Building Yard. Such request implies that the applicant will abide by all the relevant requirements of the Rules and the General Conditions of the Society.

# 2 Rules

## 2.1 Effective date

**2.1.1** 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 Application

**2.2.1** In principle, the applicable Rules for assignment of class to a new vessel are those in force at the date of contract for construction. In the case of admission to class after construction, the Rules in force at the date of the request for classification apply.

**2.2.2** Special consideration may be given to applying new or modified rule requirements which entered into force subsequent to the date of the 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 was signed
- where it is intended to use existing previously approved plans for a new contract.

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

**2.2.4** The rule requirements related to assignment, maintenance and withdrawal of the class of vessels already in operation are applicable from the date of their entry into force.

## 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.

**2.3.2** As a rule, certification of materials and equipment by the Society in compliance with NR467 Rules for Steel Ships is considered acceptable within the scope of these Rules.

## 2.4 Novel features

**2.4.1** The Society may consider the classification of vessels 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 memoranda.

## 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 Other construction Rules and Regulations

**2.6.1** The appraisal of design and construction particulars by the Society will be exclusively based on Rules and Guidelines agreed upon in the specification of the classification contract between the Prospective vessel Owner, the Other Interested Party or the Building Yard and the Society.

**2.6.2** In addition, applicable statutory Rules, such as **ADN**, may be applied upon agreement with the relevant Authority and if defined in the specification of the classification contract between the Prospective vessel Owner, the Other Interested Party or the Building Yard and the Society.

**2.6.3** The navigation in maritime areas is subject to competent authority agreement which may require the compliance of the vessel design and construction with applicable statutory Regulations.

**2.6.4** The compliance to statutory Rules of the respective flag state is the responsibility of the Prospective vessel Owner.



## 2.7 Industry Codes, Standards, etc.

**2.7.1** Internationally recognized Standards and Codes published by relevant organisations, national industry organisations or standardisation institutions may be used upon agreement in particular cases as a design and construction basis.

Examples: ISO, IEC, EN, DIN, NF.

## 3 Duties of the Interested Parties

### 3.1 International and national Regulations

**3.1.1** The classification of a vessel does not dispense the Owner, Other Interested Party and Building Yard from compliance with any requirements issued by Administrations.

### 3.2 Surveyor's intervention

**3.2.1** Surveyors are to be given free access at all times to vessels which are classed or being classed, Building Yard and manufacturer 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 experts or/and 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** Owners, Other Interested Parties and Building Yard are to take the necessary measures for the Surveyor's inspections and testing to be carried out safely and efficiently under their full responsibility. Owners, Other Interested Parties and Building Yard - 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 Owner, Other Interested Party or Building Yards.

**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 Owner, Other Interested Party or Building Yard to the Surveyor on request.

**3.2.4** During the phases of design and construction of the vessel, 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 vessels

**3.3.1** The classification of a vessel is based on the understanding that the vessel 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 vessel in operating conditions according to normal prudent conduct will not exceed that corresponding to the freeboard assigned or the maximum approved for the classification, that the vessel 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 vessel are adapted to the prevailing wave height and weather conditions.

**3.3.2** Any document issued by the Society in relation to its interventions reflects the condition of the vessel 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 vessel until the next survey required by the Rules. It is the duty of the Interested Party to inform the Surveyor when he boards the vessel of any events or circumstances affecting the class.

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

#### 3.4.1 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, Building Yards and on board vessels, 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 recognised national or international standard each piece of such equipment.

Note 1: Refer to Rule Note NR533 Approval of Service Suppliers.

#### 3.4.2 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.

#### 3.4.3 On board measuring equipment

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

**3.4.4 Other equipment**

The Surveyor may request evidence that other equipment (e.g. tensile test machines, ultrasonic thickness measurement equipment, etc.) is calibrated to a recognised national or international standard.

**3.5 Spare parts**

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

**3.5.2** 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.

**3.6 Quality system audits**

**3.6.1** Attention is drawn to the possibility that auditors external to the Society may attend surveys and audits carried out by the Society and that this attendance shall not be obstructed.

**4 Application of statutory requirements by the Society**

**4.1 International and national Regulations**

**4.1.1** 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 requirements, survey the vessel, report and issue or contribute to the issue of the corresponding certificates.

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

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.

SECTION 2

CLASS DESIGNATION

1 General

1.1 Purpose of the classification notations

1.1.1 The class of a vessel complying with these Rules is expressed by the “classification notations”, assigned for hull and machinery including electrical installations.

1.1.2 There are different kinds of classification notations, describing particular features, capabilities, service restrictions or special equipment and installations included in the classification.

1.1.3 The classification notations give the scope according to which the class of the vessel 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 vessel and other criteria which have been provided by the Owner, Building Yard or Other 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 type, service, navigation and any other criteria taken into account for classification.

Note 1: Reference should be made to Ch 1, Sec 1, [1.4] on the limits of classification and its meaning.

1.1.4 The classification notations assigned to a vessel are indicated on the certificate of classification, as well as in the Register of vessels published by the Society.

It will be the decision of the Owner, Building Yard or Other Interested Party to have the notations, together with the whole class designation, included in the published Register of the Society or not.

1.1.5 The classification notations applicable to existing vessels conform to the Rules of the Society in force at the date of assignment of class, as indicated in Ch 2, Sec 1, [4]. However, the classification notations of existing vessels may be updated according to the current Rules, as far as applicable.

1.1.6 At the request of the Owner and as far as applicable, the Society reserves the right to grant other classification notations as defined in other Rules of the Society. The class maintenance surveys for such classification notations are to be performed to the corresponding requirements in the other Rules of the Society.

1.2 Types of notations assigned

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

- a) construction mark
- b) class symbol
- c) class period
- d) equipment symbol
- e) navigation and operating area notations
- f) service notations with additional service features, as applicable
- g) additional class notations (optional).

The different classification notations and their conditions of assignment are defined in Articles [2] to [9].

1.2.2 Examples of class designation

Tab 1 shows examples of a class designation for hull and machinery of a vessel covered by these Rules.

Table 1 : Examples of class designation

Vessel type	Class designation
General cargo vessel	II ⚡ HULL • MACH 3 Z IN General cargo vessel / Double hull / 1R / Heavycargo (Hold, 110 kN/m²)
Tanker	I ⚡ HULL • MACH 5 Z IN(1,2) Tanker / DG-N closed / Double hull / 2R DP = 11,5kPa / TP = 13kPa
	I ⚡ HULL ⚡ MACH 5 Z IN(1,7) / Estuary Plus / Belgian coast / operating between the Western Scheldt and the Zeebrugge harbour / within 5NM from shore / Beaufort 7 Tanker / Type C / ADN / 2R / Annual survey DP = 57,5kPa / TP = 65kPa
Passenger vessel	I ⚡ HULL ⚡ MACH 5 Z IN(0,8) Passenger vessel / Ferry / Fire / With double bottom
Tug	I • HULL • MACH 5 (-) IN(2) Tug • AUT-UMS
Note 1: IN corresponds to IN(0,6) in the previous Rules version.	

Table 2 : Hull and machinery - Mode of survey and certification

Component	Symbol	Rule requirements
Hull	⚡	Vessels built under the supervision of the Society and with certification of components and materials in accordance with the Rules.
	⚡	Vessels built under the supervision of another classification Society and which have been assigned a class equivalent to the Society's Rules of classification.
	•	Vessels built under the supervision of the Society in accordance with the Rules but, e.g., without inspection by the Society of components and materials which, however, are deemed to be acceptable. It is the responsibility of the Building Yard, Owner or Other Interested Party to ascertain that the materials and equipment used in the vessel's construction satisfactorily meet the Rules requirements. Depending on particular conditions or vessel notations, inspection of materials and components by the Society may be required for essential services.
	•	In the event of admission to class or classification after construction of not classed vessels.
Machinery	⚡, etc.	Same symbols followed by <b>MACH</b>

2 Construction marks for hull and machinery installations

2.1 General

2.1.1 The construction mark identifies the procedure under which the vessel and its main equipment or arrangements have been surveyed for initial assignment of the class. (see Tab 2). However, the Society may change the construction mark where the vessel is subjected to repairs, conversion or alterations.

The procedures under which the vessel is assigned one of the construction marks are detailed in Ch 2, Sec 1.

2.1.2 One of the construction marks defined below is assigned separately to the hull of the vessel, 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 (e.g. ⚡ **Crane**).

If the vessel 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**.

2.2 Symbol ⚡

2.2.1 The symbol ⚡ will be assigned to the relevant part of the vessel when it has been constructed:

- under the survey of and in accordance with the Rules of the Society at the Building Yard and/or at subcontractors supplying construction components/hull sections, as applicable
- with certification by the Society of components and materials requiring inspection subject to the Society's construction Rules.

2.3 Symbol ⚡

2.3.1 The symbol ⚡ will be assigned to the relevant part of the vessel when this latter has been designed and constructed in accordance with the Rules and under supervision of another classification Society and is subsequently - or at a later date - classed with the Society, see Tab 2.

2.4 Symbol •

2.4.1 The symbol • will be assigned to the relevant part of the vessel, where the procedure for the assignment of classification is other than those detailed in [2.2.1] and [2.3.1], but however deemed acceptable, see Tab 2.

3 Class symbol

3.1 General

3.1.1 The class symbol expresses the degree of compliance of the vessel with the rule requirements as regards its construction and maintenance. One class symbol is to be assigned to every classed vessel.

3.1.2 The class symbol **I** is assigned to vessels built in accordance with the Society's Rules or other Rules recognised as equivalent, and maintained in a condition considered satisfactory by the Society.

3.1.3 The class symbol **II** is assigned to vessels which do not meet all requirements for class symbol **I**, but are deemed acceptable to be entered into the Register of vessels. In this case, the class may be maintained for shorter class periods or with shorter survey intervals. See Tab 3.

Table 3 : Class symbol, class period and equipment symbol

Symbol	Description
Class symbol	
I	For vessels found to meet the construction and scantling requirements.
II	For vessels that do not meet in full some construction or scantling requirements, but, however, are deemed acceptable to be entered in the Register of vessels.
Class period symbol (p)	
5 3	These symbols, preceding the range of navigation character, indicate the duration of the class period in years.
Equipment symbol	
Z	Where the vessel's anchors and chain cables meet the applicable requirements of the Rules.
(Z)	The symbol <b>Z</b> is replaced by <b>(Z)</b> , if the vessel's equipment does not meet the rule requirements in full, but, however, is deemed acceptable for the intended service. Reference will be made in the classification certificate to the compliance of the equipment with other recognized standards or Regulations such as ES-TRIN or Normam 02.
(-)	Where the Society considers that it is not called upon to form an opinion on the equipment with regard to particular conditions.

4 Class period symbol

4.1 General

4.1.1 The symbol **p** indicates the duration of the nominal class period in years.

The hull, the machinery as well as special equipment and installations classed have, in principle, the same class period.

Normally: **p** = 5

The nominal class period may be extended in compliance with Ch 2, Sec 2, [6.2.1].

The nominal class period can be reduced in exceptional cases and for a limited time, if the vessel does not fully comply with the Rules but has been allowed to operate under restrictions, e.g. regarding the range of navigation and/or weather conditions. See Tab 3.

5 Navigation and operating area notations

5.1 Range of navigation notation

5.1.1 The symbol **IN** indicates a vessel on waters covered by these Rules, i.e.:

- all inland waterways
- all restricted maritime stretches of water up to a significant wave height of 2 m
- other waters showing comparable conditions.

Note 1: The Owner's attention is drawn to the navigation conditions, which on some lakes are very similar to sea navigation conditions. It is up to the Owner to state in each particular case if he wishes that the vessel is assigned a range of navigation according to these Rules or one of the navigation notations listed in the Rules for seagoing vessels.

For operation on estuaries, lakes or restricted maritime stretches of water, the symbol **IN** is completed, between

brackets, with the significant wave height for which the vessel has been designed. See also Ch 1, Sec 3, [12.2].

5.2 Estuary plus

5.2.1 The range of navigation notation will be completed by the navigation notation **Estuary plus**, if:

- the significant wave height exceeds 1,2 m, or
- the vessel is operated on restricted maritime stretches of water, or
- the vessel is operated on large lakes.

See also Ch 1, Sec 3, [12.3].

5.3 Operating area notation

5.3.1 The operating area notation expresses the specified area where considered vessel is intended to operate. The operating area notation will be assigned to:

- vessels with the notation **Estuary plus**, or
- vessels operating within specific restrictions which are different from normal navigation conditions, or
- vessels operating in defined river systems or waters only.

See also Ch 1, Sec 3, [12.4].

6 Equipment symbol

6.1 General

6.1.1 The symbol **Z** indicates that the vessel's equipment on anchors and chain cables meet the applicable requirements of the Rules.

6.1.2 Where the vessel's equipment does not meet the rule requirements, but is deemed by the Society acceptable for the intended service, the symbol **Z** is replaced by **(Z)**. Reference will be made in the classification certificate to the compliance of the equipment with other recognized standards or Regulations such as ES-TRIN or Normam 02.

**6.1.3** The symbol **Z** is replaced by **(-)**, where the Society considers that it is not called upon to form an opinion on the anchor equipment, with regard to particular conditions, e.g., in the case of a rigid convoy, for:

- Pusher, where the propulsion system is deemed sufficient to ensure a convoy minimum required speed over the ground whatever the maximum expectable stream and wind conditions
- Non propelled cargo vessel operated solely as part of such a convoy.

## 7 Service notations

### 7.1 General

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

**7.1.2** A vessel may be assigned several different service notations. In such a 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 notation.

**7.1.3** Where a vessel part does not meet fully the applicable rule requirements, a service notation between brackets may be assigned provided that the vessel is proven to comply with the applicable statutory Rules, when deemed acceptable by the Society for the intended service and the operation area, e.g.:

**(Passenger vessel)**

Reference will be made in the classification certificate to the compliance of the part with the applicable statutory Rules, together with a mention of any restriction to be observed for the vessel operation.

## 8 Additional service features

### 8.1 General

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

**2R**

**DG-N open**

**8.1.2** Where a vessel part does not meet fully the applicable rule requirements, an additional service feature between brackets may be assigned provided that the vessel is proven to comply with the applicable statutory Rules, when deemed acceptable by the Society for the intended service and the operation area, e.g.:

**Tanker / (DG-C)**

Reference will be made in the classification certificate to the compliance of the part with the applicable statutory Rules, together with a mention of any restriction to be observed for the vessel operation.

**8.1.3** The requirement [8.1.2] does not apply to the following additional service features:

- **Type G**
- **Type C**
- **Type N closed**
- **Type N open with flame arresters**
- **Type N open.**

## 9 Additional class notations

### 9.1 General

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

**Ice**

**AUT-UMS**

**9.1.2** The assignment of such an additional class notation is subject to the compliance with additional rule requirements, which are detailed in Part D, Chapter 2.

SECTION 3

CLASSIFICATION NOTATIONS

1 General

1.1 Application

1.1.1 The notations to be assigned for the classification of inland vessels are indicated in Tab 1 together with the reference to their definitions.

Table 1 : List of classification notations

Classification notations	Reference
Construction mark	Ch 1, Sec 2, [2]
Class symbol	Ch 1, Sec 2, [3]
Class period	Ch 1, Sec 2, [4]
Equipment symbol	Ch 1, Sec 2, [6]
Service notations	[1.2]
Additional service features	[1.3]
Additional class notations	[1.4]
Range of navigation	[12.2]
Estuary plus	[12.3]
Operating area	[12.4]

1.2 Service notations

1.2.1 Generally, the service notations will be assigned according to the indications or suggestions of the Prospective vessel Owner, Building Yard or Other Interested Party.

1.2.2 The various service notations which may be assigned to a vessel are defined in [2] to [10], according to the category to which they belong. These notations are also listed in Tab 2, together with corresponding additional service features.

1.2.3 Vessels may be described by service notations which correspond to seagoing vessels or to special type regarding the hull configuration and/or particular kind of propulsion. Such notations may be assigned instead or in addition to the notations referred to, when the applicable rule requirements are met, e.g.:

- Crew boat
- Supply vessel
- HSC

1.2.4 The Society reserves the right to grant other service notations.

1.3 Additional service features

1.3.1 General

Additional service features are defined together with service notations to which they correspond in [2] to [10].

The service notation may be also completed by the additional service features described in [1.3.2] to [1.3.4] depending upon:

- vessel mode of propulsion
- hull structural configuration
- hull materials.

1.3.2 No propulsion

Each non-propelled vessel or unit will be assigned the additional service feature **No propulsion**, added to its service notation.

This service feature does not apply to the following units:

- pontoons
- harbour equipment
- floating establishments.

1.3.3 Hull structural configuration

Based on the different types of the hull structural configuration, the following additional service features may be added to the service notations:

- **Double hull** for vessels and units fitted with inner bottom and inner sides contributing to the hull girder strength and complying with the applicable rule requirements.  
Convenient accesses to all double bottom and side tank spaces are to be provided for inspection.
- **With double bottom** for vessels and units fitted with inner bottom contributing to the hull girder strength and complying with the applicable rule requirements.  
Convenient accesses to all double bottom spaces are to be provided for inspection.
- **With double sides** for vessels and units fitted with inner sides contributing to the hull girder strength and complying with the applicable rule requirements.  
Convenient accesses to all side tank spaces are to be provided for inspection.

1.3.4 Special considerations for hull materials

If vessels are constructed of normal strength hull structural steel, this will not be specially indicated. If other materials are employed for the hull, this will be indicated in the notations in the class certificate, e.g.:


- **HS** for Higher Strength hull structural steel
- **A** for ALuminium
- **C** for Composite materials such as fibre reinforced plastic (FRP)
- **W** for Wood or plywood
- **CR** for Concrete.

Table 2 : Service notations and corresponding additional service features

	Service notation [ref. in Part A]	Additional service feature [ref. in Part A]	Applicable rule requirements
Cargo vessels	<b>Bulk cargo vessel</b> [2.1.1] <b>Container vessel</b> [2.1.2] <b>General cargo vessel</b> [2.1.3] <b>RoRo cargo vessel</b> [2.1.4]		Pt D, Ch 1, Sec 2 Pt D, Ch 1, Sec 4 Pt D, Ch 1, Sec 1 Pt D, Ch 1, Sec 5
		<b>1R</b> [2.2.1]	Pt B, Ch 3, Sec 1, [3.1.5]
		<b>2R</b> [2.2.2]	Pt B, Ch 3, Sec 1, [3.1.4]
		<b>Nonhomload</b> [2.2.3]	–
		<b>Ind</b> [2.2.4]	–
		<b>Max. density</b> [2.2.5]	–
		<b>DG1</b> [2.2.6]	Pt D, Ch 3, Sec 7
		<b>DG2</b> [2.2.7]	Pt D, Ch 3, Sec 7
		<b>DGD</b> [2.2.8]	Pt D, Ch 3, Sec 9
		<b>No propulsion</b> [1.3.2]	–
		<b>Double hull / With double bottom / With double sides</b> [1.3.3]	–
		<b>HS / A / C / W / CR</b> [1.3.4]	–
		<b>Dualfuel / Gasfuel</b> [1.3.5]	NR529 or NR467, Pt D, Ch 9
		<b>Hydrogencell</b> [1.3.6]	NI547
		<b>Battery system</b> [1.3.7]	NR467, Pt F, Ch 11, Sec 21
		<b>Electric hybrid</b> [1.3.8]	NR467, Pt F, Ch 11, Sec 22
Carriage of liquid or gaseous cargo in bulk	<b>Tanker</b> [3.1.1]		Pt D, Ch 1, Sec 3
		<b>1R</b> [3.2.1]	Pt B, Ch 3, Sec 1, [3.1.5]
		<b>2R</b> [3.2.2]	Pt B, Ch 3, Sec 1, [3.1.4]
		<b>Nonhomload</b> [3.2.3]	–
		<b>Ind</b> [3.2.4]	–
		<b>Max. density</b> [3.2.5]	–
		<b>Max. t°</b> [3.2.6]	–
		<b>TP = x kPa</b> [3.2.7]	–
		<b>DP = x kPa</b> [3.2.7]	–
		<b>Type G</b> [3.2.8]	ADN (1)
		<b>Type C</b> [3.2.9]	ADN (1)
		<b>Type N closed</b> [3.2.10]	ADN (1)
		<b>Type N open with flame arresters</b> [3.2.11]	ADN (1)
		<b>Type N open</b> [3.2.12]	ADN (1)
		<b>DG-G</b> [3.2.13]	Pt D, Ch 3, Sec 2
		<b>DG-C</b> [3.2.14]	Pt D, Ch 3, Sec 3
		<b>DG-N closed</b> [3.2.15]	Pt D, Ch 3, Sec 4
		<b>DG-N open with flame arresters</b> [3.2.16]	Pt D, Ch 3, Sec 4
		<b>DG-N open</b> [3.2.17]	Pt D, Ch 3, Sec 4
		<b>Oil separator vessel</b> [3.2.18]	Pt D, Ch 3, Sec 5
		<b>Supply vessel</b> [3.2.19]	Pt D, Ch 3, Sec 6
		<b>DGD</b> [3.2.20]	Pt D, Ch 3, Sec 9
		<b>No propulsion</b> [1.3.2]	–
		<b>Double hull / With double bottom / With double sides</b> [1.3.3]	–
		<b>HS / A / C / W / CR</b> [1.3.4]	–
		<b>Dualfuel / Gasfuel</b> [1.3.5]	NR529 or NR467, Pt D, Ch 9
		<b>Hydrogencell</b> [1.3.6]	NI 547
		<b>Battery system</b> [1.3.7]	NR467, Pt F, Ch 11, Sec 21
		<b>Electric hybrid</b> [1.3.8]	NR467, Pt F, Ch 11, Sec 22



	Service notation [ref. in Part A]	Additional service feature [ref. in Part A]	Applicable rule requirements
Carriage of passengers	<b>Passenger vessel</b> [4.1.1]		Pt D, Ch 1, Sec 6
		No propulsion [1.3.2] Double hull / With double bottom / With double sides [1.3.3] HS / A / C / W / CR [1.3.4] Dualfuel / Gasfuel [1.3.5] Hydrogencell [1.3.6] Battery system [1.3.7] Electric hybrid [1.3.8]	– – – NR529 or NR467, Pt D, Ch 9 NI 547 NR467, Pt F, Ch 11, Sec 21 NR467, Pt F, Ch 11, Sec 22
Vessels for dredging activities	<b>Dredger</b> [5.1.1] (2)		Pt D, Ch 1, Sec 9
		No propulsion [1.3.2] Double hull / With double bottom / With double sides [1.3.3] HS / A / C / W / CR [1.3.4] Dualfuel / Gasfuel [1.3.5] Hydrogencell [1.3.6] Battery system [1.3.7] Electric hybrid [1.3.8]	– – – NR529 or NR467, Pt D, Ch 9 NI 547 NR467, Pt F, Ch 11, Sec 21 NR467, Pt F, Ch 11, Sec 22
			Pt D, Ch 1, Sec 9
			Pt D, Ch 1, Sec 9
			Pt D, Ch 1, Sec 9
			Pt D, Ch 1, Sec 9
	<b>Hopper barge</b> [5.1.2] <b>Hopper dredger</b> [5.1.3] (2) <b>Split hopper barge</b> [5.1.4] <b>Split hopper dredger</b> [5.1.5] (2)		Pt D, Ch 1, Sec 9
			Pt D, Ch 1, Sec 9
			Pt D, Ch 1, Sec 9
			Pt D, Ch 1, Sec 9
		1R [5.2.1] 2R [5.2.2] Nonhomload [5.2.3] No propulsion [1.3.2] Double hull / With double bottom / With double sides [1.3.3] HS / A / C / W / CR [1.3.4] Dualfuel / Gasfuel [1.3.5] Hydrogencell [1.3.6] Battery system [1.3.7] Electric hybrid [1.3.8]	Pt B, Ch 3, Sec 1, [3.2.4] Pt B, Ch 3, Sec 1, [3.2.4] – – – – NR529 or NR467, Pt D, Ch 9 NI 547 NR467, Pt F, Ch 11, Sec 21 NR467, Pt F, Ch 11, Sec 22
Working units	<b>Launch</b> [6.1.1]		Pt D, Ch 1, Sec 10
		HS / A / C / W / CR [1.3.4] Dualfuel / Gasfuel [1.3.5] Hydrogencell [1.3.6] Battery system [1.3.7] Electric hybrid [1.3.8]	– NR529 or NR467, Pt D, Ch 9 NI 547 NR467, Pt F, Ch 11, Sec 21 NR467, Pt F, Ch 11, Sec 22
			Pt D, Ch 1, Sec 8
			Pt D, Ch 1, Sec 8
			Pt D, Ch 1, Sec 7
	<b>Pontoon</b> [6.1.2] <b>Pontoon-crane</b> [6.1.2] <b>Pusher</b> [6.1.3]		Pt D, Ch 1, Sec 8
		DGL [6.2.1] DGD [6.2.2] Dualfuel / Gasfuel [1.3.5] Hydrogencell [1.3.6] Battery system [1.3.7] Electric hybrid [1.3.8]	Pt D, Ch 3, Sec 8 Pt D, Ch 3, Sec 9 NR529 or NR467, Pt D, Ch 9 NI 547 NR467, Pt F, Ch 11, Sec 21 NR467, Pt F, Ch 11, Sec 22

	Service notation [ref. in Part A]	Additional service feature [ref. in Part A]	Applicable rule requirements
	<b>Tug</b> [6.1.4]		Pt D, Ch 1, Sec 7
		<b>DGL</b> [6.2.1]	Pt D, Ch 3, Sec 8
		<b>DGD</b> [6.2.2]	Pt D, Ch 3, Sec 9
		<b>Dualfuel / Gasfuel</b> [1.3.5]	NR529 or NR467, Pt D, Ch 9
		<b>Hydrogencell</b> [1.3.6]	NI 547
		<b>Battery system</b> [1.3.7]	NR467, Pt F, Ch 11, Sec 21
		<b>Electric hybrid</b> [1.3.8]	NR467, Pt F, Ch 11, Sec 22
Pleasure vessel	<b>Pleasure vessel</b> [7.1.1]		Pt D, Ch 1, Sec 11
		<b>HS / A / C / W /CR</b> [1.3.4]	–
		<b>Dualfuel / Gasfuel</b> [1.3.5]	NR529 or NR467, Pt D, Ch 9
		<b>Hydrogencell</b> [1.3.6]	NI 547
		<b>Battery system</b> [1.3.7]	NR467, Pt F, Ch 11, Sec 21
		<b>Electric hybrid</b> [1.3.8]	NR467, Pt F, Ch 11, Sec 22
Harbour equipment	<b>Floating dock</b> [8.2.1] <b>Floating landing dock</b> [8.2.2] <b>Floating door</b> [8.2.3] <b>Floating bridge</b> [8.2.4] <b>Worksite unit</b> [8.2.5] <b>Floating Storage</b> [8.2.6]		NR612
Floating establishment	<b>Floating establishment</b> [9.1]		NR580
Special service	<b>Special service</b> [10] (3)		<b>(4)</b>
		<b>Particular service</b> [10.1.2]	–
		<b>No propulsion</b> [1.3.2]	–
		<b>Double hull / With double bottom / With double sides</b> [1.3.3]	–
		<b>HS / A / C / W /CR</b> [1.3.4]	–
		<b>Dualfuel / Gasfuel</b> [1.3.5]	NR529 or NR467, Pt D, Ch 9
		<b>Hydrogencell</b> [1.3.6]	NI 547
		<b>Battery system</b> [1.3.7]	NR467, Pt F, Ch 11, Sec 21
		<b>Electric hybrid</b> [1.3.8]	NR467, Pt F, Ch 11, Sec 22
<b>(1)</b> The applicable requirements of Part D, Chapter 3, not covered by ADN are to be complied with. <b>(2)</b> This notation may be completed by the type of dredger, e.g. <b>Suction dredger</b> . <b>(3)</b> This notation may be completed by the type of vessel, e.g. <b>Rescue vessel</b> . This type of vessel is considered on a case by case basis by the Society, according to its intended mission. <b>(4)</b> These vessels are considered on a case by case basis according to their additional service feature.			

1.3.5 Vessels with gas fuelled propulsion

The service notation will be completed by one of the following additional service features, when the vessel complies with the applicable requirements of NR529 Safety Rules for Gas-Fuelled Engine Installations in Ships, or NR467 Rules for Steel Ships, Part D, Chapter 9, or a combination thereof, as applicable:

- **Dualfuel** for engines using both gas and fuel oil as fuel
- **Gasfuel** for engines using only gas as fuel.

The gas may be either compressed natural gas or liquefied natural gas.

1.3.6 Vessels with hydrogen fuel cell propulsion

The service notation will be completed by the additional service feature **Hydrogencell**, when the vessel complies with NI 547 Guidelines for Fuel Cell Systems Onboard Commercial Ships.

1.3.7 Battery system

The service notation may be completed by the additional service feature **Battery system** when batteries are used for propulsion and/or electric power supply purpose during operation of the vessel. This additional service feature is mandatory when the vessel is only relying on batteries for propulsion and/or electrical power supply for main sources.

The requirements for the assignment of this additional service feature are given in the Rules for the Classification of Steel Ships (NR467, Pt F, Ch 11, Sec 21).

Note 1: when a vessel is assigned the additional service feature **Electric hybrid** ( ), it is not necessary to assign the additional service feature **Battery system**.

1.3.8 Electric hybrid

The service notation may be completed by the additional service feature **Electric hybrid** ( ) when vessels are provided with an energy storage system (ESS) used to supply the electric propulsion and/or the main electrical power distribution system of the vessel.

The additional service feature **ELECTRIC HYBRID ( )** is to be completed, between brackets, by at least one of the following notation:

- **PM**, when at least one of the following power management mode is available: load smoothing mode, peak shaving mode, or enhanced dynamic mode
- **PB**, when power backup mode is available

- **ZE**, when zero emission mode is available.

Example:

**ELECTRIC HYBRID (PM, ZE)**

The requirements for the assignment and maintenance of this additional service feature are given in the Rules for the Classification of Steel Ships (NR467, Pt F, Ch 11, Sec 22).

Table 3 : List of additional class notations

Additional class notation	Ref. in Part A	Applicable rule requirements	Remarks
ADN (1) (5)	[11.4.2]	ADN Regulations	Applies to the following notations: <ul style="list-style-type: none"><li>• <b>Type G, Type C, Type N closed</b></li><li>• <b>Type N open with flame arresters</b></li><li>• <b>Type N open, DG1, DG2, DGL, DGD</b></li><li>• <b>Oil separator vessel, Supply vessel</b></li></ul>
Annual survey	[11.1]	Pt D, Ch 2, Sec 9	
AUT-UMS (2)	[11.2]	Pt D, Ch 2, Sec 8	
Auxiliary propulsion	[11.3]	Part C	
AWT	[11.15.3]	Pt D, Ch 2, Sec 11	
Cicos (3)	[11.4.3]	Cicos Regulations	
Cleanvessel	[11.15.2]	Pt D, Ch 2, Sec 11	
COMF-NOISE	[11.5.2]	NR467, Pt F, Ch 6	
COMF-VIB	[11.5.3]	NR467, Pt F, Ch 6	
Damage stability	[11.14.1]	Pt D, Ch 2, Sec 6	
Equipped for transport of containers	[11.6]	Pt D, Ch 2, Sec 3	
Equipped for transport of wheeled vehicles	[11.7]	Pt D, Ch 2, Sec 4	
EUR	[11.4.4]	ES-TRIN (4)	
Ferry	[11.8]	Pt D, Ch 2, Sec 5	Applies to passenger vessels
Fire	[11.9]	Pt D, Ch 2, Sec 7	
Grabloading	[11.10]	Pt D, Ch 2, Sec 10	Applies to bulk cargo vessels
Green passport	[11.15.4]	NR528	
GWT	[11.15.5]	Pt D, Ch 2, Sec 11	
Heavycargo (AREA <sub>i</sub> , x <sub>i</sub> kN/m²)	[11.11]	Pt D, Ch 2, Sec 2	
Heavycargo	[11.12]	Pt D, Ch 2, Sec 2	Applies to bulk cargo vessels
Ice	[11.13.5]	Pt D, Ch 2, Sec 1	
Ice-30	[11.13.4]		
Ice-40	[11.13.3]		
Ice-40+	[11.13.2]		
NDO-x days	[11.15.6]	Pt D, Ch 2, Sec 11	
NOX-x%	[11.15.7]	Pt D, Ch 2, Sec 11	
Normam 02	[11.4.5]	Normam 02	
OWS-x ppm	[11.15.8]	Pt D, Ch 2, Sec 11	
SOX-x%	[11.15.9]	Pt D, Ch 2, Sec 11	
<p>(1) ADN means European agreement concerning the international carriage of dangerous goods by inland waterways.</p> <p>(2) A character of construction is added to this notation.</p> <p>(3) Cicos means International Commission of the Congo-Oubangui-Sangha Basin.</p> <p>(4) ES-TRIN means European Standard laying down Technical Requirements for Inland Navigation vessels</p> <p>(5) Does not apply to the following notations:</p> <ul style="list-style-type: none"><li>• <b>DG-G, DG-C, DG-N closed</b></li><li>• <b>DG-N open with flame arresters</b></li><li>• <b>DG-N open</b></li></ul>			

## 1.4 Additional class notations

**1.4.1** The additional class notations which may be assigned to a vessel are defined in [11], and listed in alphabetical order in Tab 3.

**1.4.2** The Society reserves the right to grant other additional class notations.

## 1.5 Navigation and operating area notations

**1.5.1** The navigation and operating area notations which may be assigned to a vessel are defined in [12] and listed hereafter:

- Range of navigation
- Estuary plus
- Operating area.

## 1.6 Survey related notations

**1.6.1** The survey related notations which may be assigned to a vessel are:

- **Annual survey** as defined in [11.1]
- **Laid-up** where lay-up survey is implemented in compliance with Ch 2, Sec 2, [11].

# 2 Cargo vessels

## 2.1 Service notations

### 2.1.1 Bulk cargo vessel

The service notation **Bulk cargo vessel** applies to vessels intended for the carriage of dry bulk cargo complying with the rule requirements stated under Pt D, Ch 1, Sec 2.

When the maximum cargo density is greater than 1 t/m<sup>3</sup>, the service notation **Bulk cargo vessel** is completed with the indication of the maximum density of the cargo that the vessel is allowed to carry, e.g.:

**Bulk cargo vessel / Max. density 1.8 t/m<sup>3</sup>**

### 2.1.2 Container vessel

The service notation **Container vessel** applies to vessels specially intended for the carriage of containers complying with the rule requirements stated under Pt D, Ch 1, Sec 4.

### 2.1.3 General cargo vessel

The service notation **General cargo vessel** applies to vessels intended for the carriage of general cargo, dry bulk cargo of density  $\rho_B \leq 1 \text{ t/m}^3$  included, complying with the applicable rule requirements stated under Pt D, Ch 1, Sec 1.

### 2.1.4 RoRo cargo vessel

The service notation **RoRo cargo vessel** applies to vessels specially intended to carry vehicles, trains and loads on wheeled beds, complying with the applicable rule requirements stated under Pt D, Ch 1, Sec 5.

## 2.2 Additional service features

### 2.2.1 1R

The service notation of cargo vessels will be completed by the additional service feature **1R**, when the vessel's structure is designed for loading and unloading in one run.

### 2.2.2 2R

The service notation of cargo vessels will be completed by the additional service feature **2R**, when the vessel's structure is designed for loading and unloading in two runs.

### 2.2.3 Nonhomload

The service notation of cargo vessels will be completed by the additional service feature **Nonhomload**, when the vessel has been designed in such a way that the cargo spaces may be loaded non-homogeneously, including cases where some holds may be empty, at a draught up to the scantling draught and fulfil the appropriate rule requirements for general strength, and when the corresponding loading conditions are listed in the reviewed loading manual. This additional service feature may be completed with the indication of the different maximum loads allowed in each hold and which holds may be empty, if appropriate.

### 2.2.4 Ind

The service notation of a vessel carrying substances in independent cargo tanks which meet the requirements of the Rules, will be completed by the additional service feature **Ind**.

### 2.2.5 Max. density

When applicable, the maximum allowed density **Max. density** of the cargo carried may be added to the service notation as an additional service feature.

### 2.2.6 DG1

The service notation of cargo vessels will be completed by the additional service feature **DG1** when the vessel is designed to carry dry dangerous goods in quantities exceeding those indicated in Pt D, Ch 3, App 2, [1], in compliance with the applicable rule requirements stated under Pt D, Ch 3, Sec 7.

### 2.2.7 DG2

The service notation of cargo vessels will be completed by the additional service feature **DG2** when the vessel is designed to carry dry dangerous goods in quantities limited to those indicated in Pt D, Ch 3, App 2, [1], in compliance with the applicable rule requirements stated under Pt D, Ch 3, Sec 7.

### 2.2.8 DGD

The service notation of cargo vessels will be completed by the additional service feature **DGD** when the vessel (not carrying dangerous goods) is intended to be a part of a pushed convoy or a side-by-side formation comprising a cargo vessel or a tanker carrying dangerous substances and complies with the applicable rule requirements stated under Pt D, Ch 3, Sec 9.

### 3 Vessels carrying liquid or gaseous cargo in bulk

#### 3.1 Service notation

##### 3.1.1 Tanker

The service notation **Tanker** applies to vessels specially intended to carry liquid or gaseous cargo in bulk, in compliance with the applicable rule requirements stated under Pt D, Ch 1, Sec 3.

**3.1.2** The list of cargoes the tanker is allowed to carry will be issued by the Society, in the case of transport of dangerous goods (see Pt D, Ch 3, Sec 1).

The compatibility of the accepted dangerous goods with all the construction materials of the vessel, including installations and equipment, which come into contact with the cargo, is outside of the classification scope and remains the responsibility of the vessel Owner.

#### 3.2 Additional service features

##### 3.2.1 1R

The service notation of tankers will be completed by the additional service feature **1R**, when the vessel's structure is designed for loading and unloading in one run.

##### 3.2.2 2R

The service notation of tankers will be completed by the additional service feature **2R**, when the vessel's structure is designed for loading and unloading in two runs.

##### 3.2.3 Nonhomload

The service notation of tankers will be completed by the additional service feature **Nonhomload**, when the vessel has been designed in such a way that the cargo spaces may be loaded non-homogeneously, including cases where some holds may be empty, at a draught up to the scantling draught and fulfil the appropriate rule requirements for general strength, and when the corresponding loading conditions are listed in the reviewed loading manual. This additional service feature may be completed with the indication of the different maximum loads allowed in each tank and which tanks may be empty, if appropriate.

##### 3.2.4 Ind

The service notation of a tanker carrying substances in independent cargo tanks which meet the requirements of the Rules, in particular those concerning parallelepiped cargo tanks, or cylindrical pressure tanks, will be completed by the additional service feature **Ind**.

##### 3.2.5 Max. density

When applicable, the maximum allowed density **Max. density** of the cargo carried may be added to the service notation as an additional service feature.

##### 3.2.6 Max. t°

When applicable, the maximum allowed temperature, **Max. t°** of the cargo carried may be added to the service notation as an additional service feature.

##### 3.2.7 TP / DP

In addition to the service notation **Tanker**, the test pressure **TP** and the design pressure **DP** of the cargo tank, measured at the tank top, expansion trunk or dome excluded and expressed in kPa, are added as additional service features. These pressures are to be determined according to Pt B, Ch 3, Sec 4, [5] and first list item of Pt B, Ch 3, Sec 4, [3.1.2] for test pressure and design pressure respectively, taking  $z$  equal to  $z_{TOP}$ .

##### 3.2.8 Type G

**Type G** applies to a tanker built and equipped for the carriage in bulk of pressurised or refrigerated gases, in compliance with the applicable provisions of ADN Regulations (see also Note 1). **Type G** will be completed by the additional class notation **ADN**.

Note 1: Items not covered by the ADN provisions shall comply with applicable requirements of Part D, Chapter 3.

##### 3.2.9 Type C

**Type C** applies to a tanker built and equipped for the carriage of dangerous liquids in bulk, in compliance with the applicable provisions of ADN Regulations (see also Note 1). **Type C** will be completed by the additional class notation **ADN**.

Note 1: Items not covered by the ADN provisions shall comply with applicable requirements of Part D, Chapter 3.

##### 3.2.10 Type N closed

**Type N closed** applies to a tanker built and equipped for the carriage of dangerous liquids in bulk, in compliance with the applicable provisions of ADN Regulations (see also Note 1). **Type N closed** will be completed by the additional class notation **ADN**.

Note 1: Items not covered by the ADN provisions shall comply with applicable requirements of Part D, Chapter 3.

##### 3.2.11 Type N open with flame arresters

**Type N open with flame arresters** applies to a tanker built and equipped for the carriage of dangerous liquids in bulk, in compliance with the applicable provisions of ADN Regulations (see also Note 1). **Type N open with flame arresters** will be completed by the additional class notation **ADN**.

Note 1: Items not covered by the ADN provisions shall comply with applicable requirements of Part D, Chapter 3.

##### 3.2.12 Type N open

**Type N open** applies to a tanker built and equipped for the carriage of dangerous liquids in bulk, in compliance with the applicable provisions of ADN Regulations (see also Note 1). **Type N open** will be completed by the additional class notation **ADN**.

Note 1: Items not covered by the ADN provisions shall comply with applicable requirements of Part D, Chapter 3.

##### 3.2.13 DG-G

**DG-G** applies to a tanker built and equipped for the carriage in bulk of pressurised or refrigerated gases, in compliance with the applicable rule requirements stated under Pt D, Ch 3, Sec 2.

### 3.2.14 DG-C

**DG-C** applies to a tanker built and equipped for the carriage of dangerous liquids in bulk, in compliance with the applicable rule requirements stated under Pt D, Ch 3, Sec 3.

The vessel shall be of the flush deck type (see Pt B, Ch 5, Sec 4, [1.1.1]) and double hull type with double hull spaces, double bottoms, but without trunk.

The cargo tanks may be formed by the vessel's inner hull or may be installed in the hold spaces as independent tanks.

### 3.2.15 DG-N closed

**DG-N closed** applies to a tanker built and equipped for the carriage of dangerous liquids in bulk, in compliance with the applicable rule requirements stated under Pt D, Ch 3, Sec 4.

### 3.2.16 DG-N open with flame arresters

**DG-N open with flame arresters** applies to a tanker built and equipped for the carriage of dangerous liquids in bulk, in compliance with the applicable rule requirements stated under Pt D, Ch 3, Sec 4.

### 3.2.17 DG-N open

**DG-N open** applies to a tanker built and equipped for the carriage of dangerous liquids in bulk, in compliance with the applicable rule requirements stated under Pt D, Ch 3, Sec 4.

### 3.2.18 Oil separator vessel

**Oil separator vessel** applies to Type N open tankers and DG-N open tankers with a deadweight of up to 300 tons built and equipped to accept and carry oily and greasy wastes from the operation of vessels, complying with:

- the ADN provisions, for Type N Open
- the applicable rule requirements stated under Pt D, Ch 3, Sec 5, for DG-N Open.

### 3.2.19 Supply vessel

**Supply vessel** applies to Type N open tankers and DG-N open tankers with a deadweight of up to 300 tons built and equipped for the carriage and delivery to other vessels of products intended for the operation of vessels, complying with:

- the ADN provisions, for Type N Open
- the applicable rule requirements stated under Pt D, Ch 3, Sec 6, for DG-N Open.

### 3.2.20 DGD

The service notation **Tanker** will be completed by the additional service feature **DGD** when the vessel (not carrying dangerous goods) is intended to be a part of a pushed convoy or a side-by-side formation comprising a cargo vessel or a tanker carrying dangerous substances and complies with the applicable rule requirements stated under Pt D, Ch 3, Sec 9.

## 4 Vessels carrying passengers

### 4.1 Service notation

#### 4.1.1 Passenger vessel

The service notation **Passenger vessel**, applies to vessels specially intended to carry more than 12 passengers complying with the rule requirements stated under Pt D, Ch 1, Sec 6.

## 5 Vessels for dredging activities

### 5.1 Service notations

#### 5.1.1 Dredger

The service notation **Dredger**, applies to vessels specially equipped only for dredging activities (excluding carrying dredged material), complying with the applicable rule requirements stated under Pt D, Ch 1, Sec 9.

#### 5.1.2 Hopper barge

The service notation **Hopper barge**, applies to vessels (self-propelled or non-propelled) specially equipped for carrying spoils or dredged material only, complying with the applicable rule requirements stated under Pt D, Ch 1, Sec 9.

#### 5.1.3 Hopper dredger

The service notation **Hopper dredger**, applies to vessels specially equipped for dredging activities and carrying spoils or dredged material, complying with the applicable rule requirements stated under Pt D, Ch 1, Sec 9.

#### 5.1.4 Split hopper barge

The service notation **Split hopper barge**, applies to vessels (self-propelled or non-propelled) specially equipped for carrying spoils or dredged material only, and which open longitudinally around hinges in compliance with the applicable rule requirements stated under Pt D, Ch 1, Sec 9.

#### 5.1.5 Split hopper dredger

The service notation **Split hopper dredger** applies to vessels specially equipped for dredging activities and carrying spoils or dredged material, which open longitudinally around hinges, complying with the applicable rule requirements stated under Pt D, Ch 1, Sec 9.

### 5.2 Additional service features

#### 5.2.1 1R

The service notation of vessels intended to carry spoil will be completed by the additional service feature **1R**, when the vessel's structure is designed for loading and unloading in one run.

#### 5.2.2 2R

The service notation of vessels intended to carry spoil will be completed by the additional service feature **2R**, when the vessel's structure is designed for loading and unloading in two runs.

### 5.2.3 Nonhomload

The service notation of vessels intended to carry spoil will be completed by the additional service feature **Nonhomload**, when the vessel has been designed in such a way that the cargo spaces may be loaded non-homogeneously, including cases where some holds may be empty, at a draught up to the scantling draught and fulfil the appropriate rule requirements for general strength, and when the corresponding loading conditions are listed in the reviewed loading manual. This additional service feature may be completed with the indication of the different maximum loads allowed in each hold and which holds may be empty, if appropriate.

## 6 Notations for working units

### 6.1 Service notations

#### 6.1.1 Launch

The service notation **Launch** is assigned to small vessels which are used to provide facilities and assistance for the performance of specified activities, complying with the applicable rule requirements stated under Pt D, Ch 1, Sec 10.

#### 6.1.2 Pontoon

The service notation **Pontoon** is assigned to non-propelled units intended to carry cargo and/or equipment on deck only, complying with the applicable rule requirements stated under Pt D, Ch 1, Sec 8.

When a crane is permanently fitted on board, the crane is to be certified according to NR526 Rules for the Certification of Lifting Appliances onboard Ships and Offshore Units, and the service notation **Pontoon-crane** is granted.

#### 6.1.3 Pusher

The service notation **Pusher**, applies to vessels specially equipped for pushing, complying with the applicable rule requirements stated under Pt D, Ch 1, Sec 7.

#### 6.1.4 Tug

The service notation **Tug**, applies to vessels specially equipped for towing, complying with the applicable rule requirements stated under Pt D, Ch 1, Sec 7.

### 6.2 Additional service features

#### 6.2.1 DGL

The service notation **Tug** or **Pusher** will be completed by the additional service feature **DGL** when the tug or pusher is part of a pushed convoy or a side-by-side formation comprising a tank vessel carrying dangerous substances and complies with the applicable rule requirements stated under Pt D, Ch 3, Sec 8.

#### 6.2.2 DGD

The service notation **Tug** or **Pusher** will be completed by the additional service feature **DGD** when the tug or pusher is part of a pushed convoy or a side-by-side formation comprising a cargo vessel carrying dangerous substances and complies with the applicable rule requirements stated under Pt D, Ch 3, Sec 9.

## 7 Notations for pleasure units

### 7.1 Service notation

#### 7.1.1 Pleasure vessel

The service notation **Pleasure vessel** is assigned to vessels other than passenger vessels, intended for sport or pleasure cruising complying with the requirements stated under Pt D, Ch 1, Sec 11.

## 8 Harbour equipment

### 8.1 General

**8.1.1** The requirements for harbour equipment design, construction, equipment, assignment and maintenance are developed in NR612 Harbour Equipment.

**8.1.2** Applicable additional class notations and additional service features are those defined in NR612 Harbour Equipment.

### 8.2 Service notations

#### 8.2.1 Floating dock

The service notation **Floating dock** is assigned to harbour equipment intended to lift floating units, complying with the applicable requirements of NR612 Harbour Equipment.

#### 8.2.2 Floating landing dock

The service notation **Floating landing dock** is assigned to harbour equipment intended for drawing alongside vessels allowing operations such as bunkering, cargo loading and unloading, passenger embarking and disembarking, etc., complying with the applicable rule requirements of NR612 Harbour Equipment.

#### 8.2.3 Floating door

The service notation **Floating door** is assigned to watertight box girder harbour equipment fitted with flooding and dewatering systems intended to be operated as movable gate to close or separate water stretch areas, complying with the applicable rule requirements of NR612 Harbour Equipment.

#### 8.2.4 Floating bridge

The service notation **Floating bridge** is assigned to harbour equipment supported by low flat-bottomed boats or pontoons intended to be used as bridge, complying with the applicable rule requirements of NR612 Harbour Equipment.

#### 8.2.5 Worksite unit

The service notation **Worksite unit** is assigned to harbour equipment appropriately built and equipped for use at worksites, complying with the applicable rule requirements of NR612 Harbour Equipment.

#### 8.2.6 Floating Storage

The service notation **Floating Storage** is assigned to harbour equipment intended for storage of products in bulk or in package, complying with the applicable rule requirements of NR612 Harbour Equipment.

## 9 Floating establishment

### 9.1 General

**9.1.1** The service notation **Floating establishment** is assigned to stationary berthed non propelled floating units equipped for missions such as activities intended for the public, accommodation facilities, etc.

**9.1.2** The requirements for floating establishment design, construction, equipment, assignment and maintenance are developed in NR580 Floating Establishments.

**9.1.3** Applicable additional class notations and additional service features are those defined in NR580 Floating Establishments.

## 10 Special service

### 10.1 General

**10.1.1** The service notation Special service is assigned to vessels which, due to the peculiar characteristics of their activity, are not covered by any of the service notations mentioned above. The classification requirements of such units are considered by the Society on a case by case basis.

This service notation may apply, for instance, to vessels engaged in research, expeditions and survey, vessels for training of personnel and other vessels with design features and modes of operation which may be referred to the same group of vessels.

**10.1.2** An additional service feature will be specified after the service notation, e.g. **Rescue vessel**, to identify the particular service in which the unit is intended to trade. The scope of classification of such units is indicated into the certificate of classification.

## 11 Additional class notations

### 11.1 Annual survey

**11.1.1** The additional class notation **Annual survey** is assigned to vessels for which surveys for the maintenance of class include the annual survey performed in compliance with Pt D, Ch 2, Sec 9.

### 11.2 Automated machinery systems

**11.2.1** The additional class notation **AUT-UMS** is assigned to vessels which are fitted with automated installations enabling machinery spaces to remain periodically unattended in all sailing conditions including manoeuvring, complying with the requirements stated under Pt D, Ch 2, Sec 8.

**11.2.2** In compliance with Ch 1, Sec 2, [2.1.2], this notation is assigned a character of construction, as defined in Ch 1, Sec 2, [2].

### 11.3 Auxiliary propulsion

**11.3.1** A service notation may be completed by the additional class notation **Auxiliary propulsion**, when the vessel is equipped with an auxiliary propulsion system allowing short moves at a limited speed complying with the applicable requirements of Part C.

### 11.4 Compliance with statutory Regulations

#### 11.4.1 General

A service notation may be completed by an additional class notation denoting compliance with any specific statutory Regulations, such as those given in [11.4.2] to [11.4.5].

#### 11.4.2 ADN

A service notation may be completed by the additional class notation **ADN**, when the vessel's structure and equipment are examined by the Society and found in compliance with the Regulations Annexed to the European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterways, as amended. Assigned class notation **ADN** is, in no way, intended to replace statutory certificate.

A service notation may also be completed by the additional class notation **ADN**, when corresponding certificate has been issued by the Authorities.

#### 11.4.3 Cicos

A service notation may be completed by the additional class notation **Cicos**, when the vessel's structure and equipment are examined by the Society and found in compliance with the Regulations of the International Commission of the Congo-Oubangui-Sangha Basin, as amended. Assigned class notation **Cicos** is, in no way, intended to replace statutory certificate.

A service notation may also be completed by the additional class notation **Cicos**, when corresponding certificate has been issued by the Authorities.

#### 11.4.4 EUR

A service notation may be completed by the additional class notation **EUR**, when the vessel's structure, equipment and systems are examined by the Society and found in compliance with the ES-TRIN, as amended. Assigned class notation **EUR** is, in no way, intended to replace statutory certificate.

A service notation may also be completed by the additional class notation **EUR**, when corresponding certificate has been issued by the Authorities.

Note 1: ES-TRIN means European Standard laying down Technical Requirements for Inland Navigation vessels.

#### 11.4.5 Normam 02

A service notation may be completed by the additional class notation **Normam 02**, when the vessel's structure and equipment are examined by the Society and found in compliance with the Brazilian Flag Regulations for Inland Navigation Vessels, as amended. Assigned class notation **Normam 02** is, in no way, intended to replace statutory certificate.

A service notation may also be completed by the additional class notation **Normam 02**, when corresponding certificate has been issued by the Authorities.



## 11.5 Comfort on board vessels (COMF)

### 11.5.1 General

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

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

The requirements for the assignment of these notations are given in NR467 Rules for Steel Ships, Part F, Chapter 6.

### 11.5.2 Comfort with regard to noise (COMF-NOISE)

The additional class notation **COMF-NOISE** is assigned to vessels satisfying levels of noise defined in NR467 Rules for Steel Ships, Part F, Chapter 6. The assessment of noise levels is carried out through measurements during harbour and river trials.

The notation is completed by a grade **1**, **2** or **3** which represents the comfort level achieved for the assignment of the notation. The lower grade (1) corresponds to the higher class of comfort, e.g.:

#### COMF-NOISE 2

### 11.5.3 Comfort with regard to vibration (COMF-VIB)

The additional class notation **COMF-VIB** is assigned to vessels satisfying levels of vibration defined in NR467 Rules for Steel Ships, Part F, Chapter 6. The assessment of vibration is carried out through measurements during harbour and river trials.

The notation is completed by a grade **1**, **2** or **3** (evaluation based on overall frequency criteria) which represents the comfort level achieved for the assignment of the notation. The lower grade (1) corresponds to the higher class of comfort, e.g.:

#### COMF-VIB 1

## 11.6 Equipped for transport of containers

**11.6.1** A service notation may be completed with the additional class notation **Equipped for transport of containers**, where the vessel complies with the rule requirements stated under Pt D, Ch 2, Sec 3.

## 11.7 Equipped for transport of wheeled vehicles

**11.7.1** A service notation may be completed with the additional class notation **Equipped for transport of wheeled vehicles**, where the vessel complies with the rule requirements stated under Pt D, Ch 2, Sec 4.

## 11.8 Ferry

**11.8.1** The service notation **Passenger vessel** may be completed by the additional class notation **Ferry**, for vessels specially equipped to load wheeled vehicles, complying with the rule requirements stated under Pt D, Ch 2, Sec 5.

## 11.9 Fire

**11.9.1** The additional class notation **Fire** may be added to the service notation when the vessel's installations comply with the rule requirements stated under Pt D, Ch 2, Sec 7.

## 11.10 Grabloading

**11.10.1** The service notation **Bulk cargo vessel** may be completed with the additional class notation **Grab-loading** if the hold tank is specially reinforced for loading/unloading cargoes by means of grabs or buckets.

The requirements for the assignment of this notation are given in Pt D, Ch 2, Sec 10.

However, this does not preclude vessels not assigned with this notation from being loaded/unloaded with grabs.

## 11.11 Heavycargo ( $AREA_i$ , $x_i$ kN/m<sup>2</sup>)

**11.11.1** A service notation will be completed by the additional class notation **Heavycargo ( $AREA_i$ ,  $x_i$  kN/m<sup>2</sup>)**, when the double bottom and/or hatch covers and/or other cargo areas designed to support heavy cargoes fulfil the appropriate rule requirements. The value  $x_i$  indicates the maximum allowable local pressure corresponding to zone  $AREA_i$  where the cargo is intended to be stowed, e.g.:

**General cargo vessel / Heavy cargo (Hold, 120 kN/m<sup>2</sup>)**

The requirements for the assignment of this additional class notation are given in Pt D, Ch 2, Sec 2.

## 11.12 Heavycargo

**11.12.1** When the maximum density of the cargo that the vessel is allowed to carry is greater than or equal to 2,5 t/m<sup>3</sup>, the service notation **Bulk cargo vessel** will be completed by the additional class notation **Heavycargo** followed by the indication of the maximum allowable cargo density, when the double bottom structure complies with the rule requirements stated under Pt D, Ch 2, Sec 2, e.g.:

**Bulk cargo vessel / Heavy cargo/ Max. density 4.4 t/m<sup>3</sup>**

## 11.13 Navigation in ice

**11.13.1** Notations dealt with under this Sub-article are relevant to vessels strengthened for navigation in ice in accordance with the rule requirements given in Pt D, Ch 2, Sec 1.

### 11.13.2 Ice-40+

The additional class notation **Ice-40+** is assigned to vessels with such structure, machinery and other properties that they are capable of navigating in light ice conditions, with the assistance of icebreakers when necessary.

These vessels are to comply with the ice strengthening requirements developed in Pt D, Ch 2, Sec 1, which are equivalent to those corresponding to **ICE CLASS IC** in the "Finnish-Swedish Ice Class Rules 2010 as amended".

### 11.13.3 Ice-40

The additional class notation **Ice-40** is assigned to vessels whose reinforcements for navigation in ice are different from those required for the assignment of the notation **Ice-40+** defined in [11.13.2] and complying with the specific rule requirements detailed in Pt D, Ch 2, Sec 1.

### 11.13.4 Ice-30

The additional class notation **Ice-30** is assigned to vessels with such structure, machinery and other properties that they are capable of navigating in broken ice with a thickness not exceeding 30 cm, complying with the applicable rule requirements stated under Pt D, Ch 2, Sec 1.

### 11.13.5 Ice

The additional class notation **Ice** is assigned to vessels with such structure, machinery and other properties that they are capable of navigating in broken ice with a thickness not exceeding 20 cm, complying with the applicable rule requirements stated under Pt D, Ch 2, Sec 1.

## 11.14 Stability notations

### 11.14.1 Damage stability

The additional class notation **Damage stability** may be assigned to vessels for which the intact stability and the damage buoyancy file have been examined by the Society and found to satisfy the specific rule requirements stated under Pt D, Ch 2, Sec 6.

The certificate issued specifies the criteria considered for this examination and is to be annexed to the classification certificate. The damage buoyancy and stability file is to be available on board.

**11.14.2** The certificate issued for damage stability remain valid unless:

- the relevant structure, equipment or installations of the vessel are modified or not kept in a satisfactory condition of maintenance and operation
- the conditions of operation of the vessel differ from those taken into consideration for the examination
- the proper applicable documentation examined by the Society is not available on board
- the classification certificate is not valid.

## 11.15 Pollution prevention

### 11.15.1 General

The notations dealt with under this heading are assigned to vessels fitted with equipment and arrangements enabling them to control and limit the emission of polluting substances in the water and the air.

The requirements for the assignment of these notations are given in Pt D, Ch 2, Sec 11.

### 11.15.2 Cleanvessel

The additional class notation **Cleanvessel** is assigned to vessels fitted with equipment and arrangements as given in Pt D, Ch 2, Sec 11.

### 11.15.3 Advanced wastewater treatment (AWT)

The additional class notation **AWT** is assigned to vessels fitted with an Advanced Wastewater Treatment plant in accordance with the provisions of in Pt D, Ch 2, Sec 11.

### 11.15.4 Green passport for vessel recycling

The additional class notation **Green passport** may be assigned to vessels for which requirements intended to facilitate vessel recycling have been applied, encompassing the identification, quantification and localization of materials which may cause harm to the environment and people when the fittings or equipment containing such materials are removed, or when the vessel is recycled.

The requirements for the assignment and maintenance of this notation are given in NR528 Green Passport.

### 11.15.5 GWT

The additional class notation **GWT** applies to vessels fitted with a grey water treatment plant in accordance with the provisions of Pt D, Ch 2, Sec 11.

### 11.15.6 NDO-x days

The additional class notation **NDO-x days** applies to vessels having sufficient onboard storage capacity for solid waste and liquid effluents, allowing the fully loaded vessel to operate without discharging any substances into the water during x consecutive days (no discharge period), in accordance with the provisions of Pt D, Ch 2, Sec 11.

### 11.15.7 NOX-x%

The additional class notation **NOX-x%** applies to vessels fitted with diesel engines having a weighted average NOx emission level not exceeding x% of limit, in accordance with the provisions of Pt D, Ch 2, Sec 11.

### 11.15.8 OWS

The additional class notation **OWS-x ppm** applies to vessels fitted with an oily water separator (OWS) capable of producing effluents having a hydrocarbon content not exceeding x ppm, in accordance with the provisions of Pt D, Ch 2, Sec 11.

### 11.15.9 SOX-x%

The additional class notation **SOX-x%** applies to vessels using fuel oils complying with the criteria given in Pt D, Ch 2, Sec 11.

## 12 Navigation and operating area notations

### 12.1 General

**12.1.1** The assignment of these notations does not absolve the Owner or Other Interested Party from compliance with any international and national Regulations established by the Administrations for a vessel 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].

**12.1.2** Where it is envisaged for the vessel to proceed temporarily in conditions other than defined by the assigned navigation notations or operating area notations, e.g. for transit, appropriate drawing review and occasional survey are to be carried out to check that the intended voyage and the vessel's specific condition comply with the Society's Rules.

## 12.2 Range of navigation

**12.2.1** The range of navigation which the Society assigns upon examination of plans or any other equivalent procedure does not entirely determine the actual capability of a vessel to operate in a specific area; this capability being dependent on other factors which are not considered in the Rules. Consequently, no comparison should be made between a range of navigation assigned by the Society and a navigation zone or category as defined by national or international Regulations.

### 12.2.2 IN

The range of navigation **IN** is assigned to a vessel having a structure with scantlings deemed suitable to navigate on stretches of water where there may be strong currents and a certain roughness of the surface on which a maximum wave height of 0,6 m can develop.

Note 1: **IN** corresponds to **IN(0,6)** in the previous Rules version.

### 12.2.3 IN( $x \leq 2$ )

The range of navigation **IN( $x \leq 2$ )** is assigned to a vessel having structure scantlings and other design features deemed suitable to navigate on stretches of water on which a significant wave height  $x$ , not exceeding 2,0 m, can develop, e.g. estuaries, lakes and restricted maritime stretches of water.

The definition of significant wave height is given in Ch 1, Sec 1, [1.2.10].

## 12.3 Estuary plus

**12.3.1** The range of navigation notation will be completed by the navigation notation **Estuary plus**, if:

- the significant wave height exceeds 1,2 m, or
- the vessel is operated on restricted maritime stretches of water, or
- the vessel is operated on large lakes.

Vessels assigned with the notation **Estuary plus** shall comply with Pt D, Ch 2, Sec 12.

**12.3.2** The navigation notation **Estuary plus** will be completed by the operating area notation as defined in [12.4].

**12.3.3** In the class designation, the navigation notation **Estuary plus** will be indicated after the range of navigation.

## 12.4 Operating area

**12.4.1** The operating area notation expresses the specified area where considered vessel is intended to operate. The operating area notation will be assigned to:

- vessels with the notation **Estuary plus**, or
- vessels operating within specific restrictions which are different from normal navigation conditions, or
- vessels operating in defined river systems or waters only.

**12.4.2** In the class designation, the operating area notation will be indicated after the navigation notation **Estuary plus** if assigned, or after the range of navigation notation.

**12.4.3** The operating area will be completed with:

- the indication of the wind force on Beaufort scale considered for the classification if the navigation notation **Estuary plus** is assigned
- eventual limitations or restrictions in other cases (e.g. current speed, etc.)

Example:

**Belgian coast / operating between the Western Scheldt and the Zeebrugge harbour / within 5 NM from shore / Beaufort 7**

## 13 Other notations

### 13.1 General

**13.1.1** When the vessel's hull or essential parts have been constructed in accordance with a design, for which sufficient experience is not available, the Society may also define other notations by means of provisional requirements and guidelines, which may then be published in the form of tentative rules. The Society will decide at what intervals the required periodical surveys will have to be carried out.

**13.1.2** Procedures as developed by IMO such as the international convention on load lines used to be noted ILLC 66 and other Codes for seagoing ships may be adopted, as far as practicable, if no equivalent Regulations are available.



Part A

**Classification and Surveys**

Chapter 2

**CLASSIFICATION**

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<b>SECTION 1</b>	<b>ASSIGNMENT OF CLASS</b>
<b>SECTION 2</b>	<b>MAINTENANCE OF CLASS</b>
<b>SECTION 3</b>	<b>SUSPENSION AND WITHDRAWAL OF CLASS</b>
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<b>SECTION 5</b>	<b>HULL SURVEY FOR NEW CONSTRUCTION - STEEL AND ALUMINIUM ALLOYS</b>
<b>APPENDIX 1</b>	<b>REQUIREMENTS FOR THICKNESS MEASUREMENTS</b>



# SECTION 1

# ASSIGNMENT OF CLASS

## 1 General

### 1.1

**1.1.1** Class is assigned to a vessel 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, [1.4.2].

This may be achieved through:

- the completion of a new building, during which a survey has been performed
- a survey when the vessel changes class between classification Societies, or
- a specific admission to class survey, in cases where a vessel is not classed at all.

## 2 New building procedure

### 2.1 Vessel surveyed by the Society during construction

**2.1.1** When a vessel 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 vessel, taking into account the provisions of Ch 1, Sec 1, [2.1], Ch 1, Sec 1, [2.2] and Ch 1, Sec 1, [2.3].

**2.1.2** The Society:

- reviews the plans and documentation submitted as required by the Rules, see Ch 2, Sec 4
- proceeds, if required, with the appraisal of the design of materials and equipment used in the construction of the vessel 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 reviewed drawings
- attends tests and trials provided for in the Rules
- assigns the classification notations, refer to Ch 1, Sec 2.

**2.1.3** The Society defines which materials and equipment used for the construction of vessels built under survey are, as a rule, subject to appraisal of their design and to inspection at works, and according to which particulars (a summary of these requirements is given, for easy reference, in NR544 Equipment and Materials Certification for the Classification of Inland Navigation Vessels).

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

- conduct an overall examination of the parts of the vessel 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.

### 2.2 Vessels built under supervision of another classification Society

**2.2.1** In this case, vessels will be admitted to the Society's class upon satisfactory surveys and verification of documentation. For the extent and scope of the surveys to be carried out and the list of documentation to be submitted by the Owner or Other Interested Party, reference is to be made to Ch 2, Sec 4.

Supervision of construction tests and trials to be carried out are based on the completion progress of the vessel and the updated current construction/class status as provided by the previous classification Society.

Admission to class may be conditioned by statutory Regulations.

**2.2.2** Other vessels may be accepted on a case by case basis.

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

**2.3.1** As a general rule, all materials, machinery, boilers, auxiliary installations, equipment, items, etc. which are covered by the class and used or fitted on board vessels surveyed by the Society during construction are to be new and 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.

**2.3.2** The requirements for the selection of materials to be used in the construction of the various parts of a vessel, the characteristics of products to be used for such parts and the checks required for their acceptance are to be as stated in other Parts of the Rules or as specified on reviewed plans. In particular, the testing of products manufactured according to quality assurance procedures approved by the Society or judged equivalent by the Society and the approval of such procedures are governed by the requirements of the Society.

### 2.4 Defects or deficiencies and their repairs

**2.4.1** 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.

**2.4.2** 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.

**2.4.3** It is the duty of the Owner, Other Interested Party and Building Yard to notify the Society of any defects or deficiencies noted during the construction of the vessel and/or of any item not complying with the applicable requirements or in any case unsatisfactory.

**2.4.4** Proposals regarding remedial actions intended to be adopted to eliminate such defects or deficiencies are to be submitted to the Society and, if accepted, carried out to the Surveyor's satisfaction.

## **2.5 Equivalence of rule testing under certain conditions**

**2.5.1** Notwithstanding the provisions of [2.3], 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.

## **3 Vessels classed after construction**

### **3.1 General**

**3.1.1** When an Owner applies to the Society for a vessel already in service to be admitted to class, the order will be processed differently depending on whether the vessel is:

- classed with another Society, or
- not classed at all.

**3.1.2** Where appropriate within reasonable limits, a proven service record of satisfactory performance during a period of adequate length may be used as a criterion of equivalence. Special consideration will be given to vessels of recent construction.

**3.1.3** For installations or equipment covered by additional class notations, the Society will determine the documentation to be submitted.

**3.1.4** In addition, the Society may base its judgement upon documentation such as certificates issued or accepted by the former classification Society, if any, and statutory certificates issued by the flag Administration or by a recognised organisation on its behalf; moreover, other documents and/or plans may be specifically required to be supplied to the Society in individual cases.

### **3.2 Vessels classed with another Society**

**3.2.1** In this case, vessels will be admitted to the Society's class upon satisfactory surveys and verification of documentation. For the extent and scope of the surveys to be carried out and the list of documentation to be submitted by the Owner or Other Interested Party, reference is to be made to Ch 2, Sec 4, [2].

**3.2.2** Surveys to be carried out are based on the age of the vessel and the updated current class status of the previous classification Society, as provided by the Owner.

## **3.3 Not classed vessels**

**3.3.1** In this case, the class of the vessel will be assigned upon a preliminary review of the documentation listed in Ch 2, Sec 4, [2.1.5] and subsequent satisfactory completion of the surveys.

**3.3.2** The extent and scope of the admission to class survey are to be not less than those required at the class renewal survey of a vessel of the same age and type; in addition, all other periodical surveys should be performed together with those inspections which are linked to specific service notations and/or additional class notations and/or special installations the vessel is provided with.

## **4 Date of classification - Definitions**

### **4.1 Date of build**

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

If modifications are carried out, the date of build remains assigned to the vessel. Where a complete replacement or addition of a major portion of the vessel (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 vessel is to be indicated on the classification certificate and in the Register, where it has been agreed that the newer structure shall be on a different survey cycle
- survey requirements are based on the date of build associated with each major portion of the vessel.

### **4.2 Date of classification for new buildings**

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

### **4.3 Date of classification for existing vessels**

**4.3.1** In principle, for existing vessels, the date of classification is the date of completion of the admission to class survey.

## **5 Reassignment of class**

### **5.1 General**

**5.1.1** At the request of the Owner, a vessel 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.



**5.1.2** Where, after suspension or withdrawal of class, the repairs required by the Society have been carried out and the vessel has been subjected to a survey for readmission to class, the original class may be reassigned starting with a new period of class. Such surveys are generally to be carried out in accordance with the requirements for a class renewal survey.

**5.1.3** Depending on the duration of the interruption period, parts of the machinery installation may have to be dismantled and river trials or function tests have to be carried out in excess of the requirements mentioned above. For parts and installations replaced or added in the meantime, the scope of examinations and tests to be carried out for admission to class shall be as for newbuildings.

# SECTION 2

## MAINTENANCE OF CLASS

### 1 General principles of surveys

#### 1.1 Survey types

**1.1.1** Classed vessels are submitted to surveys for the maintenance of class. These surveys include the class renewal survey, intermediate and eventual annual survey, bottom survey (either survey in dry condition or in-water survey), propeller shaft survey, pressure equipment 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.

**1.1.2** The different types of periodical surveys are summarized in Tab 1. The intervals at which the periodical surveys are carried out are given in the items referred to in the second column of Tab 1. The relevant extent and scope are given in Ch 3, Sec 1 to Ch 3, Sec 9 for all vessels.

Where there are no specific survey requirements for additional class notations assigned to a vessel, equipment and/or arrangements related to these additional class notations are to be examined, as applicable, to the Surveyor's satisfaction at each class intermediate or 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 service notations and additional class notations are not complied with, the service notation and/or the additional class notations as appropriate will be suspended and/or withdrawn in accordance with the applicable rule requirements given in Ch 2, Sec 3.

Note 1: It is understood that the 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 specified otherwise, any survey other than bottom survey and propeller shaft 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.

**1.1.4** The periodical surveys listed in the following are to be conducted for the hull, machinery including electrical installations as well as special equipment and installations included in the classification of the vessel (see Tab 1).

If, for some obvious reason, e.g. a temporary out-of-service condition of certain equipment, parts included in the classification cannot be surveyed, this will be noted in the survey statement/certificate.

**1.1.5** Where flag state Regulations are applicable which impose inspection intervals deviating from the class related intervals, the intervals will be harmonized in the individual case to reduce the number of single surveys, where possible.

#### 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.

When a survey becomes due, the requirements of [1.2.2] to [1.2.4] apply.

##### 1.2.2 Class renewal survey

In the case of a class renewal survey, the Society may grant an extension provided there is documented agreement to such an extension and class extension surveys are performed prior to the expiry date of the class certificate, and the Society is satisfied that there is justification for such an extension.

##### 1.2.3 Annual and intermediate surveys

In the case of annual and intermediate surveys, as a rule, no postponement is granted. The surveys are to be completed within their prescribed windows.

##### 1.2.4 All other periodical surveys and recommendations

In the case of all other periodical surveys and conditions of class, extension or postponement may be granted, provided there is sufficient technical justification for such an extension or postponement.

#### 1.3 Extension of scope of survey

**1.3.1** The Society may extend the scope of the provisions in Ch 3, Sec 1 to Ch 3, Sec 9, which set forth the technical requirements for surveys, whenever and so far as considered necessary, or modify them in the case of special vessels or systems.

**1.3.2** The extent of any survey also depends upon the condition of the vessel and its equipment. Should the Surveyor have serious doubts as to the maintenance or condition of the vessel 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.

Table 1 : List of periodical surveys

Type of survey	Reference in this Section	Reference to scope of survey
Class renewal - hull	[4]	Ch 3, Sec 3, Ch 3, Sec 7 and Ch 3, Sec 8 (1)
Class renewal - machinery	[4]	Ch 3, Sec 3, Ch 3, Sec 7 and Ch 3, Sec 8 (1)
Class renewal - additional class notations		Ch 3, Sec 9 (2)
Annual	[5.2]	
Annual - additional class notations		Ch 3, Sec 9 (2)
Intermediate - hull	[5.3]	Ch 3, Sec 2, Ch 3, Sec 7 and Ch 3, Sec 8 (1)
Intermediate - machinery	[5.3]	Ch 3, Sec 2, Ch 3, Sec 7 and Ch 3, Sec 8 (1)
Intermediate - additional class notations		Ch 3, Sec 9 (2)
Bottom - dry condition	[5.4]	Ch 3, Sec 5, [2]
Bottom - in water	[5.4]	Ch 3, Sec 5, [3]
Propeller shaft - complete	[5.5]	Ch 3, Sec 4, [1]
Propeller shaft - modified	[5.5]	Ch 3, Sec 4, [2]
Pressure equipment	[5.6]	Ch 3, Sec 6
(1) As applicable, according to the service notation and additional service feature assigned to the vessel.		
(2) As applicable, according to the additional class notations assigned to the vessel.		

1.4 General procedure of survey

1.4.1 The general procedure of survey consists in:

- an overall examination of the parts of the vessel covered by the rule requirements
- checking, at random, of 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 vessel's class, remedial measures may be required to be implemented before the vessel continues in service.

1.4.3 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.

2 Definitions and procedures related to surveys

2.1 Definitions

2.1.1 Period of class

Period of class means the period starting either from the date of the initial classification or from the credited date of the last class renewal survey, and expiring at the limit date assigned for the next class renewal survey.

2.1.2 Anniversary date

Anniversary date means the day of the month of each year in the period of class which corresponds to the expiry date of the period of class.

2.1.3 Survey time window

Survey time window, or more simply window, means the fixed period during which annual and intermediate surveys are to be carried out.

2.1.4 Overdue surveys

Each periodical survey is assigned a limit date specified by the relevant requirements of the Rules (end of survey interval or end date of window) by which it is to be completed.

A survey becomes overdue when it has not been completed by its limit date.

2.1.5 Conditions of class

A defect and/or deficiency to be dealt with in order to maintain class, within a specific period of time, is indicated as a condition of class. A condition of class is pending until it is cleared, through a survey by the attending Surveyor or upon evidence that requirements have been completed, to the satisfaction of the Society. Where it is not cleared by its limit date, the condition of class is overdue.

Conditions of class may be imposed in other cases, which, in the Society's opinion, require specific consideration.

2.1.6 Memoranda

Those defects and/or deficiencies which do not affect the maintenance of class and which may therefore be cleared at the Owner's convenience and any other information deemed noteworthy for the Society's convenience are indicated as memoranda. Memoranda are not to be regarded as condition of class.

2.2 Terminology related to hull survey

2.2.1 Ballast tank

A ballast tank is a tank that is being primarily used for water ballast. A tank which is used for both cargo and water bal-

last will be treated as a ballast tank when substantial corrosion has been found in such tank, see [2.2.7].

## 2.2.2 Spaces

Spaces are separate compartments such as holds and tanks.

## 2.2.3 Overall survey

An overall survey is a survey intended to report on the overall condition of the hull structure and determine the extent of additional close-up surveys.

## 2.2.4 Close-up survey

A close-up survey is a survey where the details of structural components are within the close visual inspection range of the Surveyor, i.e. normally within reach of hand.

## 2.2.5 Transverse section

A transverse section includes all longitudinal members contributing to longitudinal hull girder strength, such as plating, longitudinals and girders at the deck, side shell, bottom, inner bottom, longitudinal bulkheads, and plating in side tanks, as well as relevant longitudinals, as applicable for the different vessels. For a transversely framed vessel, a transverse section includes adjacent frames and their end connections in way of transverse sections.

## 2.2.6 Representative tanks or spaces

Representative tanks or spaces are those which are expected to reflect the condition of other tanks or spaces of similar type and service and with similar corrosion protection systems. When selecting representative tanks or spaces, account should be taken of the service and repair history on board and identifiable suspect areas.

## 2.2.7 Substantial corrosion

Substantial corrosion is an extent of corrosion such that assessment of the corrosion pattern indicates wastage in excess of 75% of allowable margins, but within acceptable limits.

## 2.2.8 Pitting corrosion

Pitting corrosion is defined as scattered corrosion spots/ areas with local material reductions which are greater than the general corrosion in the surrounding area.

## 2.2.9 Coating condition

Coating condition is defined as follows:

- good: condition with only minor spot rusting
- fair: condition with local breakdown at edges of stiffeners and weld connections and/or light rusting over 20% or more of areas under consideration, but less than as defined for poor condition
- poor: condition with general breakdown of coating over 20% or more of areas or hard scale at 10% or more of areas under consideration.

## 2.2.10 Critical structural area

Critical structural areas are locations which have been identified from calculations to require monitoring or from the service history of the subject vessel or from similar vessels or sister vessels, if applicable, to be sensitive to cracking, buckling or corrosion which could impair the structural integrity of the vessel.

## 2.2.11 Suspect areas

Suspect areas are locations showing substantial corrosion and/or considered by the Surveyor to be prone to rapid wastage.

## 2.2.12 Cargo area for vessels carrying liquid cargo in bulk

The cargo area is that part of the vessel which contains cargo tanks, slop tanks and cargo/ballast pump rooms, cofferdams, ballast tanks and void spaces adjacent to cargo tanks and also deck areas throughout the entire length and breadth of the part of the vessel over the above-mentioned spaces.

## 2.2.13 Cargo area for dry cargo vessels

The cargo area is that part of the vessel which includes all cargo holds and adjacent areas including fuel tanks, cofferdams, ballast tanks and void spaces.

## 2.2.14 Prompt and thorough repair

A "Prompt and thorough repair" is a permanent repair completed at the time of survey to the satisfaction of the Surveyor, therein removing the need for the imposition of any associated condition of class. See also [2.2.11].

## 2.3 Procedures for thickness measurements

**2.3.1** When required as per the scope of surveys, thickness measurements are normally to be carried out under the responsibility of the Owner, and in the presence of the Surveyor, by a service supplier independent from the Owner.

Thickness measurements are to be carried out in compliance with Ch 2, App 1.

**2.3.2** For all vessels, the following applies:

- thickness measurements required in the context of surveys of hull structure are to be witnessed by a Surveyor. This requires the Surveyor to be on board while the gaugings are taken, enabling him at any time to intervene and to control the process
- prior to commencement of the survey, a meeting is to be held between the attending surveyor(s), the Owner representative(s) in attendance and the thickness measurement firm's representative(s) so as to ensure the safe and efficient execution of the surveys and thickness measurements to be carried out on board.

**2.3.3** In any kind of survey, i.e. class renewal, intermediate, annual or other surveys having the same scope, thickness measurements of structures in areas where close-up surveys are required, are to be carried out simultaneously with close-up surveys.

**2.3.4** Thickness measurement is normally to be carried out by means of ultrasonic test equipment. The accuracy of the equipment is to be proven to the Surveyor as required. The thickness measurements are to be carried out by a company authorised by the Society.

The Society reserves the right to limit the scope of authorisation of the Company.

Note 1: Rule Note NR533 Approval of Service Suppliers gives details about the authorisation.

## 2.4 Thickness measurements acceptance criteria

### 2.4.1 Hull structural elements

Acceptance criteria applicable to hull structural elements are given in Ch 2, App 1.

### 2.4.2 Anchor equipment

Maximum permissible reduction of the mean diameter of chain links: 12%.

Maximum permissible reduction in weight of anchors: 10%.

### 2.4.3 Piping system

The maximum permissible large-surface reduction of piping thickness shall not exceed the values of corrosion allowance defined in Pt C, Ch 1, Sec 10, [2.4.4].

## 2.5 Agreement of firms for in-water survey

**2.5.1** The in-water surveys referred to in the Rules are to be carried out by a certified company accepted by the Society.

Note 1: Rule Note NR533 Approval of Service Suppliers gives details about the certification.

## 2.6 Preparations and conditions for surveys

**2.6.1** Surveys required for maintenance of class, e.g. in the case of repairs of, or modifications to any parts subject to classification, are to be agreed with the Society's head office or the local Society representations in due time, so that the measures envisaged may be assessed and supervised as required.

**2.6.2** The Surveyors are to be given access at any time to the vessel and/or to the workshops, so that they may perform their duties. The Owner is to provide the necessary facilities for the safe execution of the surveys.

For their internal examination, tanks and spaces are to be safe for access, i.e. cleared, cleaned, gas freed, ventilated, etc.

For survey of the vessel's internal structure including close up survey, means are to be provided to enable the Surveyor to examine the structure in a safe and practical way.

Tanks and spaces are to be sufficiently illuminated, clean and free from water, scale, dirt, oil residues, etc. to reveal significant corrosion, deformation, fractures, damage or other structural deterioration.

Adapted rescue and safety equipment is to be available.

In this connection all areas to be surveyed have to be cleared, cleaned and are to be made gas-free, as deemed necessary by the Surveyor.

The class certificate and other documents related to classification and carried on board are to be made available to the Surveyor.

**2.6.3** When examination of solid ballast spaces are required, the solid ballast is to be partially removed for examination of the condition of the structure in way. Should doubts arise, the Surveyor may require more extensive removal of solid ballast.

**2.6.4** The Society will inform the Owner about the status of class, indicating the last recognized surveys and the next due dates. However in principle it remains the responsibility of the Owner to comply with the class conditions and to observe the dates for the prescribed surveys.

**2.6.5** Upon request the Society may agree to testing, monitoring and analysis procedures as a supplement to or equivalent substitute for conventional survey methods.

**2.6.6** The Society reserves the right to extend the scope of a survey and/or inspection for given reasons, e.g. in case of suspected damage or other negative experience gained, possibly on board of similar vessels or vessels with similar components. Likewise, the Society reserves the right to demand surveys to be held between the due dates of regular periodical surveys.

## 2.7 Equipment for surveys

**2.7.1** One or more of the following fracture detection procedures may be required if deemed necessary by the Surveyor:

- radiographic equipment
- ultrasonic equipment
- magnetic particle equipment
- dye penetrant.

## 2.8 Selection of Surveyors

**2.8.1** On principle, the acting Surveyors will be chosen by the Society. However, the Owner is free to have any findings of surveys and decisions resulting there from, which deem to be doubtful, checked by other Society's Surveyors upon special request to head office.

## 2.9 External service suppliers

**2.9.1** Personnel or firms engaged in services affecting classification and statutory work are subject to approval by the Society.

The inspection, measuring and test equipment used in workshops, Building Yards and on board vessels, which may form the basis for Surveyor's decisions affecting classification or statutory work, shall be appropriate for the services to be performed. The firms shall individually identify and calibrate each unit of such equipment to a recognized national or international standard.

## 2.10 Repairs

**2.10.1** Any damage in association with wastage over the allowable limits (including buckling, grooving, detachment or fracture), or extensive areas of wastage over the allowable limits, which affects or, in the opinion of the Surveyor, will affect the vessel's structural, watertight or weathertight integrity, is to be promptly and thoroughly (see [2.2.14]) repaired.

Areas to be considered include, as applicable for the different vessel types:

- side structure and side plating; side shell frames, their end attachments and adjacent shell plating; inner side structure and inner side plating

- deck structure and deck plating
- bottom structure and bottom plating; inner bottom structure and inner bottom plating
- longitudinal bulkheads structure and longitudinal bulkheads plating, where fitted
- watertight or oiltight bulkheads structure and plating
- hatch covers or hatch coamings, where fitted
- weld connection between air pipes and deck plating
- air pipe heads installed on the exposed decks
- ventilators, including closing devices, if any; bunker and vent piping systems.

**2.10.2** For locations where adequate repair facilities are not available, consideration may be given to allow the vessel to proceed directly to a repair facility. This may require discharging the cargo and/or temporary repairs for the intended voyage.

**2.10.3** Additionally, when a survey results in the identification of structural defects or corrosion, either of which, in the opinion of the Surveyor, will impair the vessel's fitness for continued service, remedial measures are to be implemented before the vessel continues in service.

**2.10.4** Where the damage found on structure mentioned in [2.10.1] is isolated and of a localised nature which does not affect the vessel's structural integrity, consideration may be given by the Surveyor to allow an appropriate temporary repair to restore watertight or weathertight integrity and impose a condition of class in accordance with the Rules, with a specific time limit.

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

#### **3.1 Issue of Certificate of Classification**

**3.1.1** A Certificate of Classification, bearing the class notations assigned to the vessel and an expiry date, is issued to any classed vessel.

**3.1.2** 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.

The period of validity for the Provisional Certificate of Classification is not to exceed 6 months from the date of issuance.

**3.1.3** The Certificate of Classification is to be made available to the Society's Surveyors upon request.

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

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

**3.2.2** 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, [1.4.4].

**3.2.3** 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 vessel at the time.

This statement is issued on the assumption that the Owner has complied with the Rules, in particular with [6].

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 Ch 2, Sec 3, [2], 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.

**3.2.4** According to the same conditions as in [3.2.3], a statement declaring that the class is maintained "clean and free from condition of class" may be issued by the Society when there is no pending condition of class at that date.

**3.2.5** 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.

#### **3.3 Endorsement of Certificate of Classification**

##### **3.3.1 Text of endorsement**

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

##### **3.3.2 Possible modifications to endorsements**

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

#### **3.4 Status of surveys and conditions of class**

**3.4.1** Information given in the Certificate of Classification, vessel survey status, Rules and other vessel specific documents made available to the Owner, enables the Owner to identify the status of surveys and conditions of class.

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

## 4 Class renewal survey

### 4.1 General principles

**4.1.1** Class renewal survey - also called special survey - is to be carried out at the intervals **p** indicated by the character of class period.

**4.1.2** In principle elements covered by the classification and submitted to a class renewal survey on a date different from the date of the periodical class renewal survey of the vessel, are to be re-examined **p** years after the previous survey.

**4.1.3** Upon request, extension of the class period may be granted by the Society, see [6.2].

**4.1.4** Class renewals for hull are numbered in the sequence I, II, III, etc., depending upon the age of the vessel, in years, at time of class renewal survey:

I	: Age ≤ 5
II	: 5 < Age ≤ 10
III	: 10 < Age ≤ 15
IV	: 15 < Age

Regarding their scope, see Ch 3, Sec 3, [2].

**4.1.5** A class renewal survey may be carried out in several parts. The survey may be commenced at the last year during the class period. Considering [4.1.3], the total survey period of the class renewal survey must not exceed 12 months, except under special circumstances and by prior agreement from the Society.

**4.1.6** The new period of class will commence:

- with the following day, after which the previous class expires, provided that the class renewal survey has been completed within the 3 months preceding that date. In case of extension of validity of class certificate, the period of class will commence the following day after which the last classification certificate has expired.
- with the date on which the class renewal survey has been completed, if this is the case more than 3 months before expiry of the previous class.

**4.1.7** The class renewal survey is in principle to be held, in addition to the inspections and checks to be carried out on occasion of the intermediate surveys, when the vessel is in dry dock or on a slipway unless a dry docking survey has already been carried out within the admissible period, see [4.1.5] and Ch 3, Sec 5.

## 5 Other periodical surveys

### 5.1 General

**5.1.1** The different types of periodical surveys are summarised in Tab 1.

### 5.2 Annual surveys

**5.2.1** Where required, annual surveys are to be carried out within three months before or after each anniversary date.

**5.2.2** The Society may require a vessel to be submitted to an annual survey, depending on:

- its service notation
- its range of navigation and frequency of operations in restricted maritime stretches of water or lakes, and
- its age.

As a rule, annual survey is required when the vessel is granted with a range of navigation **IN(1,2 < x ≤ 2)** or operated more than 40% of the time in salt waters.

### 5.3 Intermediate surveys

**5.3.1** The intermediate survey falls due at half the nominal time interval between two class renewal Surveys, i.e. every **p/2** years.

The survey has to be carried out within a time interval of 6 months before to 6 months after the date corresponding to **p/2**.

### 5.4 Bottom survey

**5.4.1** Bottom survey means the examination of the outside of the vessel's bottom and related items. This examination may be carried out with the vessel either 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.

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

### 5.5 Survey of propeller shafts, propellers and other propulsion systems

#### 5.5.1 General

For maintenance of class, periodical surveys and tests of propeller shafts, propellers as well as other propulsion systems of the vessels are to be carried out.

### 5.5.2 Propeller shaft normal survey

The propeller shaft normal survey is a complete propeller shaft survey whose scope is given in Ch 3, Sec 4, [1].

Where the propeller shaft is:

- fitted with continuous liners, or
- protected against corrosion, or
- mechanically grease-lubricated, or
- fitted with approved oil sealing glands, or
- made of corrosion-resistant material, or
- of increased corrosion allowance to the Society satisfaction,

the interval of survey is to be **p** years, possibly in connection with the dry dock survey, in any of the following three cases:

- 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, 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
- the propeller is fitted keyless to the shaft taper, the shaft is protected from river 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
- 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. Non-destructive examination of the fillet radius of the aft propeller shaft flange may be required if the visual examination of the area is not satisfactory.

Propeller shafts and tube shafts are to be sufficiently drawn to permit entire examination.

For oil lubricated arrangement, the shaft need not be drawn at the occasion of the normal survey, provided that all exposed areas of the after shaft area are examined by an approved crack-detection method and:

- the clearances and wear down of the bearings
- the records of lubricating oil analysis, oil consumption
- the visible shaft areas,

are found satisfactory.

Periodicity of propeller shaft normal survey is summarized in Fig 1.

### 5.5.3 Propeller shaft modified survey

A modified survey of the propeller shaft is an alternate way of examination whose scope is given in Ch 3, Sec 4, [2]. It

may be accepted for propeller shafts described in [5.5.2] provided that:

- they are fitted with oil lubricated bearings and approved oil sealing glands, or they are mechanically grease-lubricated
- 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 at interval of **p** years from the last normal survey with a window period of plus or minus six months.

The next normal survey is to be carried out 2 **p** years from the last normal survey.

Periodicity of propeller shaft modified survey is summarized in Fig 1.

### 5.5.4 Propellers

During normal or modified surveys of the propeller shafts, the propellers as well as the remote and local control gear of controllable pitch propellers are to be surveyed at the Surveyor's discretion, depending on the findings.

### 5.5.5 Other propulsion systems

Other propulsion systems such as rudder and steering propellers, pod propulsion systems, pump jet units, etc., are submitted to periodical surveys at intervals not exceeding **p** years.

## 5.6 Pressure equipment survey

### 5.6.1 Boiler survey

There are to be two internal examinations of boilers in each period of class of five years.

In all cases, the interval between any two such examinations is not to exceed 36 months.

### 5.6.2 Thermal oil heater survey

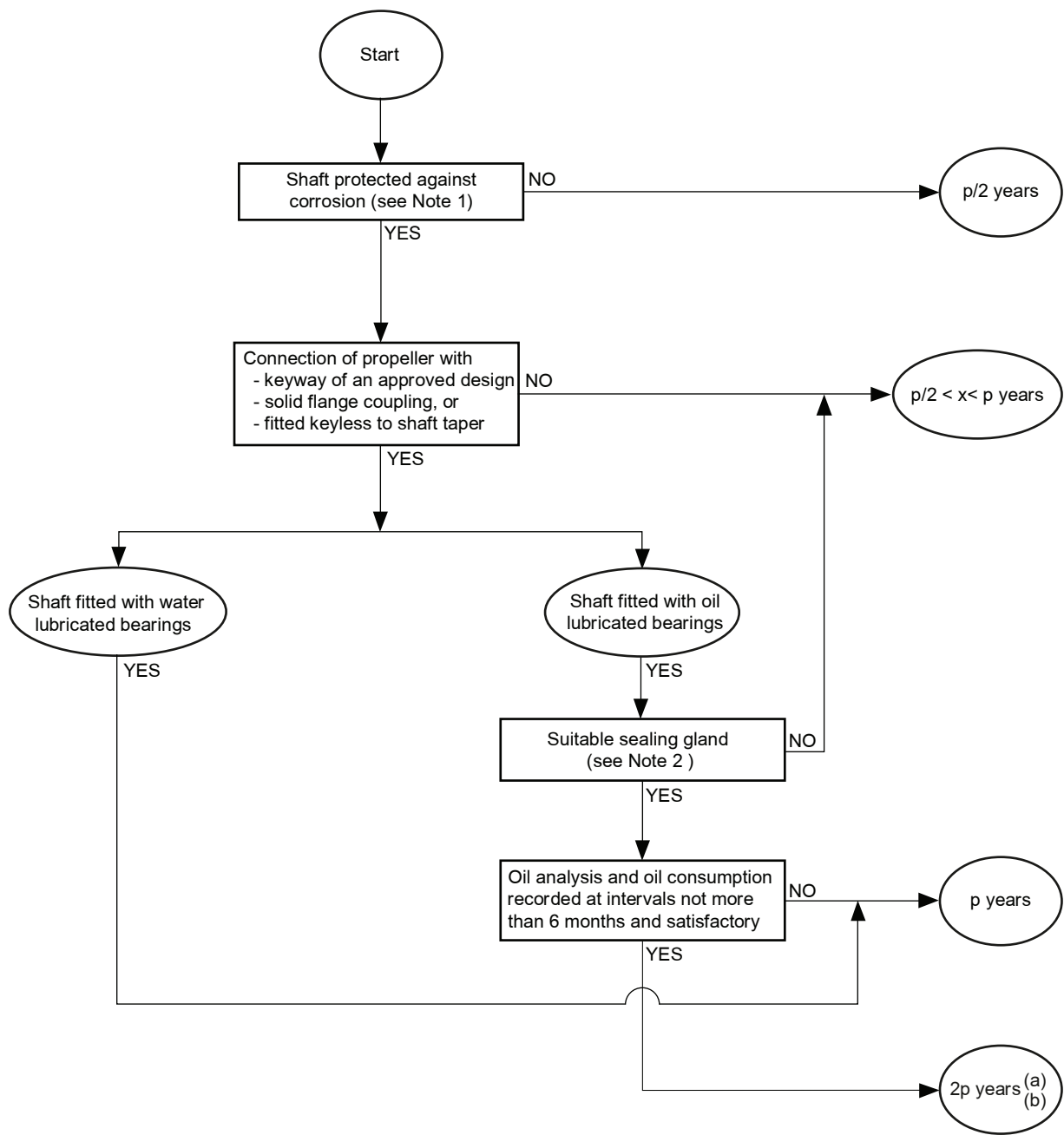
There is to be one internal examination of thermal oil heaters in each period of class of five years.

## 5.7 Links between anniversary dates and intermediate surveys and class renewal surveys

**5.7.1** The link between the anniversary dates, the class renewal survey (when carried out according to the normal system), and the intermediate surveys is given in Fig 2, considering class period **p** = 5.



Figure 1 : Periodicity of propeller shaft survey

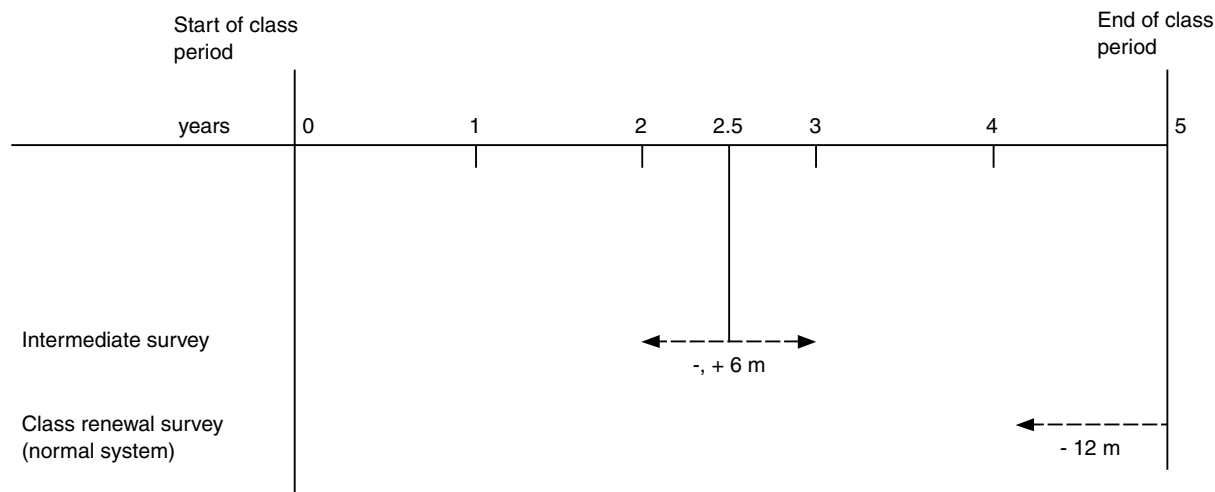


(a): with shaft withdrawn, subject to modified survey at p years plus or minus 6 months.  
(b): the periodicity cannot exceed the maximum recommended by the designer and manufacturer of the propeller shaft and bearing system.  
Note 1: Shafts protected against corrosion are those:

- 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.

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



6 Occasional surveys

6.1 General

6.1.1 An occasional survey is any survey which is not a periodical survey. The survey may be defined as an occasional survey of hull, machinery, boilers, refrigerating plants, etc., depending on the part of the vessel concerned. Where defects are found, the Surveyor may extend the scope of the survey as deemed necessary.

6.1.2 Occasional surveys are carried out at the time of, for example:

- updating of classification documents, e.g. change of the Owner, name of the vessel, flag
- damage or suspected damage
- repair or replacement work
- alterations or conversion
- quality system audits
- postponement of surveys or of conditions of class.

6.2 Class extension surveys

6.2.1 On Owner’s special request and following surveys of hull and machinery including shaft arrangement afloat, the Society may extend the class by no more than 12 months in total, provided that the surveys in the scope of an intermediate survey at least, show that hull and machinery including electrical installations are in unobjectionable condition.

The class extension surveys are to be performed within one month before of the certificate of classification.

6.3 Damage and repair surveys

6.3.1 Damage and repair surveys fall due whenever the vessel's hull and machinery, including electrical installations, as well as special equipment and installations covered by the classification have suffered a damage which might affect validity of class, or if damage may be assumed to have occurred as a consequence of an average or some other unusual event, see also [10.1.2].

6.3.2 Where damage has occurred to the vessel's hull, machinery including electrical installations or special equipment and installations, the automatic/remote-control systems, etc., the damaged parts are to be made accessible for inspection in such a way that the kind and extent of the damage can be thoroughly examined and ascertained, see also [10.1.2].

In the case of grounding, dry docking, see Ch 3, Sec 5, [2] or, alternatively, in-water survey, see Ch 3, Sec 5, [3], is required.

6.3.3 The repair measures are to be agreed with the Surveyor such as to render possible confirmation of the class without reservations upon completion of the repairs. In general, a class confirmation with conditions of class, e.g. in the case of a preliminary repair (“emergency repair”), requires to be approved by the Society’s head office or Society’s representative.

6.3.4 Surveys conducted in the course of repairs are to be based on the latest experience and instructions by the Society. In exceptional cases advice is to be obtained from the Society’s head office or Society’s representative, in particular where doubts exist as to the cause of damage.

6.3.5 For older vessels, in the case of repairs and/or replacement of parts subject to classification, as a matter of principle, the construction Rules in force during their period of construction continue to be applicable.

This does not apply in the case of modifications required to the structure in the light of new knowledge gained from damage analyses, with a view to avoiding recurrence of similar damages.

6.3.6 Regarding the materials employed and certificates required, the requirements for newbuildings are applicable. See [10.2].

6.3.7 Regarding corrosion damages or excessive wastage beyond allowable limits that affect the vessel's class, see Ch 2, App 1.

## 6.4 Conversion surveys

**6.4.1** In case of conversion and/or major changes of the vessel's hull, machinery, as well as special equipment and installations with effect to the class designation including notations, the Society's approval is to be requested as in the case of newbuildings and surveys are to be carried out, as described in [10.2].

A new or amended class designation will be assigned, where necessary.

## 6.5 Quality system audits

**6.5.1** The Society reserves the right to require extraordinary surveys to be held independently of any regular surveys. Such surveys may become necessary for examining the vessel's technical condition and are understood to be a part of Society's quality assurance system.

## 6.6 Survey for towage or voyage over sea

**6.6.1** In compliance with the provisions of the General Conditions, a certificate regarding towage or voyage over sea may be issued upon satisfactory survey the scope of which is fixed in each particular case by the Society according to the towing or voyage over sea.

## 7 Surveys in accordance with flag state Regulations

### 7.1 General

**7.1.1** All activities outlined in [7.2] and, where applicable, issuance of relevant certificates/attestations are likewise subject to the respective latest edition of Society's General Conditions.

### 7.2 Society's intervention

**7.2.1** Where surveys are requested by the Owner on account of international conventions and/or of corresponding laws and Regulations of a flag state, the Society will carry them out by order or within the framework of official order, acting on behalf of the Authorities concerned, based on the respective provisions. This includes surveys according to e.g. ADN Regulations, European Directive, etc.

Where possible, such surveys will be carried out simultaneously with the class surveys.

## 8 Surveys relative to classification notations from other Rules of the Society

### 8.1 General

**8.1.1** The surveys requested for granting of classification notations defined in other Rules of the Society have to be performed according to corresponding requirements for maintenance of class.

## 9 Change of ownership

### 9.1

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

- the Society is informed of the change in due time and able to carry out any survey deemed appropriate, and
- the new Owner expressly requests to keep the current class, involving acceptance of the Society's General Conditions and Rules. This request covers inter alia the condition of the vessel when changing ownership.

**9.1.2** The vessel'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 vessel of which the Society has not been advised by the former or, as the case may be, new Owner.

## 10 Validity of class

### 10.1 General

**10.1.1** The class continues to be valid, provided that the hull, machinery as well as special equipment and installations classed are subject to all surveys stipulated, see Part A, Chapter 3 and that any repairs required as a consequence of such a survey are carried out to the satisfaction of the Society.

If some special equipment classed is not subjected to the prescribed surveys or is no longer intended to be carried on board, the notation for that equipment only will be suspended or withdrawn.

**10.1.2** The Society's head office or one of its representations are to be immediately informed about any average, damage or deficiency to the hull, machinery or equipment classed, where these may be of relevance to the vessel's class and safety. A survey will have to be arranged immediately.

If the survey reveals that the vessel's class has been affected, it will be maintained only on condition that the repairs or modifications demanded by the Society are carried out within the period and under the operating conditions specified by the Surveyor. Until full settlement of these demands the class will be restricted.

**10.1.3** Any damage or excessive wastage beyond allowable limits to side shell frames, their end attachments and/or adjacent shell plating, the deck structure and deck plating, the bottom structure and bottom plating, the watertight or oiltight bulkheads and the hatch covers or coamings that affect a vessel's class, is to be permanently repaired immediately.

For locations where adequate repair facilities are not available, consideration may be given to allow a vessel to proceed directly to a Repair Yard. This may require temporary repairs for the intended voyage.

Damages or excessive wastage at the areas noted above and not immediately affecting the vessel's structural or watertight/weathertight integrity may be temporarily repaired for a period to be defined.

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

- immediately report the outcome of this inspection to the Society, and
- ask the Society to perform a survey in order to verify the deficiencies, when related to the class of the vessel.

**10.1.5** Apart from the class certificate, any other documentation of significance for classification, such as:

- reports on surveys previously performed
- maintenance schedules to be observed by vessel owner, as agreed with the Society
- reviewed drawings and other documentation handed out to the vessel owner and containing particulars or instructions of significance in respect of the classification requirements, e.g. use of special steel grades,

is to be kept on board and made available to the Surveyor on request.

**10.1.6** Systems for special use may be exempted from classification. However, any changes in such systems that may affect the safety of operations and hence validity of the vessel's class, including its classified installations, shall be notified to the Society in due course. This applies particularly to cases, where system changes lead to structural conversions or important changes in the machinery and electrical installation.

**10.1.7** The Society provides a notification system to remind the vessel owner of surveys becoming due, or of any other matters of interest or urgency in connection with the classification of the vessel. However, it remains the responsibility of the vessel Owner to comply with the class conditions and to observe the dates for the prescribed surveys.

## 10.2 Repairs, conversions

**10.2.1** Where parts or components are damaged or worn to such an extent that they no longer comply with the class requirements, they are to be repaired or replaced. The damaged parts shall be made accessible for inspection so that the kind and extent of the damage can be thoroughly examined.

During repairs or maintenance work, the Owner has to arrange so that any damage, defects or non-compliance with the rule requirements are reported to the Surveyor during his survey.

**10.2.2** Repairs and conversions of the vessel's hull, machinery as well as special equipment and installations classed have to be carried out under the supervision of the Society to ensure compliance with the Rules and continued validity of class. The repair measures are to be agreed with

the Surveyor such as to render possible confirmation of the class, without reservations and conditions of class, upon completion of the repairs.

Where necessary, documentation is to be submitted to the Society and/or made available to the attending Surveyor.

Generally, a confirmation of class with conditions of class, e.g. in case of temporary repairs, requires to be approved by the Society's head office.

**10.2.3** The areas affected by repairs or conversion shall be treated in the same way as for new buildings. However, experience and technical knowledge gathered since the vessel was built shall be taken into account.

Materials and equipment used for conversions, alterations or repairs are generally to meet the requirements of the Rules for new vessels built under survey; see Ch 2, Sec 4.

**10.2.4** If, following major conversions, new classification notations are assigned so that the class certificate has to be reissued, commencement of a new period of class may be agreed upon.

## 11 Lay-up and recommissioning

### 11.1 General principles

**11.1.1** The period of class of hull and machinery will not be interrupted throughout the lay-up period. This means that periodical and non-periodical surveys will have to be carried out as before; surveys due, for which dry-docking is required, may be postponed until recommissioning.

**11.1.2** Upon expiry of the class, a survey substituting the class renewal survey will have to be performed. When the lay-up survey is applied, this is indicated in the Certificate of Classification and the notation **Laid-up** is entered in the Register.

**11.1.3** A vessel 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 lay-up of the vessel or does not implement the lay-up maintenance program, the vessel'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 Ch 2, Sec 3.

**11.1.4** The lay-up maintenance program provides for a "lay-up survey" to be performed at the beginning of lay-up and subsequent "lay-up condition surveys" which are required to be carried out as long as the vessel remains laid-up. The minimum content of the lay-up maintenance program as well as the scope of these surveys are given in Ch 3, App 1. The other periodical surveys which become overdue during the lay-up period may be postponed until the recommissioning of the vessel.

**11.1.5** Where the vessel has an approved lay-up maintenance program and its period of class expires, the period of class is extended until it is recommissioned, subject to the satisfactory completion of the lay-up condition surveys as described in [11.1.4].

**11.1.6** 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 recommissioning of the vessel and/or the expiry dates of the next periodical surveys of the same type.

**11.1.7** When a vessel is recommissioned, the Owner is to notify the Society and make provisions for the vessel to be submitted to the following surveys:

- an occasional survey prior to recommissioning, the scope of which depends on the duration of the lay-up period

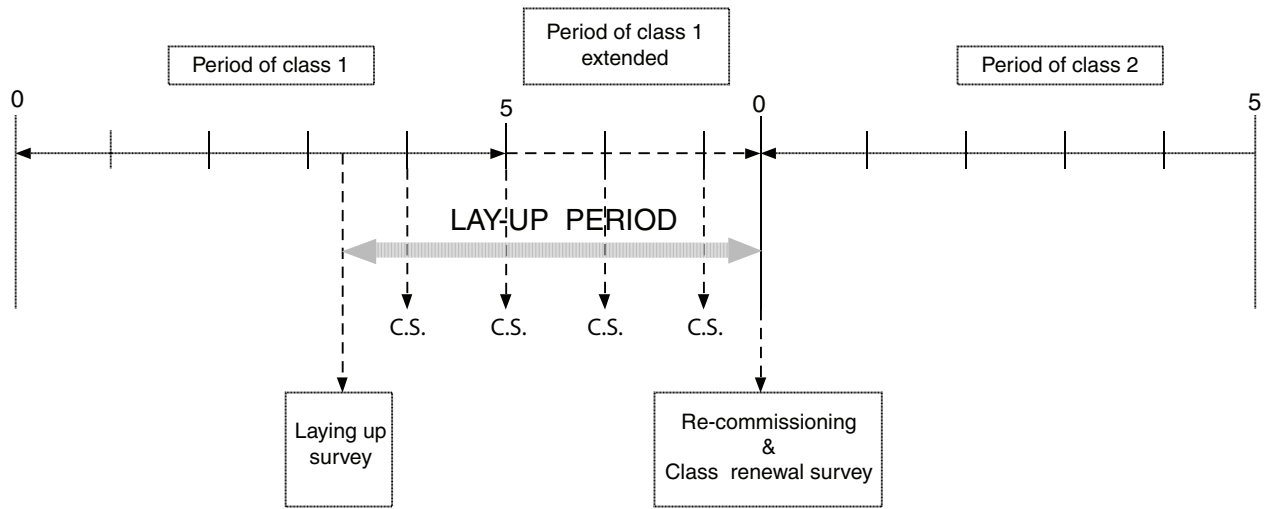
- all periodical surveys which have been postponed in accordance with [11.1.2], taking into account the provisions of [11.1.4].

**11.1.8** Where the previous period of class expired before the recommissioning and was extended as stated in [11.1.5], in addition to the provisions of [11.1.4] a complete class renewal survey is to be carried out prior to recommissioning. Items which have been surveyed in compliance with the class renewal survey requirements during the 12 months preceding the recommissioning may be credited. A new period of class is assigned from the completion of the class renewal survey.

**11.1.9** The principles of intervals or limit dates for surveys to be carried out during the lay-up period, as stated in [11.1.1] to [11.1.7], are summarised in Fig 3. The interval between successive lay-up condition surveys are to be agreed with the Society.

**11.1.10** The scope of the laying-up survey and lay-up condition surveys are described in detail in Ch 3, App 1.

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



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

## SECTION 3

## SUSPENSION AND WITHDRAWAL OF CLASS

### 1 Discontinuance of class

#### 1.1 General

**1.1.1** The class may be discontinued either temporarily or permanently. In the former case it is referred to as “suspension” of class, in the latter case as “withdrawal” of class. In both these cases, the class is invalidated in all respects.

If, for some reason, the class has expired or has been withdrawn or suspended by the Society, this fact may be indicated in the Register.

**1.1.2** If the vessel Owner is not interested in maintenance of class of the vessel or any of its special equipment and installations classed, or if conditions are to be expected under which it will be difficult to maintain class, the Society will have to be informed accordingly. The Society will decide whether the certificate will have to be returned and class suspended or withdrawn. Where only special equipment and installations are concerned, the corresponding notation will be withdrawn and the certificate amended accordingly.

**1.1.3** Class may also be suspended if a vessel is withdrawn from active service for a longer period.

### 2 Suspension of class

#### 2.1 General

**2.1.1** The class may be suspended either automatically or following the decision of the Society. In any event, the vessel will be considered as not retaining its class from the date of suspension until the date when class is reinstated.

**2.1.2** The class may be automatically suspended when one or more of the following circumstances occur:

- when a vessel is not operated in compliance with the rule requirements, such as in cases of services or conditions not covered by the service notation, or trade outside the navigation restrictions for which the class was assigned
- when a vessel proceeds with less freeboard than that assigned, or has the freeboard marks placed on the sides in a position higher than that assigned, or, in cases of vessels where freeboards are not assigned, the draught is greater than that assigned
- when the Owner fails to inform the Society in order to submit the vessel to a survey after defects or damages affecting the class have been detected

- when repairs, alterations or conversions affecting the class are carried out either without requesting the attendance of the Society or not to the satisfaction of the Surveyor.

Suspension of class with respect to the above cases will remain in effect until such time as the cause giving rise to suspension has been removed. Moreover, the Society may require any additional surveys deemed necessary taking into account the condition of the vessel and the cause of the suspension.

**2.1.3** In addition, the class is automatically suspended:

- when the class renewal survey has not been completed by its limit date or within the time granted for the completion of the survey, unless the vessel is under attendance by the Society's Surveyors with a view to completion prior to resuming trading
- when the annual survey, if relevant, or the intermediate survey has not been completed by the end of the corresponding survey time window.

Suspension of class with respect to the above cases will remain in effect until such time as the class is reinstated once the due items and/or surveys have been dealt with.

**2.1.4** In addition to the circumstances for which automatic suspension may apply, the class of a vessel may also be suspended following the decision of the Society:

- when a condition of class is not dealt with within the time limit specified, unless it is postponed before the limit date by agreement with the Society
- when one or more surveys are not held by their limit dates or the dates stipulated by the Society also taking into account any extensions granted in accordance with the provisions of Ch 1, Sec 2, [4]
- when, due to reported defects, the Society considers that a vessel is not entitled to retain its class even on a temporary basis, pending necessary repairs or renewals, etc
- in other circumstances which the Society will consider on their merits, e.g. in the event of non-payment of fees or when the Owner fails to render the vessel available for the occasional surveys as listed in Ch 2, Sec 2, [6.1.2].

**2.1.5** Suspension of class decided by the Society takes effect from the date when the conditions for suspension of class are met and will remain in effect until such time as the class is reinstated once the due items and/or surveys have been dealt with.

### 3 Withdrawal of class

#### 3.1 General

**3.1.1** The Society will withdraw the class of a vessel in the following cases:

- at the request of the Owner
- when the causes that have given rise to a suspension currently in effect have not been removed within six months after due notification of suspension to the Owner
- when the vessel is reported as a constructive total loss
- when the vessel is lost
- when the vessel is reported scrapped.

Withdrawal of class takes effect from the date on which the circumstances causing such withdrawal occur.

**3.1.2** When the withdrawal of class of a vessel comes into effect, the Society will:

- forward the Owner written notice
- delete the vessel from the Register Book

- notify the flag Administration, if needed
- make the information available to the Underwriters, at their request.

### 4 Suspension/withdrawal of additional class notations

#### 4.1 General

**4.1.1** If the survey requirements related to maintenance of additional class notations are not complied with, the suspension or withdrawal may be limited to the notations concerned.

The same procedure may apply to service notations of vessels which are assigned with more than one service notation.

**4.1.2** The suspension or withdrawal of an additional class notation or a service notation (where a vessel is assigned with more than one service notation) generally does not affect the class.

## SECTION 4 CLASSIFICATION PROCEDURES

### 1 Classification of new building

#### 1.1 Order for classification

**1.1.1** The written order for classification is to be submitted to the Society by the Building Yard, the Other Interested Party or by the Prospective vessel Owner, using the form provided by the Society. It should be clearly agreed between the parties concerned, e.g. in the building contract, which party will be responsible for compliance with the Society's Rules and Guidelines and other Rules and Regulations to be applied.

**1.1.2** Where orders for the production of components are placed with subcontractors, the Society will have to be advised accordingly indicating the scope of the subcontract. The Building Yard, Prospective Owner and Other Interested Party are responsible for observance of the Rules, Guidelines and Regulations by subcontractors.

**1.1.3** When particulars already approved by the Society for previous vessels built under supervision of the Society are incorporated in the design of the new building, this should be specifically stated in the order for classification. Amendments to the construction Rules having been introduced meanwhile shall be taken into account.

#### 1.2 Examination of design and construction particulars

**1.2.1** Particulars/documents for review such as construction plans, calculations, details on materials, type designation of standard equipment, etc. are to be submitted to the Society, in English or other language agreed upon with the Society in due time prior to commencement of construction/manufacturing.

The particulars submitted shall contain all details required to verify compliance with the construction Rules. The Society reserves the right to request additional information and particulars to be submitted, according to the specific nature of the vessel to be classed.

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

**1.2.2** After examination by the Society, the documents subject to review will be returned in one copy with a mark/stamp of review. One copy of each document, with remarks related to the compliance with the rule require-

ments should the need arise, will be forwarded for verification to the Society's inspection office(s) in charge of construction supervision.

**1.2.3** Any deviations from the reviewed documents e.g. due to requirements of the vessel Owner or alterations suggested by the Building Yard, require to be approved by the Society prior to being realized.

#### 1.3 Documentation

**1.3.1** The design data, calculations and plans to be submitted for review are listed in applicable requirements of Part B, Part C and Part D.

**1.3.2** The documentation submitted to the Society is examined in relation to the class requested in the order for classification.

**1.3.3** Should the Other Interested Party, Building Yard or Prospective Owner subsequently wish to have the class, in particular the service notations or additional class notations, granted to the vessel modified, plans and drawings are generally to be re-examined.

**1.3.4** As a rule, modifications of the reviewed plans regarding items covered by classification are to be submitted for review.

**1.3.5** The plans and design data to be submitted to the Society are to incorporate all information necessary for the assessment of the design of the vessel for the purpose of assignment of class. It is the responsibility of the Other Interested Party, Building Yard or Prospective Owner to ascertain that the design data are correct, complete and compatible with the use of the vessel.

**1.3.6** Design data and calculations are to be adequately referenced. It is the duty of the Other Interested Party, Building Yard or Prospective Owner to ascertain that the references used are correct, complete and applicable to the design of the vessel.

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

**1.3.8** It is the responsibility of the Other Interested Party, Building Yard or Prospective Owner to ascertain that drawings used for the procurement, construction and other works are in accordance with the reviewed plans.



## 1.4 Supervision of construction and trials

**1.4.1** The Society will assess the production facilities and procedures of the Building Yard, subcontractors and other manufacturers, to determine whether they meet the requirements of the Society's Rules and any additional requirements of the Other Interested Party or Prospective vessel Owner as agreed in the building specification. This assessment may be connected with a quality assurance certification.

**1.4.2** Materials, components, appliances and installations subject to inspection are to comply with the relevant rule requirements and are to be presented for inspection by the Society's Surveyors, unless otherwise provided as a result of special arrangements agreed upon with the Society.

It is the duty of the Building Yard, subcontractors and other manufacturers to inform the Society's inspection office in due time about particular surveys to be carried out.

**1.4.3** In order to enable the Surveyor to fulfill his duties, he is to be given free access to the workshops and to the vessel. For performance of the tests required, the Building Yard, subcontractors and other manufacturers are to give the Surveyor any assistance necessary by providing the staff and the equipment needed for such tests which always remain under their full responsibility.

**1.4.4** During the phase of construction of the vessel or installation, the Society will satisfy itself by surveys and inspections that:

- parts for hull, machinery and electrical installations or special equipment subject to review have been constructed in compliance with the reviewed drawings/documents
- all tests and trials stipulated by the Rules for classification and construction are performed satisfactorily
- workmanship is in compliance with current engineering standards and/or the Society's rule requirements
- welded parts are produced by qualified welders having undergone the tests required by the applicable Rules
- for hull sections or components requiring the Society's approval, certificates have been presented; the Building Yard, subcontractors or other manufacturers will have to ensure that any parts and materials requiring approval will only be delivered and installed, if the appropriate certificates have been issued
- type-tested or type-approved appliances and equipment are used, in accordance with the rule requirements, where individual certificates are not required.

## 1.5 Tests

**1.5.1** As far as practicable, the machinery including electrical installations as well as special equipment and installations classed will be subjected to operational trials at the manufacturer's premises to the scope specified in the Rules.

Where the machinery, electrical installations or special equipment and installations are of novel design, the Society may require performance of trials under specified conditions.

## 1.6 Trials on board

**1.6.1** Upon completion of the vessel, all hull, machinery including electrical installations as well as special equipment and installations classed will be subjected to operational trials in the presence of the Surveyor prior to and during the navigation trials. This will include, e.g.:

- tightness, operational and load tests of tanks, anchoring equipment, hatches and hatch covers, shell doors, ramps, etc.
- operational and/or load tests of the machinery, installations and equipment of importance for the operational safety of the vessel.

During a final survey, checks will be made in the presence of the Surveyor to ensure that any deficiencies found, for instance during the navigation trials, have been eliminated.

### 1.6.2 Reports, certificates, documentation

Satisfactory testing of materials, components, machinery, etc. at subcontractor's works will be certified by the Surveyor and/or the local Society's representation.

**1.6.3** Upon satisfactory completion of the construction and the trials on board, the Surveyor will prepare construction and survey reports, on the basis of which the Society will issue the class certificate.

**1.6.4** The classification data of each vessel will be included in the Society's data file. An extract of these vessel data will be indicated in the Register.

## 2 Classification after construction of existing vessels

### 2.1 Admission to class

**2.1.1** Vessels not originally built under supervision of the Society may be classed subsequently following the procedures described in the following.

**2.1.2** The vessel's Owner should contact the Society for the necessary arrangements. The written order for admission to class of existing vessels or special equipment including the required documents shall be formally addressed to the Society's head office using the form provided by the Society.

**2.1.3** In the case of transfer of class, the Society is to be informed about the previous class status and period, as well as about any conditions of class/recommendations imposed by the previous classification Society.

**2.1.4** The documents listed in [2.1.5], updated to present status shall be submitted for examination where applicable. Information shall be provided about any additional Regulations to be observed.

### 2.1.5 Particulars for hull and machinery

- Particulars of the type and main dimensions of the vessel, building year, building yard, major conversions, if any, freeboard, stability documentation and details of the anchor equipment
- particulars of the type, output and main data, building year and manufacturer of the main engine(s) and of the auxiliary machinery essential for operational safety, the electrical installations, the automatic/remote-control system, the safety arrangements, the steering gear and the windlasses
- general arrangement, capacity plan, hydrostatic and cross curves, loading manual, where required, midship section, longitudinal and transverse sections, transverse bulkheads, decks, shell expansion, engine and boiler foundations, stem and stern frame, rudder and rudder stock, hatch covers
- machinery arrangement and layout, thrust, intermediate and screw shafts, propellers, main engines, propulsion gears and clutch systems, starting-air receivers, auxiliary boilers and related systems, cooling water and lubricating oil systems, bilge and ballast systems, fuel oil and starting-air systems, air and sounding pipe systems, electrical arrangements and wiring diagrams
- steering gear arrangement and piping system and steering gear manufacturer, make and model information
- pumping arrangements at the forward and after ends, drainage of cofferdams and pump rooms and general arrangements of cargo piping in tanks and on decks, for tankers
- torsional vibration calculations of the main shafting system including its branches for propelling installation less than two years old
- instrument and alarm list, fire alarm system, list of automatic safety functions, e.g. slowdowns, etc.
- plans required for vessels to which an additional class notation is assigned
- alternative technical data may be accepted by the Society in lieu of specific items of the listed documentation not available at the time of the transfer of class.

## 2.2 Examination of design and surveys

**2.2.1** The requirements according to [1.2] are applicable in principle. The report on the survey according to [2.3] will be evaluated together with the examination of the particulars and/or drawings to be reviewed.

**2.2.2** Where sufficiently detailed documentation required for review is not available, the necessary information may have to be gathered by an additional survey, possibly including measurements, and/or by additional investigations, computations, etc.

**2.2.3** If the vessels as well as the special equipment and installations classed have the valid class of another classification Society, and if sufficient proof has been furnished regarding the present class status, the Society may dispense with parts of the examination of drawings and computations and may reduce the scope of the survey. However, at least a survey to the scope of an intermediate survey according to Part A, Chapter 3 is to be carried out.

## 2.3 Reports, certificates, documentation

**2.3.1** Upon satisfactory completion of the examinations and surveys mentioned above, a class certificate will be issued and a class period defined.

**2.3.2** Regarding Surveyor's reports and certificates, the provisions of [1.4] apply also to the classification of existing vessels.

**2.3.3** Once a vessel and the relevant equipment have been classed with the Society, the Rules in force for surveys as well as procedures applicable to vessels constructed under supervision of the Society will apply.

## 3 Documentation to be carried on board

### 3.1 General

**3.1.1** To allow quick action in case of surveys, special operation and especially in case of damage, the following documentation must be kept on board and shall be made available to the Surveyor on request:

- class certificate - all survey statements and reports
- stability handbook and loading manual, if required
- description of corrosion protection system, if required
- "as built" drawings and other documentation containing particulars or instructions of significance as far as the Society is concerned, e.g. use of special steel etc.
- list of important testing/monitoring procedures to be followed in connection with validity of class.

## SECTION 5

# HULL SURVEY FOR NEW CONSTRUCTION - STEEL AND ALUMINIUM ALLOYS

### 1 General

#### 1.1

**1.1.1** In this Section, the Building Yard is understood as acting directly or on behalf of the Party requesting classification.

**1.1.2** When a hull construction is surveyed by the Society the Building Yard is to provide all appropriate evidence required by the Society that the hull is built in compliance with the rules and regulations, taking account of the relevant reviewed drawings.

### 2 Documentation to be available for the Surveyor during construction

#### 2.1 General

**2.1.1** During the construction, the Building Yard is to provide the Surveyors access to documentation required by the Society; this includes documentation retained by the Building Yard or other third parties.

**2.1.2** The list of documents reviewed by the Society for the specific new construction are to be made available by the Building Yard in due time for the Society during the construction as follows:

- a) plans and supporting documents required in Ch 2, Sec 4, [1.3]
- b) examination and testing plans
- c) NDE plans
- d) welding consumable details
- e) welding procedures specifications & welding procedures qualification records
- f) welding plan or details
- g) welder's qualification records
- h) NDE operators qualification records.

**2.1.3** As required, evidence of compliance with Ch 2, Sec 1, [2.3] is also to be made available by the Building Yard to the Surveyor whilst the construction process proceeds to prove that the material and equipment supplied to the vessel has been built or manufactured under survey relevant to the classification rules and delegated statutory requirements.

### 3 Vessel construction file

#### 3.1 General

**3.1.1** The Building Yard is to deliver documents for the vessel construction file. In the event that items have been provided by another Party such as the Owner and where separate arrangement have been made for document delivery which excludes the Building Yard, that Party has the responsibility.

**3.1.2** The vessel construction file is to be placed on board the vessel by the Building Yard to facilitate operation, maintenance, survey and repair.

**3.1.3** The vessel construction file is to include but not limited to:

- as-built structural drawings including scantling details, material details, and, as applicable, wastage allowances, location of butts and seams, cross section details and locations of all partial and full penetration welds, areas identified for close attention and rudders
- manuals required for classification and statutory requirements, e.g. loading and stability
- vessel structure access manual, as applicable
- copies of certificates of forgings and castings welded into the hull (refer to NR216 Materials and Welding)
- details of equipment forming part of the watertight and weathertight integrity of the vessel
- tank testing plan including details of the test requirements (refer to Pt B, Ch 8, Sec 4)
- corrosion protection specifications (refer to Pt B, Ch 8, Sec 1)
- details for the in-water survey, if applicable, information for divers, clearances measurements instructions etc., tank and compartment boundaries
- docking plan and details of all penetrations normally examined at drydocking.

### 4 Newbuilding survey planning

#### 4.1 General

**4.1.1** Prior to commencing any newbuilding project, the Building Yard is to discuss with the Society at a kick-off meeting the items of specific activities which are relevant to the shipbuilding functions listed in the kick-off meeting templates to be supplied by the Surveyor. The purpose of the meeting is to agree how the listed items are to be addressed. The meeting is to take into account the Building Yard construction facilities and vessel type and deal with sub-con-

tractors if it is known that the Building Yard proposes to use them. This list is not exhaustive and can be modified to reflect the construction facilities or specific vessel type.

A record of the meeting is normally to be prepared and updated by the Building Yard, based upon the content of the kick-off meeting templates. The Building Yard is to agree to undertake ad hoc investigations during construction where areas of concern arise and to keep the Society advised of the progress of any investigation. Whenever an investigation is undertaken, the Building Yard is, in principle, to agree to suspend relevant construction activities if warranted by the severity of the problem.

**4.1.2** The record of the meeting is normally to be updated by the Building Yard further to additional meeting and/or agreement with the Society as the construction process progresses in the light of changing circumstances, e.g. if the Building Yard chooses to use or change sub-contractors, or to incorporate any modification necessitated by changes in production or inspection methods, rules and regulations, structural modifications, or in the event where increased inspection requirements are deemed necessary as a result of a substantial non-conformance or otherwise.

**4.1.3** Shipbuilding quality standards for hull structure during new construction are to be reviewed and agreed during the kick-off meeting. Structural fabrication is to be carried out in accordance with a recognized fabrication standard which has been accepted by the Society prior to the commencement of fabrication/construction. The work is to be carried out in accordance with these Rules and under survey of the Society.

## 5 Examination and test plan for newbuilding activities

### 5.1 General

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

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

**5.1.2** The plans and any modification to them are to be submitted to the Surveyors in sufficient time to allow approval before the relevant construction phase commences. The Society is to require sample rates of NDE, proposal for steelwork survey, tank testing requirements, etc. if the actual construction process warrants it.

# APPENDIX 1

# REQUIREMENTS FOR THICKNESS MEASUREMENTS

## 1 General

### 1.1 General

**1.1.1** Thickness measurements are a major part of surveys to be carried out for the maintenance of class, and the analysis of these measurements is a prominent factor in the determination and extent of the repairs and renewals of the vessel's structure.

This Appendix is intended to provide Owners, companies performing thickness measurements and the Society's Surveyors with a uniform means with a view to fulfilling Rule requirements for thickness measurements. In particular, it will enable all the above-mentioned parties to carry out:

- the planning and preparation
- the determination of extent and location, and
- the analysis,

of the thickness measurements in cooperation.

#### 1.1.2 Objectives of thickness measurements

The corrosion and wear tolerances stipulate limits of wastage which are to be taken into account for reinforcements, repairs or renewals of hull structure. They are classified and determined by the Society, depending on the local conditions of the structural elements into:

- criteria on global and buckling strength
- criteria on local strength and pitting.

Each measured structural item is to be checked against these criteria, as far as applicable. When the criteria are not met, reinforcements, repairs and renewals are to be carried out as appropriate.

The thickness of structural elements is checked by measurements, in order to assess whether or not the values stipulated in the Rules are kept, taking into account the admissible corrosion tolerances. Unless severe corrosion has occurred owing to particular service conditions, thickness measurements will not be required until class renewal II.

Thickness measurements are to be carried out in accordance with recognized methods and by authorized personnel or companies.

NR533 Approval of Service Suppliers gives details about the authorisation.

Rust and contamination are to be removed from the components to be examined. The Surveyor is entitled to require check measurements or more detailed measurements to be performed in his presence. The thickness measurements are to be witnessed by the Surveyor on board to the extent necessary to control the process.

### 1.2 General requirements for thickness measurements

#### 1.2.1 Main hull structural elements

As applicable, in class renewal II and all subsequent ones, the plate thickness of the main and essential longitudinal and transverse structural hull elements are to be checked by thickness measurements. The number of measurements depends on the vessel's maintenance condition and is left to the Surveyor's discretion. The minimum requirements for thickness measurements on the occasion of class renewal surveys are stated in [2.2], depending on the vessel's class renewal survey number. The number and locations of measurements are defined in [2.3].

#### 1.2.2 Reduction of thickness measurements scope

The thickness measurements may be waived or their extent may be reduced in comparison with those stated in [2.2] after satisfactory examination, when structural elements in the considered area are found in good condition.

#### 1.2.3 Extension of thickness measurement scope

The Surveyor may extend the scope of the thickness measurement as deemed necessary. This applies especially to areas with substantial corrosion. When thickness measurements indicate substantial corrosion, as defined in Ch 2, Sec 2, [2.2.7], the number of thickness measurements is to be increased to determine the extent of substantial corrosion.

#### 1.2.4 Transverse sections

Transverse sections shall be chosen where largest corrosion rates are suspected to occur or are revealed by deck plating measurements.

#### 1.2.5 Ballast tanks

If applicable, in the case of major corrosion damages, the structural elements of ballast tanks are to be checked by thickness measurements.

#### 1.2.6 Substantial corrosion and suspect areas

Where special reasons exist, the Surveyor may demand thickness measurements to be carried out already on the occasion of class renewal I, also outside the area of 0,5 L amidships. The same applies in the case of conversion or repair of a vessel.

### 1.3 Hull surveys at class renewal surveys

#### 1.3.1 Overall survey

Each class renewal survey is to include an overall survey of cargo tanks, cargo holds and all spaces. The extent of thickness measurements are given in [2.2]. For number and locations of measurements, see [2.3].

1.3.2 Close-up survey

A close-up survey may be required depending on the vessel age and/or condition.

2 Extent, number and location of measurements at class renewal survey

2.1 Scope of thickness measurements

2.1.1 The thickness measurements required by the Appendix consist of:

- systematic thickness measurements, i.e. measurements of different parts of the structure, in order to assess the overall and local strength of the vessel
- measurements of suspect areas as defined in Ch 2, Sec 2, [2.2.11]
- additional measurements on areas determined as affected by substantial corrosion as defined in Ch 2, Sec 2, [2.2.7]

2.2 Extent of thickness measurements

2.2.1 General

a) General requirements

Thickness measurements are to be carried out according to the procedure detailed in [1.2].

The extent of thickness measurements is detailed in [2.2.2], according to the vessel’s type and age. The Surveyor may extend the thickness measurements as deemed necessary. When thickness measurements indicate substantial corrosion, the extent of thickness measurements is to be increased to determine areas of substantial corrosion in accordance with the requirements of Tab 1. These extended thickness measurements are to be carried out before the survey is credited as completed.

Thickness measurements locations are to be selected to provide the best representative sampling of areas likely to be most exposed to corrosion, considering cargo and ballast history and arrangement and condition of protective coatings.

Thickness measurements of internals may be specially considered by the Surveyor if the hard protective coating is in good condition.

When pitting is found on a 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.

b) Application of the requirements for thickness measurements.

Tab 2 provides interpretations for the application of the requirements for thickness measurements related to the locations and number of points to be measured.

2.2.2 Minimum requirements for thickness measurements

a) Tank vessels

The extent of thickness measurements at class renewal survey is given in Tab 3, depending on the vessel age at time of class renewal survey. For number and locations of thickness measurements, see [2.3.2], item a).

b) Cargo vessels

“Cargo vessel” applies to vessels intended to carry dry cargoes and covers the following type and service notations:

- Bulk cargo vessel
- Container vessel
- General cargo vessel, and
- RoRo cargo vessel.

The extent of thickness measurements at class renewal survey is given in Tab 4, depending on the vessel age at time of class renewal survey. For number and locations of thickness measurements, see [2.3].

c) Other vessels

The extent of thickness measurements at class renewal survey is given in Tab 5, depending on the vessel age at time of class renewal survey. For number and locations of thickness measurements, see [2.3], taking into account the vessel’s specific particulars.

2.3 Number and locations of measurements

2.3.1 General

a) Scope

Considering the extent of thickness measurements as required in [2.2], the locations of the points to be measured are given in this Section for the most important items of the structure. Thus the number of points can be estimated.

Measurements are to be taken on both port and starboard sides of the selected transverse section or transverse bulkhead.

b) Definition

Cargo vessels include vessels assigned one of the following type and service notations:

- Bulk cargo vessel
- Container vessel
- General cargo vessel
- RoRo cargo vessel.

Table 1 : 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

Table 2 : Interpretations of the requirements for the locations and number of points to be measured

SYSTEMATIC MEASUREMENTS		
ITEM	INTERPRETATION	FIGURE
Selected plates on deck, tank top, bottom, inner bottom and side.	"Selected" means at least a single point on one out of three plates, to be chosen on representative areas of average corrosion.	No figure
All deck, tank top, bottom, inner bottom and side plates.	At least two points on each plate to be taken either at each 1/4 extremity of plate or at representative areas of average corrosion.	No figure
Transverse section	Refer to the definition given in Ch 2, Sec 2, [2.2.5] One point to be taken on each plate. Both web and flange to be measured on longitudinals, if applicable.	Fig 1 to Fig 4, for tank vessels Fig 5 to Fig 8, for cargo vessels
Bulkheads	"Selected bulkheads" means at least 50% of the bulkheads.	Fig 9, for watertight bulkheads on double hull cargo vessels Fig 10, for plane bulkheads Fig 11, for corrugated bulkheads
Selected internal structure such as floors, longitudinals, transverse frames, web frames, deck beams and girders.	The internal structural items to be measured in each space internally surveyed are to be at least 20% within the cargo area and 10% outside the cargo area.	No figure

Table 3 : Minimum Requirements for thickness measurements - Tank vessels

Class renewal I survey I	Class renewal survey II	Class renewal survey III	Class renewal survey IV and subsequent
Suspect areas throughout the vessel			
	Within the cargo area: - one transverse section - selected side / inner side plates - selected bottom / inner bottom plates	Within the cargo area: - two transverse sections - all side / inner side plates - selected bottom / inner bottom plates - selected transverse and longitudinal cargo tank bulkhead <b>(1)</b>	Within the cargo area: - three transverse sections - all side / inner side plates - all bottom / inner bottom plates - all transverse and longitudinal cargo tank bulkheads <b>(1)</b>
	Selected deck / trunk plates within the cargo area.	All deck /trunk plates within the cargo area	All deck / trunk plates full length.
		Selected deck plates, bottom plates and side plates outside the cargo area	All deck plates, bottom plates and side plates outside the cargo area
	Collision bulkhead, forward machinery space bulkhead, aft peak bulkhead <b>(1)</b>		Selected transverse and longitudinal bulkheads outside cargo area <b>(1)</b>
	- river water manifold in engine room - plating of river chests - shell plating in way of overboard discharges as considered necessary by the attending Surveyor		
		Internals in fore peak tank.	Internals in fore peak and after peak tanks.
		Selected internal structure such as floors and longitudinals, transverse frames, web frames, deck beams, girders	
			Representative exposed superstructure deck plates.
<b>(1)</b> Including plates and stiffeners.			

Table 4 : Minimum Requirements for thickness measurements - Cargo vessels

Class renewal survey I	Class renewal survey II	Class renewal survey III	Class renewal survey IV and subsequent
Suspect areas throughout the vessel			
	Within the cargo area: - one transverse section - selected side / inner side plates - selected bottom / inner bottom plates	Within the cargo area: - two transverse sections - all side / inner side plates - selected bottom / inner bottom plates - selected cargo hold transverse bulkheads (1)	Within the cargo area: - three transverse sections - all side / inner side plates - all bottom / inner bottom plates - all cargo hold transverse bulkheads (1)
	Selected top structure plates within the cargo area (1), (2).	All top structure plates within the cargo area (1), (2).	All top structure plates full length (1), (2).
		Selected deck plates, bottom plates and side plates outside the cargo area	All deck plates, bottom plates and side plates outside the cargo area
	Collision bulkhead, forward machinery space bulkhead, aft peak bulkhead (1)		Selected transverse and longitudinal bulkheads outside cargo area (1)
	- river water manifold in engine room - plating of river chests - shell plating in way of overboard discharges as considered necessary by the attending Surveyor		
		Internals in fore peak tank.	Internals in fore peak and after peak tanks.
		Selected internal structure such as floors and longitudinals, transverse frames, web frames, deck beams, girders	
			Representative exposed superstructure deck plates.
(1) Including plates and stiffeners.			
(2) Top structure includes deck, stringer plate, hatch coaming and shear strake.			

Table 5 : Minimum Requirements for thickness measurements - Other vessels

Class renewal survey I	Class renewal survey II	Class renewal survey III	Class renewal survey IV and subsequent
Suspect areas throughout the vessel			
	Within the central part: - one transverse section - selected side / inner side plates - selected bottom / inner bottom plates	Within the central part: - two transverse sections - all side / inner side plates - selected bottom / inner bottom plates - selected transverse bulkheads <b>(1)</b>	Within the central part: - three transverse sections - all side / inner side plates - all bottom / inner bottom plates - all transverse bulkheads <b>(1)</b>
	Selected exposed main deck plates within the central part.	All exposed main deck plates within the central part.	All exposed main deck plates full length.
		Selected deck plates, bottom plates and side plates outside the central part.	All deck plates, bottom plates and side plates outside the central part.
	Collision bulkhead, forward machinery space bulkhead, aft peak bulkhead <b>(1)</b>		Selected transverse and longitudinal bulkheads outside central part. <b>(1)</b>
	- river water manifold in engine room - plating of river chests - shell plating in way of overboard discharges as considered necessary by the attending Surveyor		
		Internals in fore peak tank.	Internals in fore peak and after peak tanks.
		Selected internal structure such as floors and longitudinals, transverse frames, web frames, deck beams, girders	
			Representative exposed superstructure deck plates.
<b>(1)</b> Including plates and stiffeners.			



2.3.2 Locations of measurements points

a) General

Figures are given to facilitate the explanations and/or interpretations concerning locations of thickness measurements according to Tab 6.

The Figures listed in Tab 6 show typical arrangements of tankers and cargo vessels. Due to the various designs of the other vessel types, figures are not given to cover all the different cases. However, the figures provided here may be used as guidance for vessels other than those illustrated.

The locations of measurement points on tank vessels fitted with independent cargo tank will be determined as follows:

- independent cargo tank: according to the requirements applicable to integrated cargo tanks
- surrounding vessel structure: according to the requirements applicable to a cargo vessel having similar structural arrangement.

b) Examples of locations of measurements points

Examples of locations of measurements points are shown in Fig 1 to Fig 11.

Figure 1 : Locations of measurements on a transverse section of single hull tank vessels: ordinary frame

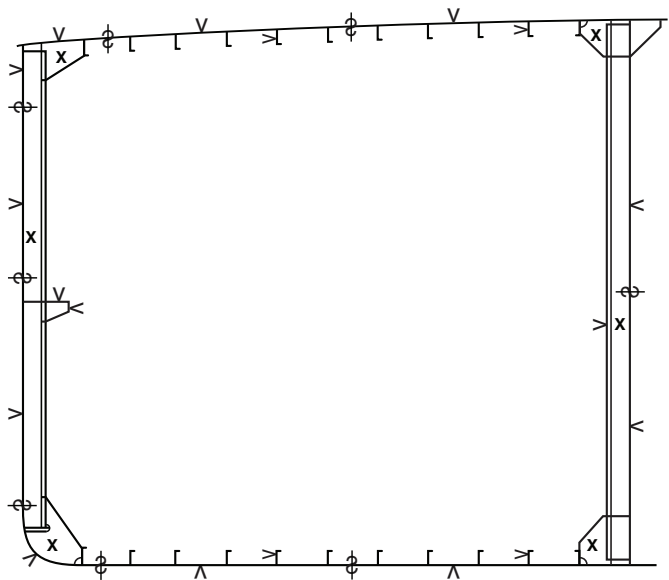


Table 6 : Locations of measurements

Vessel type	Structural item	Figure	Structural configuration
Tank vessels <ul style="list-style-type: none"><li>• Flush deck vessel</li><li>• Integrated cargo tank</li></ul>	Transverse section - ordinary frame	Fig 1	Single hull
	Transverse section - web frame	Fig 2	Combination framing system
	Transverse section - ordinary frame	Fig 3	Double hull
	Transverse section - web frame	Fig 4	Combination framing system
	Transverse tank bulkhead	Fig 10	Plane bulkhead
	Transverse tank bulkhead	Fig 11	Corrugated bulkhead
Cargo vessels <ul style="list-style-type: none"><li>• Open deck vessel</li></ul>	Transverse section - web frame	Fig 5	Double hull
	Transverse section - ordinary frame	Fig 6	Longitudinal framing system
	Transverse section - ordinary frame	Fig 7	Double hull
	Transverse section - web frame	Fig 8	Transverse framing system
	Transverse watertight bulkhead	Fig 9	Plane bulkhead
	Transverse hold bulkhead	Fig 10	Plane bulkhead
	Transverse hold bulkhead	Fig 11	Corrugated bulkhead

Figure 2 : Locations of measurements on a transverse section of single hull tank vessels: web frame

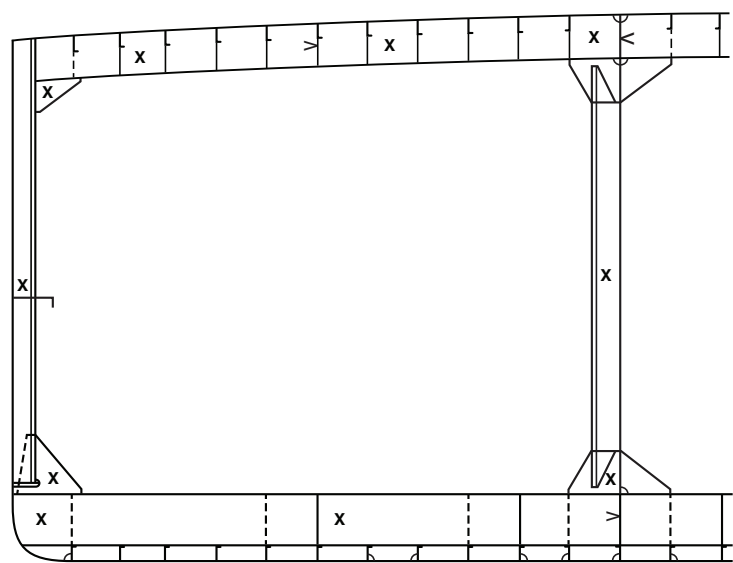


Figure 3 : Locations of measurements on a transverse section of double hull tank vessels: ordinary frame

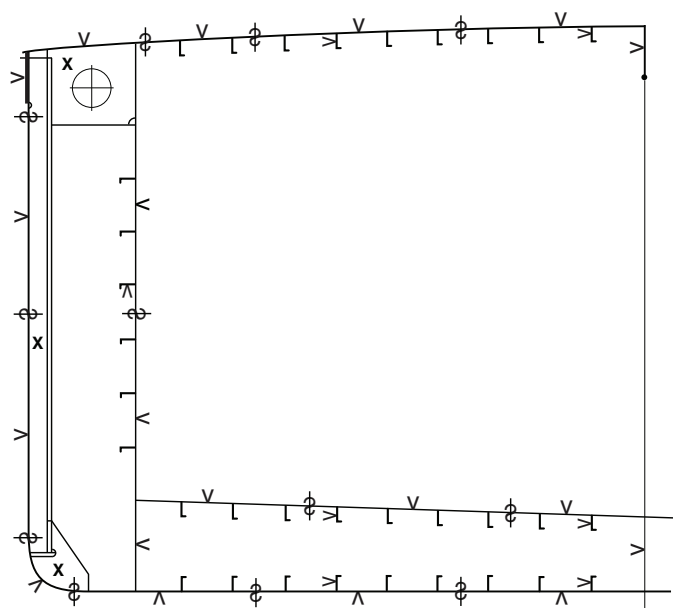


Figure 4 : Locations of measurements on a transverse section of double hull tank vessels: web frame

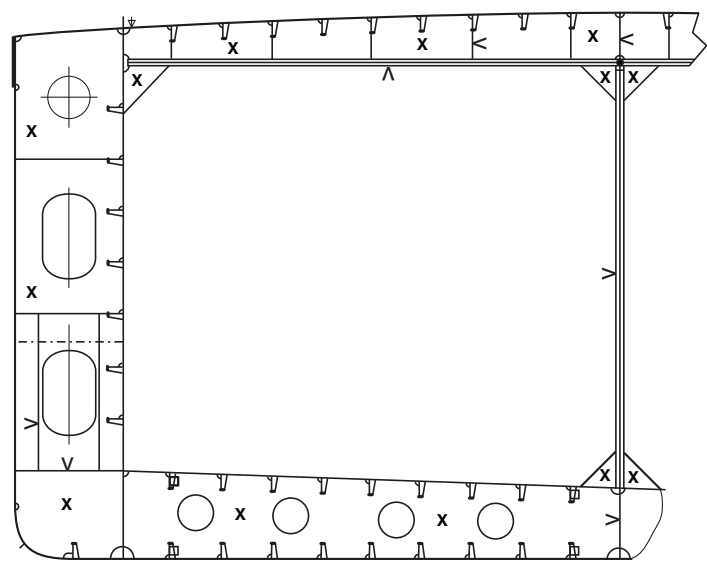


Figure 5 : Locations of measurements on a transverse section of double hull cargo vessels - web frame

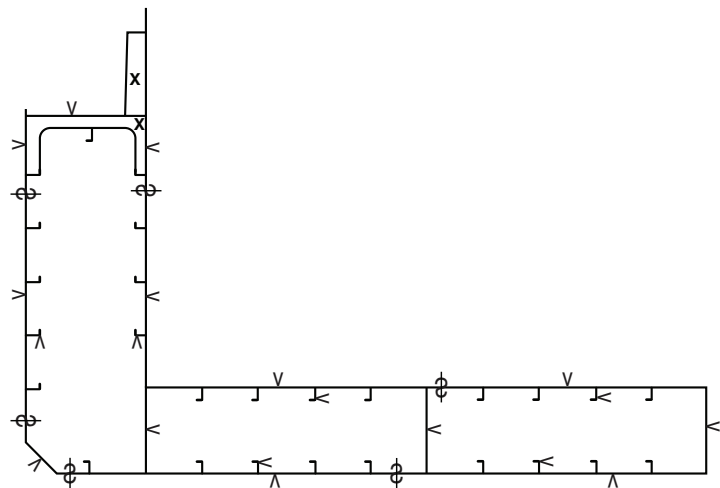


Figure 6 : Locations of measurements on a transverse section of double hull cargo vessels - ordinary frame

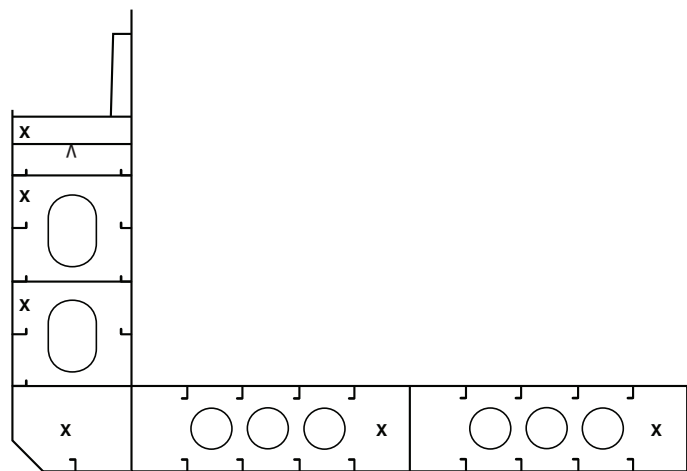


Figure 7 : Locations of measurements on a transverse section of double hull cargo vessels - ordinary frame

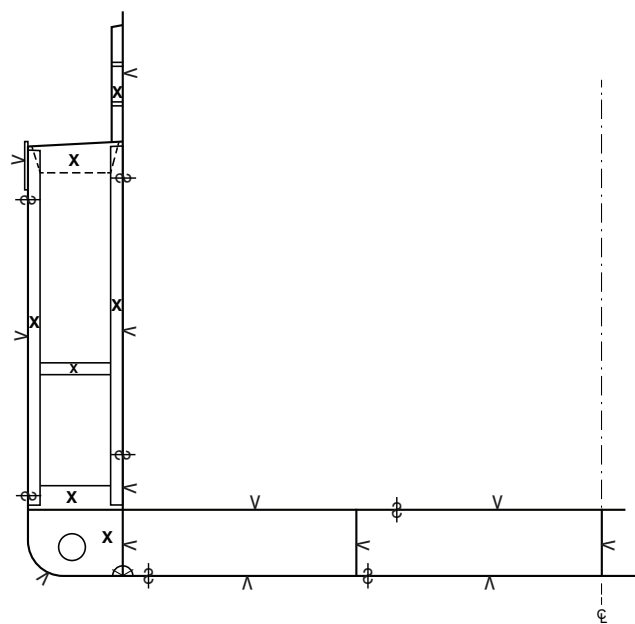


Figure 8 : Locations of measurements on a transverse section of double hull cargo vessels - web frame

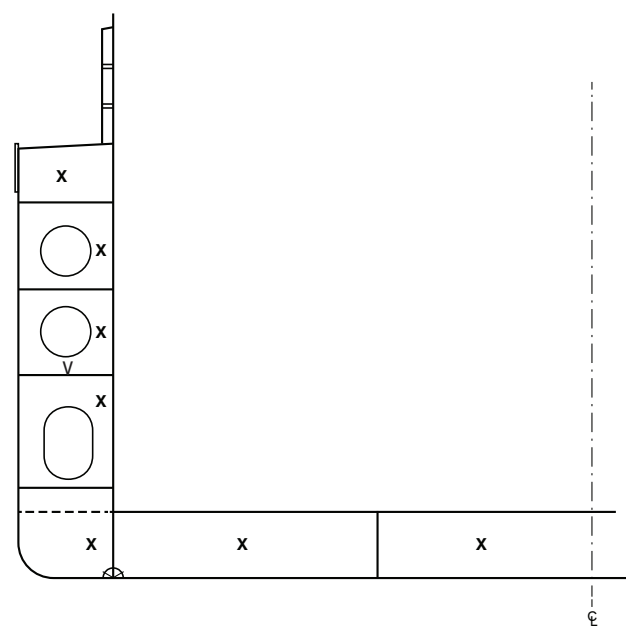


Figure 9 : Locations of measurements on watertight bulkheads - cargo vessels

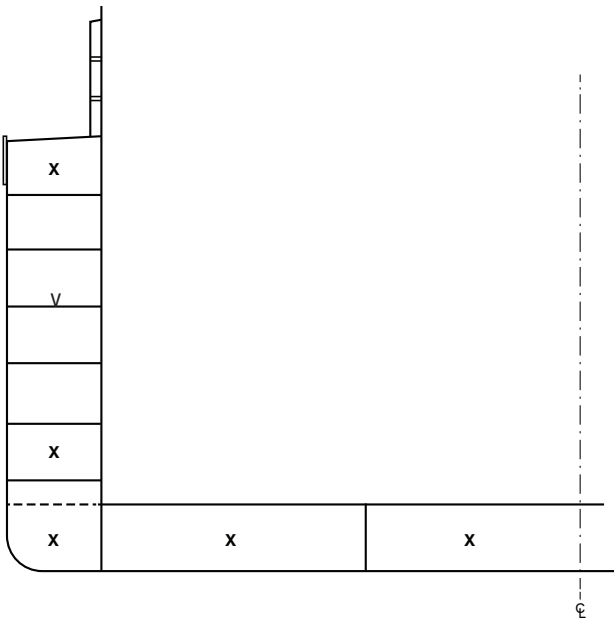


Figure 10 : Locations of measurements on tank bulkheads

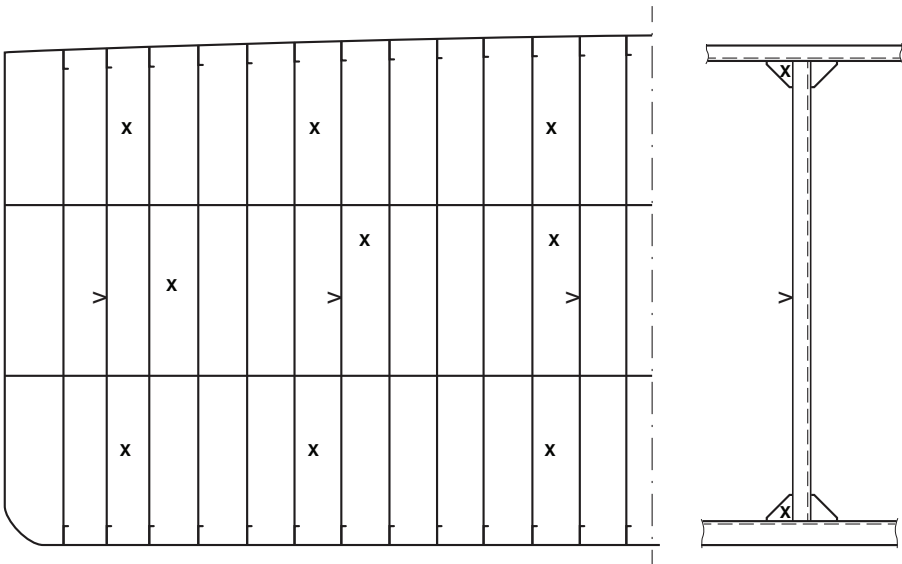
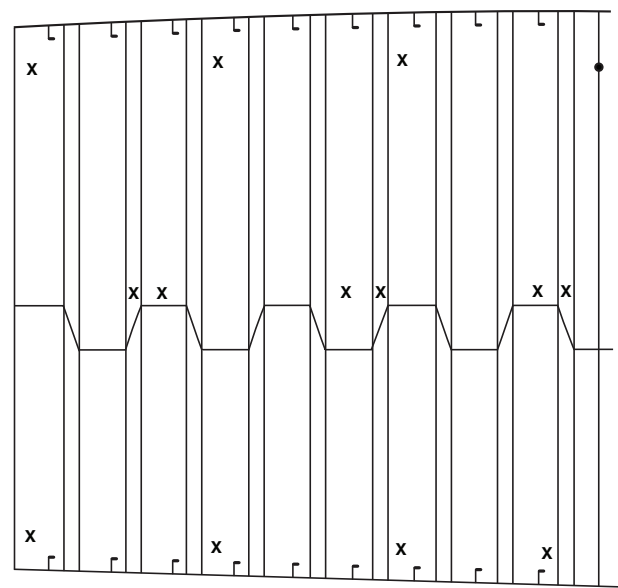


Figure 11 : Locations of measurements on transverse corrugated bulkheads



3 Measurements reporting

3.1 Application

3.1.1 This Article contains reporting forms to be used for recording thickness measurements as required in [2].

3.2 Reporting forms

3.2.1 General particulars

The first sheet of the report is to include general particulars information listed in Tab 7.

3.2.2 Deck plating, bottom shell plating or side shell plating

Appropriate reporting form is given in Tab 8.

This report is to be used for recording the thickness measurement of:

- a) all strength deck plating within central part area
- b) all keel, bottom shell plating and bilge plating within central part area
- c) side shell plating, within central part area.

The strake position is to be clearly indicated as follows (see also [5]):

- a) For strength deck, indicate the number of the strake of plating inboard from the stringer plate
- b) For bottom plating, indicate the number of the strake of plating outboard from the keel plate

- c) For side shell plating, give the number of the strake of plating below sheerstrake and letter as shown on shell expansion.

Measurements are to be taken at the forward and aft areas of plates.

The single measurements recorded are to represent the average of multiple measurements.

3.2.3 Shell and deck plating at transverse sections - strength deck and sheerstrake

Appropriate reporting form is given in Tab 9.

This report is to be used for recording the thickness measurement of strength deck plating and sheerstrake plating at transverse sections within the central part area comprising of the following structural items:

- Strength deck plating
- Stringer plate
- Sheerstrake
- Hatch coaming.

For flush deck and trunk deck vessels, the topside area comprises stringer plate and sheerstrake.

For open deck vessels, the topside area comprises hatch coaming plating, stringer plate and sheerstrake.

The exact frame station of measurement is to be stated.

The single measurements recorded are to represent the average of multiple measurements.

3.2.4 Shell and bottom plating at transverse sections

Appropriate reporting form is given in Tab 10.

This report is to be used for recording the thickness measurement of shell and bottom plating at transverse sections within the central part area comprising of the following structural items:

- Side shell plating
- Bilge plating
- Bottom shell plating
- Keel plate.

The bottom area comprises keel, bottom and bilge plating.

The exact frame station of measurement is to be stated.

The single measurements recorded are to represent the average of multiple measurements.

3.2.5 Longitudinal members at transverse sections

Appropriate reporting form is given in Tab 11.

This report is to be used for recording the thickness measurement of longitudinal members at transverse sections within the central part area.

The exact frame station of measurement is to be stated.

The single measurements recorded are to represent the average of multiple measurements.

3.2.6 Transverse structural members

Appropriate reporting form is given in Tab 12.

This report is to be used for recording the thickness measurement of transverse structural members.

The single measurements recorded are to represent the average of multiple measurements.

3.2.7 Transverse bulkheads

Appropriate reporting form is given in Tab 13.

This report is to be used for recording the thickness measurement of transverse bulkheads including bulkhead stiffeners.

The single measurements recorded are to represent the average of multiple measurements.

3.2.8 Miscellaneous structural members

Appropriate reporting form is given in Tab 14.

This report is to be used for recording the thickness measurement of miscellaneous structural members including items such as:

- Coaming of separate hatchways
- Hatch covers
- Superstructure
- Fore peak
- After peak.

The single measurements recorded are to represent the average of multiple measurements.

Table 7 : General particulars

GENERAL PARTICULARS	
Vessel name:	
Service notation:	
Bureau Veritas register number:	
Port of registry:	
Deadweight:	
Date of build:	
Classification Society:	
Name of company performing thickness measurement:	
Thickness measurement company certified by:	
Certificate No:	
Certificate valid from ..... to .....	
Place of measurement:	
First date of measurement:	
Last date of measurement:	
Type of survey:	
Scantling approach:	
Rule length (m):	
Details of measurement equipment:	
Qualification of operators:	
Report Number: .....consisting of ..... sheets	
Name of operator:.....Name of Surveyor: .....	
Signature of operator: ..... Signature of Surveyor: .....	
Company official stamp: Society official stamp	

Table 8 : Deck plating, bottom shell plating or side shell plating

REPORT ON THICKNESS MEASUREMENT OF DECK PLATING, BOTTOM SHELL PLATING OR SIDE SHELL PLATING (1)																		
Vessel's name: .....Register No..... Report No.....																		
STRAKE POSITION	Strake / Deck N°..... (2)																	
PLATE POSITION	No or Lett.	Org. Thk. (3)	Forward Reading						Aft Reading						Mean dimin %		Max. allo. dim.	
			Gauged		Diminution P		Diminution S		Gauged		Diminution P		Diminution S					
			mm	P	S	mm	%	mm	%	P	S	mm	%	mm	%	P	S	mm
12th fore																		
11th																		
10th																		
9th																		
8th																		
7th																		
6th																		
5th																		
4th																		
3rd																		
2nd																		
1st																		
amid-ships																		
1st aft																		
2nd																		
3rd																		
4th																		
5th																		
6th																		
7th																		
8th																		
9th																		
10th																		
11th																		
12th aft																		
Operator signature: .....Surveyor's signature.....																		
(1) Delete as appropriate (2) For multiple deck vessels (3) Rule thickness or as-built thickness																		



**Table 9 : Strength deck and sheerstrake plating at transverse sections**

REPORT ON THICKNESS MEASUREMENT OF STRENGTH DECK AND SHEERSTRAKE PLATING AT TRANSVERSE SECTIONS									
Vessel's name: .....Register No.....;Report No.....									
Transverse section at frame number									
STRAKE POSITION	No or lett.	Org Thk (1)	Max allow. dim.	Gauged		Diminution P		Diminution S	
		mm	mm	P	S	mm	%	mm	%
Hatch coaming (2) / Trunk longit. bulk- head									
Stringer plate									
1st strake inboard									
2nd									
3rd									
4th									
5th									
6th									
7th									
8th									
9th									
10th									
centre strake									
sheerstrake									
topside. total									
Operator's signature.....Surveyor's signature.....									
(1) Rule thickness or as-built thickness									
(2) For open deck vessels									

**Table 10 : Side and bottom plating at transverse sections**

REPORT ON THICKNESS MEASUREMENT OF SIDE AND BOTTOM PLATING AT TRANSVERSE SECTIONS									
Vessel's name: .....Register No.....Report No.....									
Transverse section at frame number									
STRAKE POSITION	No or lett.	Org. Thk. (1)	Max. allow. dim.	Gauged		Diminution P		Diminution S	
		mm	mm	P	S	mm	%	mm	%
1st strake below sheerstr.									
2nd									
3rd									
4th									
5th									
6th									
7th									
8th									
9th									
10th									
11th									
12th									
13th									
14th									
keel strake									
Bott. total									
Operator's signature.....Surveyor's signature.....									
(1) Rule thickness or as-built thickness									

Table 11 : Longitudinal members at transverse sections

REPORT ON THICKNESS MEASUREMENT OF LONGITUDINAL MEMBERS AT TRANSVERSE SECTIONS									
Vessel's name: .....Register No.....Report No.....									
Transverse section at frame number									
STRUCTURAL ITEM	it. No	Org. Thk. (1)	Max. allow. dim.	Gauged		Diminution P		Diminution S	
		mm	mm	P	S	mm	%	mm	%
Operator's signature: ..... Surveyor's signature: .....									
(1) Rule thickness or as-built thickness									

Table 12 : Transverse structural members

REPORT ON THICKNESS MEASUREMENT OF TRANSVERSE STRUCTURAL MEMBERS									
Vessel's name.....Register No.....Report No. ....									
DESCRIPTION									
LOCATION OF STRUCTURE									
STRUCTURAL MEMBERS	Item	Org. Thk. (1)	Max. allow. dim.	Gauged		Diminution P		Diminution S	
		mm	mm	P	S	mm	%	mm	%
Operator's signature.....Surveyor's signature.....									
(1) Rule thickness or as-built thickness									

Table 13 : Transverse bulkheads

REPORT ON THICKNESS MEASUREMENT OF TRANSVERSE BULKHEADS								
Vessel's name.....Register No.....Report No. ....								
LOCATION OF STRUCTURE	frame No. ...							
STRUCTURAL MEMBERS (plating / stiffeners)	Org. Thk. (1)	Max. allow. dim.	Gauged		Diminution P		Diminution S	
	mm	mm	P	S	mm	%	mm	%
Operator's signature.....Surveyor's signature.....								
(1) Rule thickness or as-built thickness								

Table 14 : Miscellaneous structural members

REPORT ON THICKNESS MEASUREMENT OF .....								
Vessel's name.....Register No.....Report No. ....								
LOCATION OF STRUCTURE:								
STRUCTURAL MEMBERS (plating / stiffeners)	Org. Thk. (1)	Max. allow. dim.	Gauged		Diminution P		Diminution S	
	mm	mm	P	S	mm	%	mm	%
Operator's signature.....Surveyor's signature.....								
(1) Rule thickness or as-built thickness								

4 Acceptance criteria

4.1 Application

4.1.1 The acceptance criteria for measured thicknesses are indicated in:

- [4.3] for vessels built according to gross scantling concept
- [4.4] for vessels built according to net scantling concept
- [4.5] for pitting.

When the acceptance criteria are not fulfilled, actions according to [4.2.1] to [4.2.3] are to be taken.

4.2 Definitions

4.2.1 Isolated area

The thickness diminution of an isolated area of an item is the localised diminution of the thickness of that item such as, for example, the grooving of a plate or a web or a local severe corrosion. It is expressed as a percentage of the relevant as built thickness.

It is not to be confused with pitting (see [4.5]).

If the criteria of acceptable diminution are not fulfilled for an isolated area, then this isolated area is to be repaired or replaced. In any case, the criteria of thickness diminution are to be considered for the corresponding item (see [4.2.2]).

4.2.2 Item

For each item, thicknesses are measured at several points and the average value of these thicknesses is to satisfy the acceptance criteria for the relevant item.

If the criteria of measured thicknesses are not fulfilled for an item, then this item is to be repaired or replaced.

Where the criteria are fulfilled but substantial corrosion as defined in Ch 2, Sec 2, [2.2.7] is observed, adequate provision is to be made in the report.

In any case, for the items which contribute to the hull girder longitudinal strength, the criteria in [4.2.3] are to be considered.

Table 15 : Zone definition - Flush deck vessels

Group of items	Zone structural items	Remarks
	DECK ZONE	
1	<ul style="list-style-type: none"><li>• Deck plating</li><li>• Deck longitudinals</li><li>• Deck girders</li></ul>	Including stringer plate
2	<ul style="list-style-type: none"><li>• Sheerstrake</li><li>• Sheerstrake longitudinals</li></ul>	The height of a sheerstrake having the same thickness as the adjacent side shell is to be taken equal to 0,08D
3	<ul style="list-style-type: none"><li>• Inner side upper strake</li><li>• Inner side upper strake longitudinals</li></ul>	The height of the inner side upper strake is to be taken equal to that of the sheerstrake
4	<ul style="list-style-type: none"><li>• Longitudinal bulkhead upper strake</li><li>• Longitudinal bulkhead upper strake longitudinals</li></ul>	The height of the longitudinal bulkhead upper strake is to be taken equal to that of the sheerstrake
	NEUTRAL AXIS ZONE	
5	Side and inner side shell plating	
6	Side and inner side shell longitudinals	
7	Side and inner side shell stringers	
8	Longitudinal bulkhead plating	
9	Longitudinal bulkhead longitudinals	
10	Longitudinal bulkhead stringers	
	BOTTOM ZONE	
11	<ul style="list-style-type: none"><li>• Bottom plating</li><li>• Bottom longitudinals</li><li>• Bottom girders</li></ul>	Including keel plate
12	<ul style="list-style-type: none"><li>• Bilge plating</li><li>• Bilge longitudinals</li></ul>	
13	<ul style="list-style-type: none"><li>• Inner bottom plating</li><li>• Inner bottom longitudinals</li><li>• Inner bottom girders</li></ul>	
14	<ul style="list-style-type: none"><li>• Inner side lower strake</li><li>• Inner side lower strake longitudinals</li></ul>	The height of the inner side lower strake is to be taken equal to: <ul style="list-style-type: none"><li>- height of the bilge, for single bottom vessels</li><li>- height of the double bottom</li></ul>
15	<ul style="list-style-type: none"><li>• Longitudinal bulkhead lower strake</li><li>• Longitudinal bulkhead lower strake longitudinals</li></ul>	The height of the longitudinal bulkhead lower strake is to be taken equal to: <ul style="list-style-type: none"><li>- height of the bilge, for single bottom vessels</li><li>- height of the double bottom</li></ul>

Table 16 : Zone definition - Trunk deck vessels

Group of items	Zone structural items	Remarks
	DECK ZONE	
1	<ul style="list-style-type: none"><li>Trunk deck plating</li><li>Trunk deck longitudinals</li><li>Trunk deck girders</li></ul>	
2	<ul style="list-style-type: none"><li>Trunk longitudinal bulkhead plating</li><li>Trunk longitudinal bulkhead longitudinals</li><li>Trunk longitudinal bulkhead girders</li></ul>	
3	<ul style="list-style-type: none"><li>Stringer plate</li><li>Stringer plate longitudinals</li></ul>	In way of the vessel depth D
4	<ul style="list-style-type: none"><li>Sheerstrake</li><li>Sheerstrake longitudinals</li></ul>	The height of a sheerstrake having the same thickness as the adjacent side shell is to be taken equal to 0,08D
5	<ul style="list-style-type: none"><li>Inner side upper strake</li><li>Inner side upper strake longitudinals</li></ul>	The height of the inner side upper strake is to be taken equal to that of the sheerstrake
6	<ul style="list-style-type: none"><li>Longitudinal bulkhead upper strake</li><li>Longitudinal bulkhead upper strake longitudinals</li></ul>	The height of the longitudinal bulkhead upper strake is to be taken equal to that of the sheerstrake
	NEUTRAL AXIS ZONE	
7	Side and inner side shell plating	
8	Side and inner side shell longitudinals	
9	Side and inner side shell stringers	
10	Longitudinal bulkhead plating	
11	Longitudinal bulkhead longitudinals	
12	Longitudinal bulkhead stringers	
	BOTTOM ZONE	
13	<ul style="list-style-type: none"><li>Bottom plating</li><li>Bottom longitudinals</li><li>Bottom girders</li></ul>	Including keel plate
14	<ul style="list-style-type: none"><li>Bilge plating</li><li>Bilge longitudinals</li></ul>	
15	<ul style="list-style-type: none"><li>Inner bottom plating</li><li>Inner bottom longitudinals</li><li>Inner bottom girders</li></ul>	
16	<ul style="list-style-type: none"><li>Inner side lower strake</li><li>Inner side lower strake longitudinals</li></ul>	The height of the inner side lower strake is to be taken equal to: <ul style="list-style-type: none"><li>height of the bilge, for single bottom vessels</li><li>height of the double bottom</li></ul>
17	<ul style="list-style-type: none"><li>Longitudinal bulkhead lower strake</li><li>Longitudinal bulkhead lower strake longitudinals</li></ul>	The height of the longitudinal bulkhead lower strake is to be taken equal to: <ul style="list-style-type: none"><li>height of the bilge, for single bottom vessels</li><li>height of the double bottom</li></ul>

4.2.3 Zone

For consideration of the hull girder longitudinal strength, the transverse section of the vessel is divided into three zones defined in Tab 15 to Tab 17:

- deck zone
- neutral axis zone
- bottom zone.

Each zone is to be evaluated separately.

The sectional area diminution of a zone, expressed as a percentage of the relevant as built sectional area, is to fulfill the criteria of acceptable diminution for that zone.

If the criteria of acceptable diminution are not fulfilled for a zone, then some items belonging to that zone are to be replaced (in principle, those which are most worn) in order to obtain after their replacement an increased sectional area of the zone fulfilling the relevant criteria.

4.3 Acceptance criteria for vessels built according to gross scantling concept

4.3.1 Application

Acceptance criteria stipulate limits of wastage which are to be taken into account for reinforcements, repairs or renewals of steel structure. These limits are generally expressed

for each structural item as a maximum percentage of acceptable wastage (W). When the maximum percentage of wastage is indicated, the minimum acceptable thickness ( $t_{min}$ ) is that resulting from applying this percentage to the rule thickness ( $t_{rule}$ ), according to the following formula:

$$t_{min} = \left(1 - \frac{W}{100}\right) t_{rule}$$

However, when the rule thickness is not available, the as-built thickness can be used.

Only for criteria related to an item (see [4.3.3], item d), 2), the Society may establish a list of renewal thicknesses tailored to the different structural items. In such a case these thicknesses are used in lieu of the minimum thicknesses calculated from the percentage of wastage.

Note 1: In any case, at the request of the Owner, the Society may perform a direct calculation based on the current measurements.

In cases where the vessel has some structural elements with reduced wear margins (e.g. due to vessel conversion, increase of draught), the minimum acceptable thickness for these elements is to be calculated with reference to the rule scantlings without taking account of any reduction originally agreed.

Decisions on steel renewals are taken by the attending Surveyor applying the criteria given in this Article and based on his judgment and the actual condition of the vessel. Should advice be needed to support his decision, the Surveyor may refer to the relevant technical office of the Society.

Table 17 : Zone definition - Open deck vessels

Group of items	Zone structural items	Remarks
	DECK ZONE	
1	<ul style="list-style-type: none"><li>Hatch coaming plating</li><li>Hatch coaming longitudinals</li><li>Hatch coaming girders</li></ul>	Including under deck strake
2	<ul style="list-style-type: none"><li>Stringer plate</li><li>Stringer plate longitudinals</li></ul>	
3	<ul style="list-style-type: none"><li>Sheerstrake</li><li>Sheerstrake longitudinals</li></ul>	The height of a sheerstrake having the same thickness as the adjacent side shell is to be taken equal to 0,08D
4	<ul style="list-style-type: none"><li>Inner side upper strake</li><li>Inner side upper strake longitudinals</li></ul>	The height of the inner side upper strake is to be taken equal to that of the sheerstrake
5	<ul style="list-style-type: none"><li>Longitudinal bulkhead upper strake</li><li>Longitudinal bulkhead upper strake longitudinals</li></ul>	The height of the longitudinal bulkhead upper strake is to be taken equal to that of the sheerstrake
	NEUTRAL AXIS ZONE	
6	Side and inner side shell plating	
7	Side and inner side shell longitudinals	
8	Side and inner side shell stringers	
9	Longitudinal bulkhead plating	
10	Longitudinal bulkhead longitudinals	
11	Longitudinal bulkhead stringers	
	BOTTOM ZONE	
12	<ul style="list-style-type: none"><li>Bottom plating</li><li>Bottom longitudinals</li><li>Bottom girders</li></ul>	Including keel plate
13	<ul style="list-style-type: none"><li>Bilge plating</li><li>Bilge longitudinals</li></ul>	
14	<ul style="list-style-type: none"><li>Inner bottom plating</li><li>Inner bottom longitudinals</li><li>Inner bottom girders</li></ul>	
15	<ul style="list-style-type: none"><li>Inner side lower strake</li><li>Inner side lower strake longitudinals</li></ul>	The height of the inner side lower strake is to be taken equal to: <ul style="list-style-type: none"><li>- height of the bilge, for single bottom vessels</li><li>- height of the double bottom</li></ul>
16	<ul style="list-style-type: none"><li>Longitudinal bulkhead lower strake</li><li>Longitudinal bulkhead lower strake longitudinals</li></ul>	The height of the longitudinal bulkhead lower strake is to be taken equal to: <ul style="list-style-type: none"><li>- height of the bilge, for single bottom vessels</li><li>- height of the double bottom</li></ul>

### 4.3.2 Criteria

The acceptance criteria for the minimum thicknesses are divided into:

- criteria on local strength, given in [4.3.3]
- criteria on global strength, given in [4.3.3]
- criteria on buckling strength, given in [4.3.4]
- criteria on pitting, given in [4.5].

Each measured structural item is to be checked against these four criteria, as far as applicable. When the criteria are not met, reinforcements, repairs and renewals are to be carried out as appropriate.

### 4.3.3 Local and global strength

a) Local and global strength criteria are given for the following vessel types:

- Cargo vessels  
Cargo vessels include vessels carrying dry cargoes, i.e., bulk cargo vessels, container vessels, general cargo vessels and Ro-Ro cargo vessels
- Tank vessels.

These criteria may also be used for other vessel types taking into consideration the equivalence or similarity of structural elements and their contribution to local and/or global strength.

b) Structural items to be assessed are listed in Tab 18 for cargo vessels, Tab 19 for tankers and Tab 20 for other vessels, grouped according to their position and contribution to the local or global strength of the vessel.

c) Each structural item is to be assessed according to three different criteria which vary with regard to the domain under which it is considered, namely:

- 1) an isolated area, which is meant as a part of a single structural item. This criterion takes into consideration very local aspects such as grooving of a plate or web, or local severe corrosion; however, it is not to be used for pitting for which separate criteria are considered (see [4.5])
- 2) an item, which is meant as an individual element such as a plate, a stiffener, a primary supporting member web or flange, etc. This criterion takes into consideration the average condition of the item, which is assessed by determining its average thickness using the various measurements taken on the same item
- 3) a zone, which is meant as all and only longitudinal elements contributing to the longitudinal strength of the vessel; in this regard, the three main zones are defined as deck zone, neutral axis zone and bottom zone.

d) The assessment of the thickness measurements is to be performed using the values given in the Tables for each structural element with regard to the three criteria defined above, in the following order:

- 1) assessment of isolated areas (column 1 in Tab 18, Tab 19 and Tab 20)

If the criterion is not met, the wasted part of the item is to be dealt with as necessary.

- 2) assessment of items (column 2 in Tab 18, Tab 19 and Tab 20)

If the criterion is not met, the item is to be dealt with as necessary in the measured areas as far as the average condition of the item concerned is satisfactory. In cases where some items are renewed, the average thicknesses of these items to be considered in the next step are the new thicknesses.

- 3) assessment of zones (column 3 in Tab 18, Tab 19 and Tab 20).

The criterion applicable to the zones is based on the general rule that the current hull girder section modulus is not to be less than 90% of the original section modulus within 0,5L amidships. At the request of the Owner, a direct calculation using the vessel's current thicknesses may be performed by the Society in order to accept greater diminutions than those given for this criterion.

e) These criteria take into consideration two main aspects:

- the overall strength of the hull girder
- the local strength and integrity of the hull structure, such as hatch covers, bulkheads, etc.

As a rule, they are applicable to the structure within the cargo area of vessels having a length equal to or greater than 90 metres. However, they may also be used for smaller vessels and for structure outside the cargo area according to the following principles:

- for vessels having a length less than 90 metres, the percentages of acceptable wastage given in the tables can be increased by 5 (%) (e.g. 15% instead of 10%, etc.), except for those of deck and bottom zones.
- for structure outside the cargo area, the same 5 (%) increase can be applied

on the understanding, however, that both conditions cannot be applied at the same time.

### 4.3.4 Buckling strength criterion

In general, the applicable criterion on buckling strength will be decided by the Society, if needed, on a case by case basis.

## 4.4 Acceptance for vessels built according to net scantling concept

### 4.4.1 Application

Acceptance criteria stipulate limits of wastage which are to be taken into account for reinforcements, repairs or renewals of steel structure.

Decisions on steel renewals are taken by the attending Surveyor applying the criteria given in this Section and based on his judgment and the actual condition of the vessel. Should advice be needed to support his decision, the Surveyor may refer to the relevant technical office of the Society.

Acceptance criteria on pitting, are given in [4.5].

Table 18 : Local and global acceptance criteria for cargo vessels (given in % of wastage)

Group of items	Description of items	1 Isolated area	2 Item	3 Zone
ITEMS CONTRIBUTING TO THE LONGITUDINAL STRENGTH (TRANSVERSE SECTION)				
	DECK ZONE (1)	–	–	10
1	Hatch coaming plating, stringer plate, sheer strake, inner side upper strake and longitudinal bulkhead upper strake	30	2515 (3)	–
2	Hatch coaming, stringer plate, sheer strake, inner side upper strake and longitudinal bulkhead upper strake longitudinals	25	20	–
	NEUTRAL AXIS ZONE (1)	–	–	15
3	Side and inner side shell plating	30	2515 (3)	–
4	Side and inner side longitudinals	25	20	–
5	Side and inner side shell stringers	25	20	–
	BOTTOM ZONE (1)	–	–	10
6	Bilge and bottom strakes, longitudinal bulkhead lower strake and inner side lower strake	30	2515 (3)	–
7	Bilge and bottom longitudinals, longitudinal bulkhead lower strake and inner side lower strake longitudinals	25	20	–
8	Inner bottom plating	30	2515 (3)	–
9	Inner bottom longitudinals	25	20	–
10	Bottom girders	25	20	–
OTHER ITEMS				
11	Hatch coaming plating (2)	25	20	–
12	Hatch coaming stiffeners	30	20	–
	stays	30	25	–
13	Hatch cover plating	25	20	–
15	Hatch cover stiffeners	30	20	–
16	Transverse bulkheads			
	plating	30	20	–
	stringer web	30	20	–
	stringer flange	25	20	–
	stiffener	25	20	–
	brackets	30	20	–
17	Side and inner side frames	25	20	–
	brackets	30	20	–
18	Deck beams	25	20	–
19	Bottom transverse web frames / floors			
	web	30	20	–
	flange	20	15	–
	brackets / stiffeners	30	20	–
20	Cross tie			
	web	25	20	–
	flange	20	15	–
	brackets	20	15	–
21	Forward and aft peak bulkheads (4)			
	plating	30	20	–
	stiffener	25	20	–
(1) Each zone is to be evaluated separately. (2) If continuous, to be included in item 1. (3) When transverse framing. (4) Including forward and aft peak bulkheads.				



**Table 19 : Local and global acceptance criteria for tankers (given in % of wastage)**

Group of items	Description of items	1 Isolated area	2 Item	3 Zone
<b>ITEMS CONTRIBUTING TO THE LONGITUDINAL STRENGTH (TRANSVERSE SECTION)</b>				
	<b>DECK ZONE (1)</b>	–	–	10
1	Deck plating, deck stringer, sheer strake and longitudinal bulkhead upper strake, trunk longitudinal bulkhead and inner side upper strake	30	25   15 (2)	–
2	Deck and sheer strake longitudinals, trunk longitudinal bulkhead longitudinals and inner side upper strake longitudinals	25	20	–
3	Deck longitudinal girders	25	20	–
4	Longitudinals connected to long. bulkhead upper strake	25	20	–
	<b>NEUTRAL AXIS ZONE (1)</b>	–	–	15
5	Side and inner side shell plating	30	25   15 (2)	–
6	Side and inner side shell longitudinals	25	20	–
7	Side and inner side shell stringers	25	20	–
8	Longitudinal bulkhead plating	30	25   15 (2)	–
9	Longitudinal bulkhead longitudinals	25	20	–
10	Longitudinal bulkhead stringers	25	20	–
	<b>BOTTOM ZONE (1)</b>	–	–	10
11	Bilge and bottom strakes, longitudinal bulkhead lower strake and inner side lower strake	30	25   15 (2)	–
12	Bilge and bottom longitudinals, longitudinal bulkhead lower strake and inner side lower strake longitudinals	25	20	–
13	Inner bottom plating	30	25   15 (2)	–
14	Inner bottom longitudinals	25	20	–
15	Bottom girders	25	20	–
<b>OTHER ITEMS</b>				
16	Deck beams	25	20	–
17	Deck transverse web frames	25	20	–
	web	20	15	–
	flange	25	20	–
	brackets / stiffeners			
18	Expansion tank	25	20	–
	plating	25	20	–
	stiffeners			
19	Side frames	25	20	–
	Side frame brackets	30	20	–
20	Side shell web frames	25	20	–
	web	20	15	–
	flange	25	20	–
	brackets / stiffeners			
<p>(1) Each zone is to be evaluated separately.</p> <p>(2) When transverse framing.</p> <p>(3) Including swash bulkheads, forward and aft peak bulkheads.</p>				

Group of items	Description of items	1 Isolated area	2 Item	3 Zone
21	Longitudinal bulkheads vertical stiffeners brackets	25 30	20 20	– –
22	Longitudinal bulkhead web frames web flange brackets / stiffeners	25 20 25	20 15 20	– – –
23	Bottom transverse web frames / floors web flange brackets / stiffeners	25 20 25	20 15 20	– – –
24	Cross tie web flange brackets / stiffeners	25 20 20	20 15 15	– – –
25	Transverse bulkheads (3) plating stringer web stringer flange stiffener	25 25 20 25	20 20 15 20	– – – –
(1) Each zone is to be evaluated separately. (2) When transverse framing. (3) Including swash bulkheads, forward and aft peak bulkheads.				

4.4.2 Values of corrosion additions

The values of corrosion additions are to be determined according to Pt B, Ch 2, Sec 5, [3].

4.4.3 Acceptance criteria for isolated areas

The thickness diminution of isolated areas of items is not to be greater than 1,25  $t_c$ , where  $t_c$  is the value of corrosion addition as defined in Pt B, Ch 2, Sec 5, [3]. Otherwise, actions according to [4.2.1] are to be taken.

4.4.4 Acceptance criteria for items

The thickness diminution of isolated items is not to be greater than the value of corrosion addition as defined in Pt B, Ch 2, Sec 5, [3]. Otherwise, actions according to [4.2.2] are to be taken.

4.4.5 Acceptance criteria for zones

The sectional area diminution of a zone (measured according to [4.2.3]) is not to be greater than 10% of the original sectional area. Otherwise, actions according to [4.2.3] are to be taken.

The criterion applicable to the zones is based on the general rule that the current hull girder section modulus is not to be less than 90% of the original section modulus within 0,5L amidships. At the request of the Owner, a direct calculation using the vessel’s current thicknesses may be performed by

the Society in order to accept greater diminutions than those given for this criterion.

4.5 Pitting

4.5.1 Pitting corrosion

Pitting corrosion is one of the most common forms that can be noted in ballast tanks. It is a localised corrosion that occurs on bottom plating, other horizontal surfaces and at structural details that trap water, particularly the aft bays of tank bottoms. For coated surfaces the attack produces deep and relatively small diameter pits that can lead to hull penetration.

Pitting of uncoated tanks, as it progresses, forms shallow but very wide scabby patches (e.g. 300m mm diameter); the appearance resembles a condition of general corrosion.

Pitting is caused by the action of a localised corrosion cell on a steel surface due to the breaking of the coating (if present), to the presence of contaminants or impurities on the steel (e.g. mill scale) or to impurities present in the steel.

4.5.2 Acceptance criteria

The maximum acceptable depth for isolated pits is 35% of the as-built thickness.

For areas with different pitting intensity, the intensity diagrams shown in Fig 12 are to be used to identify the percentage of affected areas.

**Table 20 : Local and global acceptance criteria for other vessels (given in % of wastage)**

Group of items	Description of items	1 Isolated area	2 Item	3 Zone
<b>ITEMS CONTRIBUTING TO THE LONGITUDINAL STRENGTH (TRANSVERSE SECTION)</b>				
	<b>DECK ZONE (1)</b>	–	–	10
1	Deck plating, deck stringer and sheer strake	30	25   15 (2)	–
2	Deck and sheer strake longitudinals	25	20	–
3	Deck longitudinal girders	25	20	–
	<b>NEUTRAL AXIS ZONE (1)</b>	–	–	15
4	Side shell plating	30	25   15 (2)	–
5	Side shell longitudinals	25	20	–
6	Side shell stringers	25	20	–
7	Longitudinal bulkhead plating	30	25   15 (2)	–
8	Longitudinal bulkhead longitudinals	25	20	–
9	Longitudinal bulkhead stringers	25	20	–
	<b>BOTTOM ZONE (1)</b>	–	–	10
10	Bilge and bottom strakes and longitudinal bulkhead lower strake	30	25   15 (2)	–
11	Bilge and bottom longitudinals and longitudinal bulkhead lower strake	25	20	–
12	Inner bottom plating	30	25   15 (2)	–
13	Inner bottom longitudinals	25	20	–
14	Bottom girders	25	20	–
<b>OTHER ITEMS</b>				
15	Deck beams	25	20	–
16	Deck transverse web frames	25	20	–
	web	25	20	–
	flange	20	15	–
	brackets / stiffeners	25	20	–
17	Side frames	25	20	–
	brackets	30	20	–
18	Side shell web frames	25	20	–
	web	25	20	–
	flange	20	15	–
	brackets / stiffeners	25	20	–
19	Longitudinal bulkheads	25	20	–
	vertical stiffeners	30	20	–
	brackets	30	20	–
20	Longitudinal bulkhead web frames	30	20	–
	web	30	20	–
	flange	20	15	–
	brackets / stiffeners	30	20	–
21	Bottom transverse web frames / floors	30	20	–
	web	30	20	–
	flange	20	15	–
	brackets / stiffeners	30	20	–
22	Transverse bulkheads (3)	30	20	–
	plating	30	20	–
	stringer web	30	20	–
	stringer flange	25	20	–
	stiffener	25	20	–
<p>(1) Each zone is to be evaluated separately.</p> <p>(2) When transverse framing.</p> <p>(3) Including forward and aft peak bulkheads.</p>				

For areas having a pitting intensity of 50% or more, the maximum acceptable average depth of pits is 20% of the as-built thickness. For intermediate values between isolated pits and 50% of affected area, the interpolation between 35% and 20% is made according to Tab 21.

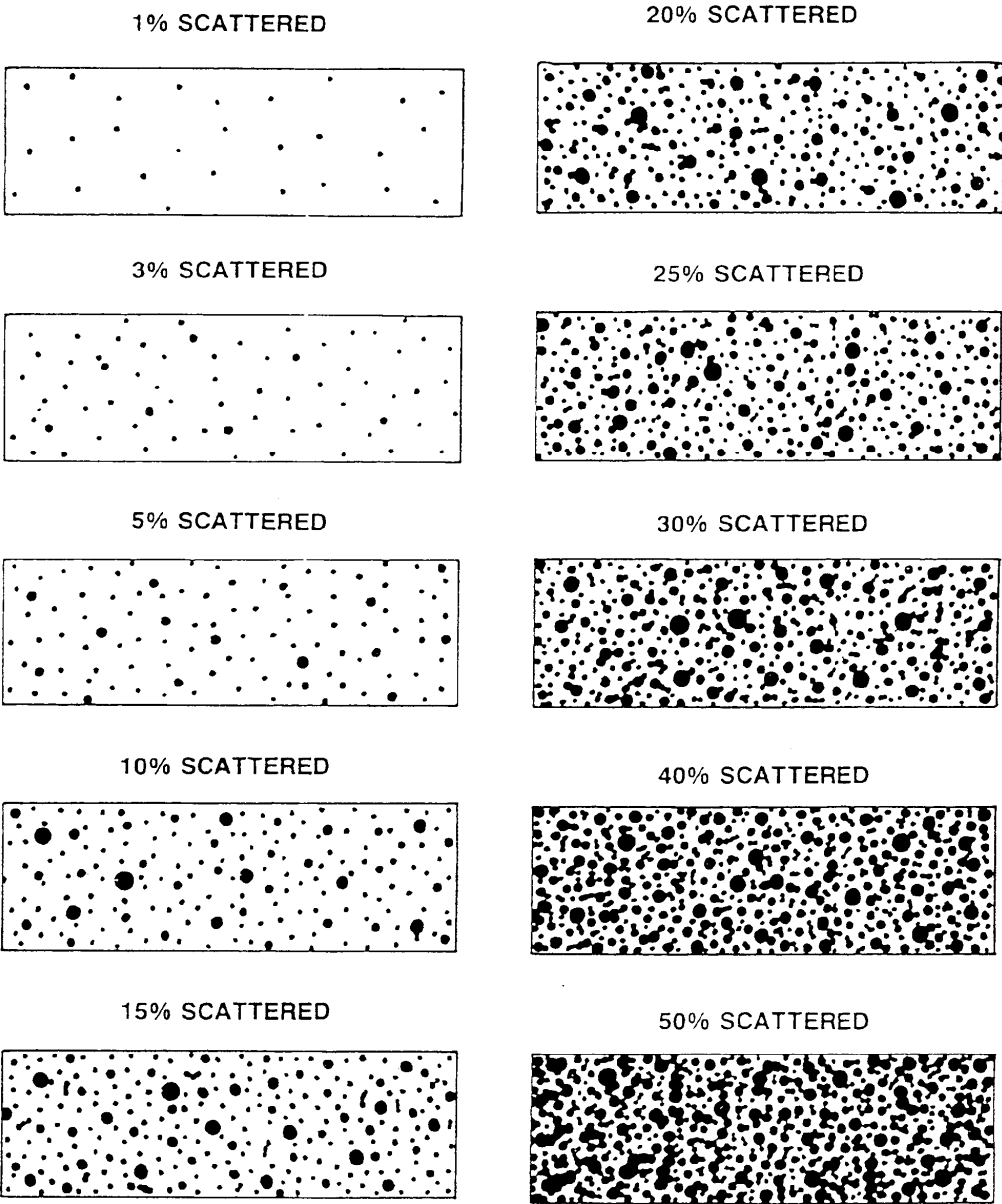
In addition, the thickness outside the pits in the area considered is to be assessed according to [4.3] and [4.4].

Note 1: Application of filler material (plastic or epoxy compounds) is recommended as a means to stop or reduce the corrosion process, but it is not considered an acceptable repair for pitting exceeding the maximum allowable wastage limits. Welding repairs may be accepted when performed in accordance with procedures agreed with the society.

Table 21 : Pitting intensity and corresponding maximum average depth of pitting

Pitting intensity (%)	Maximum average pitting depth (% of the as-built thickness)
Isolated	35,0
5	33,5
10	32,0
15	30,5
20	29,0
25	27,5
30	26,0
40	23,0
50	20,0

Figure 12 : Pitting intensity diagrams (from 1% to 50% intensity)



5 Examples of designation and location of plating strakes

5.1 Shell expansion

5.1.1 Non-propelled cargo vessel

See Fig 13.

5.1.2 Pontoon

See Fig 14.

5.1.3 Tug and pusher

See Fig 15.

5.1.4 Other vessels

For vessels other than those specified under [5.1.1] to [5.1.3], see Fig 16.

5.2 Main deck

5.2.1 Flush/trunk deck

See Fig 17.

5.2.2 Open deck

See Fig 18.

6 Guide to evaluation of coating

6.1 General

6.1.1 The information and recommendations aiming to support evaluation of the condition of the protective coatings when performing surveys are developed in NI607 Guidelines for Corrosion Protection Applicable to Inland Navigation Vessels.

Figure 13 : Non-propelled cargo vessel

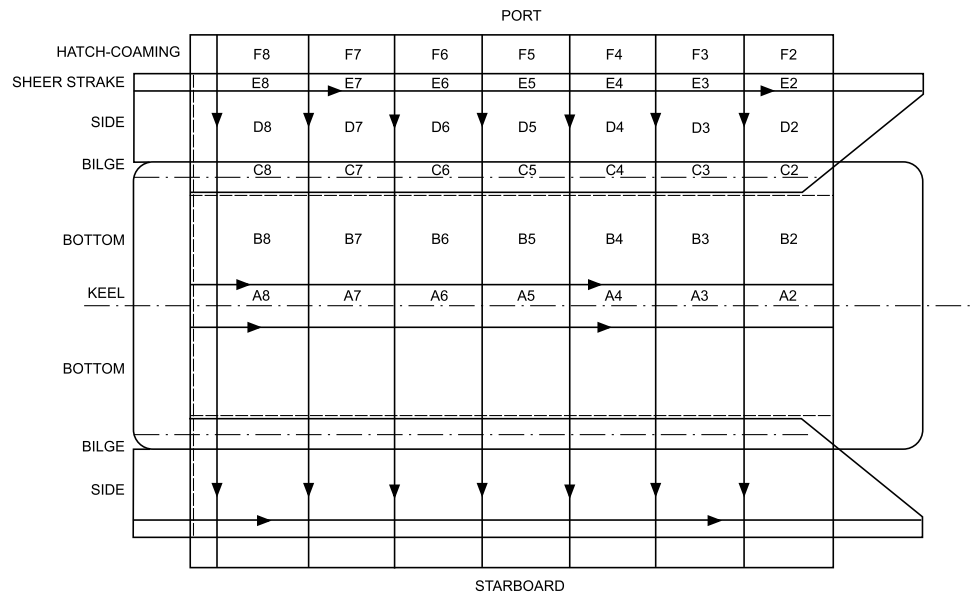


Figure 14 : Pontoon

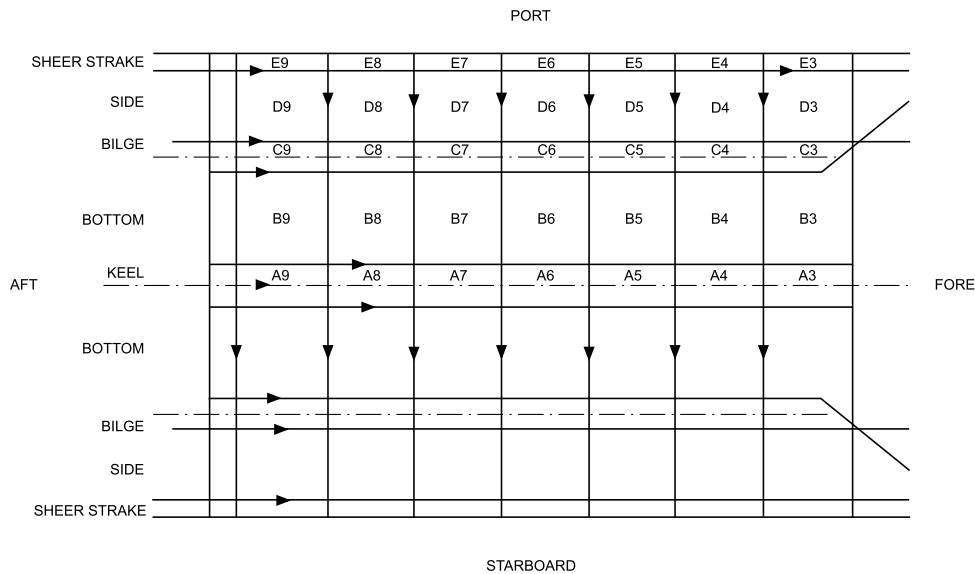


Figure 15 : Tug and pusher

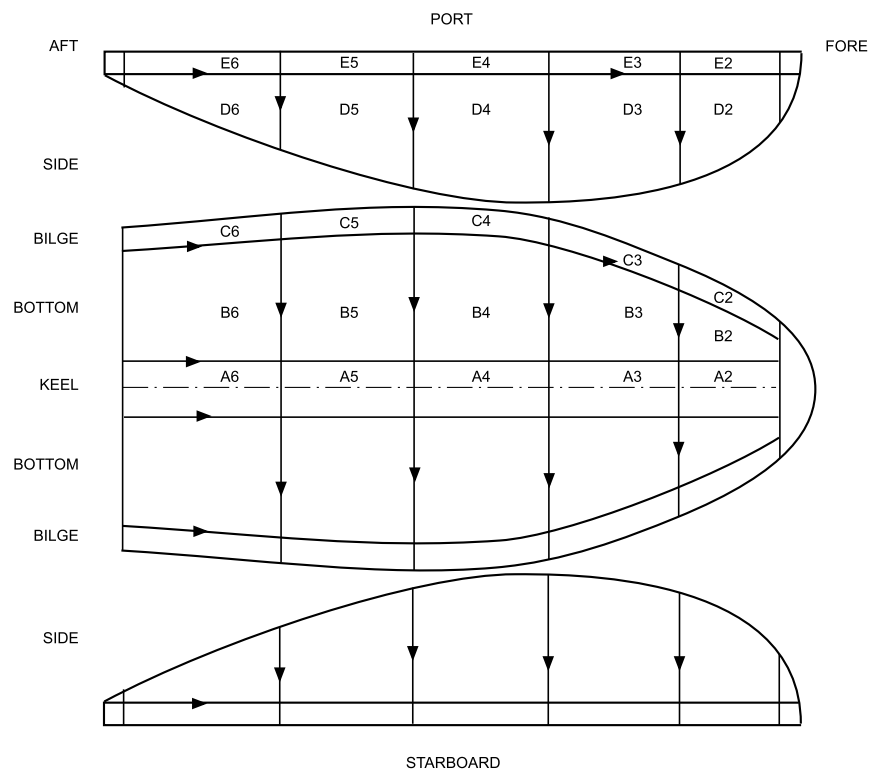


Figure 16 : Other vessels - shell plating

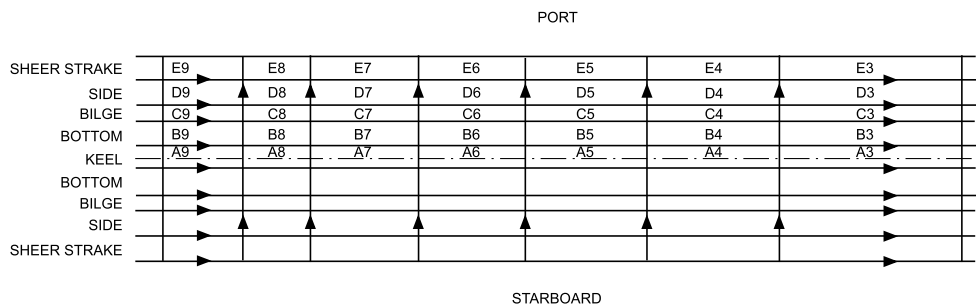


Figure 17 : Deck plating - flush deck vessels

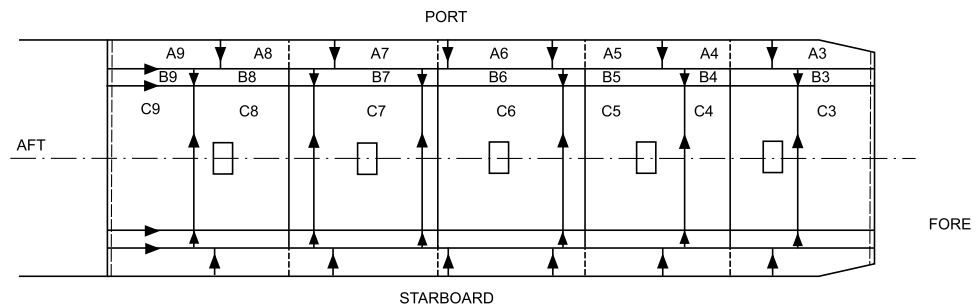
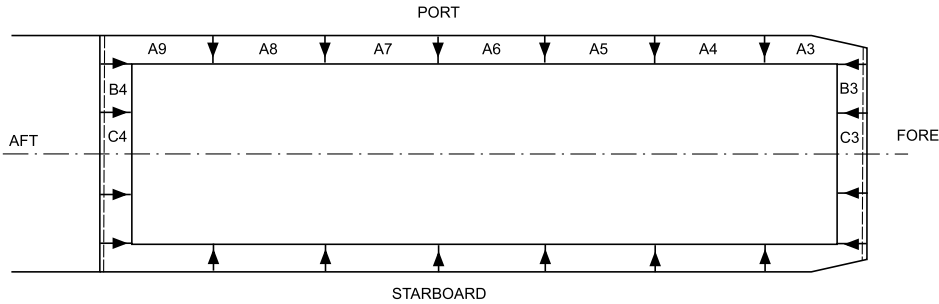


Table 22 : Coating Condition Rating Criteria

Description	Definition
GOOD	Condition with spot rusting is less than 3% of the area under consideration without visible failure of the coating. Rusting at edges or welds, must be less than 20% of edges or weld lines in the area under consideration.
FAIR	Condition with breakdown of coating or rust penetration is less than 20% of the area under consideration. Hard rust scale rust penetration must be less than 10% of the area under consideration. Rusting at edges or welds must be less than 50% of edges or weld lines in the area under consideration.
POOR	Condition with breakdown of coating or rust penetration is more than 20% or hard rust scale is more than 10% of the area under consideration or local breakdown concentrated at edges or welds is more than 50% of edges or weld lines in the area under consideration.
<b>Note 1:</b> Spot rusting is rusting in spots without visible failure of coating	
<b>Note 2:</b> Blistering of coatings is identified as coating failure.	

Figure 18 : Deck plating - open deck vessels







**SURVEYS FOR MAINTENANCE OF CLASS**

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<b>SECTION 1</b>	<b>ANNUAL SURVEY</b>
<b>SECTION 2</b>	<b>INTERMEDIATE SURVEY</b>
<b>SECTION 3</b>	<b>CLASS RENEWAL SURVEY</b>
<b>SECTION 4</b>	<b>SURVEY OF PROPELLER SHAFTS, PROPELLERS AND OTHER PROPULSION SYSTEMS</b>
<b>SECTION 5</b>	<b>BOTTOM SURVEY</b>
<b>SECTION 6</b>	<b>PRESSURE EQUIPMENT</b>
<b>SECTION 7</b>	<b>ADDITIONAL SURVEYS RELATED TO SERVICE NOTATIONS</b>
<b>SECTION 8</b>	<b>ADDITIONAL SURVEYS RELATED TO ADDITIONAL SERVICE FEATURES</b>
<b>SECTION 9</b>	<b>SCOPE OF SURVEYS RELATED TO ADDITIONAL CLASS NOTATIONS</b>
<b>APPENDIX 1</b>	<b>CLASS REQUIREMENTS AND SURVEYS OF LAID-UP VESSELS</b>



# SECTION 1

# ANNUAL SURVEY

## 1 General

### 1.1 Application

**1.1.1** An annual survey is required only for:

- vessels assigned with additional class notation **Annual survey** according to Ch 1, Sec 3, [11.1], and
- vessels complying with Ch 2, Sec 2, [5.2.2].

**1.1.2** Depending on the findings of previous surveys, the Society may also require an annual survey, covering the

check of the main hull elements and of components which are of significance for the vessel's safety, to be carried out.

### 1.2 Scope

**1.2.1** For the vessels covered by [1.1.1], the annual survey is to be carried out according to Pt D, Ch 2, Sec 9, [2].

**1.2.2** Where [1.1.2] applies, the scope and extent of the survey will be defined by the Society, on a case by case basis.

## SECTION 2 INTERMEDIATE SURVEY

### 1 General

#### 1.1

**1.1.1** The requirements of this Section apply to intermediate surveys of all vessels. The specific requirements for intermediate surveys related to service notations, additional service features and additional class notations assigned to vessels are addressed in Ch 3, Sec 7, Ch 3, Sec 7 and Ch 3, Sec 9, respectively.

**1.1.2** A survey planning meeting is to be held prior to the commencement of the survey.

**1.1.3** For vessels assigned additional class notation **Annual survey** and vessels complying with Ch 2, Sec 2, [5.2.2], the intermediate survey is to be carried out according to Pt D, Ch 2, Sec 9.

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

### 2 Surveys performance

#### 2.1 General

**2.1.1** Intermediate survey shall include all the inspections and checks required for eventual annual surveys. Additionally, the requirements stated under [3] to [5] shall be observed.

Note 1: More extensive Regulations of the country, where the vessel is registered, are to be observed.

**2.1.2** Additional requirements may have to be observed for particular vessel types, due to the request of the Owner or in connection with manufacturer's recommendations for special equipment.

### 3 Hull and hull equipment

#### 3.1 General

**3.1.1** The main structural elements of the hull are to be subjected to a general visual inspection, as far as accessible. If applicable, ballast tank, storage and engine rooms

are to be surveyed at random, depending on the vessel type and the age and general condition of the vessel. Where damages or excessive wastage affecting the class are suspected, the Surveyor is entitled to carry out further investigations as well as thickness measurements, if required.

**3.1.2** The rudder and manoeuvring arrangement and the anchor equipment are to be checked for visible damages. For the related machinery and for operability, see [4.1.1].

**3.1.3** The foundations and their substructure of special equipment, particularly on the upper deck, shall be inspected for damages.

**3.1.4** Compartments and rooms normally not accessible, or accessible only after special preparations, may be required to be opened for inspection, depending on the vessel's age and available information about service conditions.

#### 3.2 Ballast tanks

**3.2.1** Depending on the vessel's age, the Surveyor may require opening of ballast tanks for visual inspection, particularly if deterioration of the coating or excessive wastage has already been observed at previous surveys.

If the coating in such ballast tanks is found to be in poor condition (see Ch 2, Sec 2, [2.2.9]), maintenance of class is to be subject to the tanks in question being examined at annual intervals, and thickness measurements carried out as considered necessary.

If coating is to be partly or totally renewed, only approved coating is applicable in the case of a repair. The whole working procedure including the surface preparation has to be documented.

#### 3.3 Hatches and covers, bow, side and stern doors

**3.3.1** Hatches and covers, bulkhead and hull doors, ramps and any openings in the outer shell shall be surveyed regarding structural integrity as well as tightness and operability of all closures.

**3.3.2** Additionally to the overall survey the following structural members of bow, side and stern doors are to be thoroughly inspected:

- all hinges and the pertinent hydraulic cylinders in way of their securing points
- all securing elements of the locking devices and stoppers.

**3.3.3** Where considered necessary by the Surveyor, additionally crack tests shall be carried out at structural members of bow, side and stern doors.

Essentially, the crack tests will cover:

- main joining welds and their interfacial areas both on the vessel's hull and on the doors
- highly stressed areas in way of the centres of rotation of the hinges
- highly stressed areas of the locking devices and their stoppers
- repair welding.

For crack detection the dye penetration method or the magnetic particle inspection method shall be employed, and a test protocol is to be prepared.

### 3.4 Dry dock survey

**3.4.1** Intermediate surveys have to be carried out in dry-dock in the following cases:

- the vessel's shell is riveted, at the Surveyor's discretion
- the vessel's age exceeds 20 years, at the Surveyor's discretion
- the vessel's age exceeds 20 years and the service notation granted is tanker for transport of dangerous goods
- the vessel is granted with the range of navigation **IN(1,2 < x ≤ 2)**, at the Society's discretion, depending on the frequency of operation in restricted maritime stretches of water or lakes (salt or brackish waters).

For performance of dry dock surveys, see Ch 3, Sec 5, [2].

**3.4.2** Hull plates before protective application, appendages, discharge valves, river chests, etc. have to be examined. In case of doubt, thickness measurements can be requested by the Surveyor.

## 4 Machinery and electrical installations

### 4.1 General

**4.1.1** The machinery including electrical installations will be subjected to the following surveys and operational checks:

- general inspection of machinery and boiler rooms, with special regard to the propulsion system, the auxiliary engines, possible fire and explosion sources, and checking of emergency exits as to their free passage
- external inspection of boilers and pressure vessels, with their appliances and safety devices. For details regarding boilers, see Ch 3, Sec 6
- inspection and checking of the remote control, quick-closing/stopping devices of pumps, valves, ventilators, etc.
- random checking of the remote control and automation equipment

- inspection and functional checking of the main and auxiliary steering gear, including their appliances and control systems
- if applicable, checking of all communication systems between bridge and machinery/boiler and steering gear rooms
- inspection of the bilge system, including remote control actuators and bilge filling level monitors
- checking of the main and emergency power supply systems, including the switch gear and other important electrical installations
- survey of explosion-proof installations
- random inspection and checking of essential equipment to the Surveyor's discretion.

### 4.2 Fire extinguishing systems

#### 4.2.1 General requirement

The following items/systems are subject to inspection and/or testing, where applicable:

- fire mains system, including hoses and nozzles
- gas fire extinguishing system
- dry powder fire extinguishing system
- foam fire extinguishing system
- sprinkler system, including water mist sprinkler system
- water and/or foam drencher system
- any other fixed fire extinguishing system provided
- portable fire extinguishers, mobile fire extinguishers, including portable foam application units
- fire detection and alarm systems
- emergency stops for ventilation fans, boiler forced draft fans, fuel transfer pumps, fuel oil purifiers
- quick-closing fuel valves
- fire closures, fire dampers, etc.
- fireman's outfits, if required.

#### 4.2.2 Fire hoses and nozzles

Fire hoses and nozzles provided are to be included in the testing of the fire mains system to the Surveyor's discretion.

#### 4.2.3 Fixed fire extinguishing systems

Fixed fire extinguishing systems, such as gas, foam, dry powder or water mist systems, including gas cylinders are subject to maintenance every 2 years.

On the occasion of these inspections all hose assemblies must be subjected to a visual check. All hose assemblies made of synthetic rubber must be replaced according to manufacturer's instructions.

The installation, maintenance, monitoring and documentation of fixed fire extinguishing systems according to Statutory Regulations, for the engine room, pump room and all spaces containing essential equipment, such as switchboards, compressors, etc., and for the refrigeration equipment, if any, shall only be performed by recognized specialized companies.

#### 4.2.4 Portable and mobile fire extinguishers

Portable and mobile fire extinguishers are subject to inspection by approved or recognized specialized company every 2 years. Maintenance and eventual pressure testing shall be carried out as appropriate in accordance with the manufacturer's instructions or applicable Rules. Each extinguisher is to be provided with a label showing the date of inspection and name and signature of the approved or recognized specialized company.

A protocol of the inspections and maintenance work carried out is to be kept on board.

#### 4.2.5 Foam concentrate

Foam concentrate for fixed foam fire extinguishing systems is to be examined not later than 3 years after filling into the system, and yearly thereafter. The examination is to be performed by the manufacturers or by an independent recognized laboratory. Reports are to be presented to the Surveyor. Manufacturer's certificates stating the properties of the foam concentrate shall be available on board for reference.

The foam concentrate for the portable foam applicators is to be renewed on the occasion of each class renewal.

More extensive regulations regarding other inspection intervals/performance of the tests should be observed.

### 4.3 Machinery

#### 4.3.1 Measurements

The following measurements are generally to be performed unless it can be proved by valid protocols that they have been carried out recently:

- crank web deflection, main engine(s)
- crank web deflection, auxiliary diesel engine(s) (where relevant)
- axial thrust bearing clearance of shafting system(s).

#### 4.3.2 Operational tests

In addition to the requirements under [4.1.1], the following system components are to be subjected to operational tests:

- emergency generating set, including emergency switchboard (where applicable)
- emergency bilge valve(s)
- bilge, ventilation and monitoring systems for the carriage of dangerous substances
- drainage facilities of starting-air and control-air receivers
- general operational test of the machinery and electrical installation to demonstrate unrestricted operability, as indicated by the Surveyor.

#### 4.3.3 Monitoring equipment

The monitoring equipment and the automated functions of the machinery installation are to be subjected to operational trials under service conditions. The bridge remote control equipment of the propulsion system will be examined as required by the Surveyor.

### 4.4 Electrical installations and equipment

**4.4.1** The Surveyor will check the good condition, particularly the earthing of the electrical equipment, and the satisfactory operating condition of the entire electrical installation. If he judges it necessary, the insulation measurements of the electrical installation will be carried out.

### 4.5 Automated installations

**4.5.1** The good working of the fire detectors and bilge floating alarms is to be checked. The satisfactory operation of some selected equipment (alarms, safety equipment, automatic equipment, etc.) has to be checked.

## 5 Pressure equipment

### 5.1 General

**5.1.1** For steam boiler installations, thermal oil plants and pressure vessels, see Ch 3, Sec 6.

## SECTION 3

## CLASS RENEWAL SURVEY

### 1 General

#### 1.1

**1.1.1** The requirements of this Section apply to class renewal surveys of all vessels. The specific requirements for class renewal surveys related to service notations, additional service features and additional class notations assigned to vessels are addressed in Ch 3, Sec 7, Ch 3, Sec 8 and Ch 3, Sec 9, respectively.

**1.1.2** A survey planning meeting is to be held prior to the commencement of the survey.

**1.1.3** 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 vessel are in satisfactory condition or restored to such condition as to allow the vessel to operate for the new period of class of *p* years to be assigned, provided that the vessel is properly maintained and operated 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 required in [2.4] and [2.5], to ensure that the structural integrity remains effective. The aim of the examination is to discover substantial corrosion, significant deformation, fractures, damages or other structural deformation that may be present.

**1.1.4** The Owner is to provide the necessary facilities to enable this class renewal survey. The conditions for survey as detailed in Ch 2, Sec 2, [2.6] and Ch 2, Sec 2, [2.7] are to be met.

### 2 Hull and hull equipment

#### 2.1 Bottom survey in dry condition

**2.1.1** A bottom survey in dry condition is to be carried out, as detailed in Ch 3, Sec 5, [2], and in addition the requirements given in [2.1.3] to [2.1.5] are to be complied with.

**2.1.2** For vessels of unusual characteristics or engaged on special services, means of underwater inspection equivalent to the bottom survey in dry condition may be considered as an alternative by the Society, particularly when a suitable high resistance paint is applied to the underwater portion of the hull.

**2.1.3** Anchors, windlass(es) and chain cables are to be ranged and examined, and the required complement and

condition are to be checked. When the vessel is more than 5 years old, chain cables are to be gauged.

Any length of chain cable which is found to be damaged or excessively worn is to be renewed.

**2.1.4** River valves and cocks are to be opened up for internal examination.

**2.1.5** Thickness measurements of the outer shell plating, as and if required within the scope of the related class renewal survey, are to be carried out (refer to [2.5]), if not already done within 12 months before the end of class period.

#### 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.

The sheathing of wood-sheathed steel decks may be removed, at the Surveyor's discretion, in the case of doubt as to the condition of plating underneath.

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 hatch covers and coamings are to be surveyed as follows:

- a thorough survey of the items listed in Ch 3, Sec 2, [3.3] including close-up survey of hatch cover plating and hatch coaming plating, is to be carried out
- checking of the satisfactory operation of all mechanically operated hatch covers is to be made, including 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 the effectiveness of sealing arrangements of all hatch covers by hose testing or equivalent is to be carried out.

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

- windlass and chain stoppers, with disassembly as deemed necessary to verify the condition of the equipment and control and safety devices, hawse pipes
- 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** All bilge and ballast piping systems are to be examined and operationally tested to working pressure to attending Surveyor’s satisfaction to ensure that tightness and condition remain satisfactory.

**2.3 Holds and other dry compartments**

**2.3.1** Holds, 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 river suction, river 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.

**2.3.3** Chain lockers are to be internally examined, while the anchor chains are ranged as required for the bottom survey in dry condition (see [2.1.3]). The pumping arrangement of the chain lockers is to be tested.

**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 1.  
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: Due attention is also to be given to fuel oil piping passing through ballast tanks, which is to be pressure tested when the vessel is more than 10 years old.

**2.4.2** For ballast tanks, excluding double bottom tanks, where a hard protective coating is found in poor condition and it is not renewed, where soft or semi-hard coating has been applied or where a hard protective coating was not applied from time of construction, the tanks in question are to be examined at annual intervals. Thickness measurements are to be carried out as deemed necessary by the Surveyor.

When such breakdown of hard protective coating is found in double bottom ballast tanks and it is not renewed, where a soft or semi-hard coating has been applied, or where a hard protective coating was not applied from the time of construction, the tanks in question may be examined at annual intervals. When considered necessary by the Surveyor, or where extensive corrosion exists, thickness measurements are to be carried out.

**2.4.3** For integral tanks which are intended to contain liquid cargoes such as edible oil, the Surveyor may waive the requirement specified in [2.4.5] subject to a satisfactory internal examination.

**2.4.4** Boundaries of double bottom, deep, ballast, peak and other tanks, both integral and independent 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 near the top of hatches for ballast/cargo holds.

**Table 1 : Requirements for internal examination of integral (structural) tanks at class renewal survey**

Tank	Class renewal survey No. I	Class renewal survey No. II	Class renewal survey No. III	Class renewal survey Nos. IV and subsequent
Peaks (all use)	all	all	all	all
Water ballast tanks (all types)	all	all	all	all
Fresh water	none	one	all	all
Fuel oil bunkertanks: <ul style="list-style-type: none"><li>• Engine room</li><li>• Cargo length area</li></ul>	none none	none one	one two <b>(1)</b>	one half, minimum two <b>(1)</b>
Lubricating oil tanks	none	none	none	one
Cargo tanks	all	all	all	all
<p><b>(1)</b> One deep tank is to be included, if fitted.</p> <p><b>Note 1:</b> Independent 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.</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>				



**2.4.5** Boundaries of fuel oil, lube oil and fresh water tanks are to be tested with a head of liquid to the highest point that liquid will rise under service conditions. 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. The Surveyor may extend the testing as deemed necessary.

**2.4.6** The test pressure to be applied is defined in Pt B, Ch 3, Sec 4, [5] and Pt B, Ch 8, Sec 4.

## **2.5 Thickness measurements**

### **2.5.1 General**

Thickness measurements required for hull structural elements are to be carried out in compliance with Ch 2, App 1.

### **2.5.2 Hull equipment**

In class renewal II and all subsequent class renewals the cross sectional areas of the anchor chain cables are to be determined. The mean diameters of the anchor chain cables are to be determined by representative measurements, approximately 3 links per length of 27,5 m, made at the ends of the links where the wear is the greatest. The weights of the anchors are to be checked in class renewal III and all subsequent class renewals. For permissible tolerances, see Ch 2, Sec 2, [2.4.2].

### **2.5.3 Piping system**

Where thickness measurements of piping system are carried out, they are to be checked against permissible tolerances according to Ch 2, Sec 2, [2.4.3].

## **2.6 Additional inspection and check - Class renewal I**

### **2.6.1 Hull structure**

Thickness measurements are to be carried out in way of suspect areas, defined in Ch 2, Sec 2, [2.2.11].

### **2.6.2 Rudder, equipment, deck openings, etc.**

The class renewal survey also covers other parts essential for the operation and safety of the vessel, such as rudder and steering gear, watertight doors, sluice valves, air and sounding pipes, gas-freeing and safety arrangements of cargo tanks, life-boat davits, companionways, hatches, scuppers and water drain pipes with their valves, fire protecting arrangements, masts, anchors, anchor chains and hawsers.

The rudder, rudder couplings and bearings, as well as the stock are to be surveyed in mounted condition, the rudder clearance to be measured and documented. The steering gear is to be subjected to an operational trial.

If considered necessary in view of the inspection results, the rudder and/or parts of the steering gear may have to be dismantled.

Bow, side and stern doors, if any, are to be checked.

### **2.6.3 Engine room 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, engine room bulkheads in way of tank top and the bilge wells. Where wastage is evident or suspected, thickness measurements are to be carried out.

## **2.7 Additional inspection and check - Class renewal II**

**2.7.1** The requirements for the second class renewal include those for class renewal I. Additionally the following investigations are to be carried out.

**2.7.2** The structural parts behind ceilings, floor coverings and insulation are to be examined, as required by the Surveyor and depending on the general condition of the vessel, see also [2.8.2].

**2.7.3** The chain cables are to be ranged so that they can be examined for wear and other damages throughout their length. The mean diameter of the anchor chain cables is to be determined on at least 3 links per length.

## **2.8 Additional inspection and check - Class renewal III and subsequent ones**

**2.8.1** The requirements for the third and the subsequent class renewals include those for the class renewal II. Additionally, the following investigations are to be carried out.

**2.8.2** Ceilings, linings and insulation of all spaces and cargo holds including steel ceiling adjacent to the shell plating and the inner bottom shall be removed, as indicated by the Surveyor, to enable the steel structure to be examined in detail.

For class renewals III and subsequent ones, the inner bottom ceilings may be partially removed at the Surveyor's discretion, to enable their assessment.

For class renewals IV and subsequent ones, the inner bottom ceilings are to be completely removed and the tank top is to be carefully cleaned, such as to enable proper assessment of the tank top's condition.

The wall lining underneath windows in the outer shell is to be lifted as required by the Surveyor so that the structure behind may be examined.

**2.8.3** The rudder body is to be examined. The connections to the rudder stock and pertinent securing devices are to be inspected. Clearance has to be checked.

The rudder stock is to be surveyed as far as accessible. If deemed necessary in view of findings during this external inspection, the stock is to be dismantled. In way of the bearings, stock and pintle are to be examined for corrosion.

**2.8.4** The weight of the anchors is to be checked.

### 3 Machinery and electrical installations

#### 3.1 General

**3.1.1** Except for individual machinery components as indicated in the following, the scope of all class renewal surveys related to the machinery including electrical installations is identical.

The class renewal survey includes the surveys and checks in Ch 3, Sec 2, [4].

#### 3.2 Surveys requiring dry docking

**3.2.1** While the vessel is in dry dock, the river inlet and discharge valves are to be examined as to their condition and to be opened up and overhauled once within the class period.

Bow thrusters and positioning equipment are to be subjected to a general survey and to trials upon floating of the vessel.

For propeller(s), propeller and stern tube shaft(s), see Ch 3, Sec 4.

#### 3.3 Propulsion system

**3.3.1** Inspection of the propulsion system is mainly to cover:

- intermediate shafts and bearings, including thrust bearings
- gearing
- mechanical and flexible couplings
- turning gear
- the main propulsion engines, see [3.4.1].

**3.3.2** Spring elements under shear load made of rubber (with or without plies of fabric), of rubber ring clutches and other rubber couplings, are to be renewed, if required on account of negative inspection results.

#### 3.4 Main propulsion diesel engines

**3.4.1** The following components are to be inspected and checked in the dismantled condition, where deemed necessary by the Surveyor:

- cylinders, cylinder covers, pistons, piston rods and bolts, cross heads, crankshaft and all bearings
- camshaft, with drive and bearings
- tie rods, frame, foundation and fastening elements
- injection system, attached pumps and compressors, superchargers, suction and exhaust lines, charging air coolers, filters, monitoring, control, protective and safety devices, starting, reversing and manoeuvring equipment.

Class renewal survey of the main engine can be made during the main overhaul subject to the presence of the Surveyor.

Note 1: In case of medium speed diesel engines, dismantling and replacement of main and crank bearings may be postponed until the service life limits have been reached.

#### 3.5 Auxiliary engines

**3.5.1** For all auxiliary engines, the survey scope is identical to that applying to the main engines. A reduction in the scope of survey may be agreed to upon examination of the maintenance protocols.

#### 3.6 Auxiliary machinery, equipment and piping, survey performance

**3.6.1** The following components are to be inspected and tested in dismantled condition, where deemed necessary by the Surveyor:

- all pumps of the essential systems
- air compressors, including safety devices
- separators, filters and valves
- coolers, pre-heaters
- main and auxiliary steering gear
- anchor and other windlasses, including drives
- piping, pipe connections, compensators and hoses
- emergency drain valves and bilge piping systems
- tank filling level indicators
- installations preventing the ingress of water into open spaces
- freshwater distillation plant, where provided
- oil purifier and sewage systems
- additional systems and components, where deemed necessary by the Surveyor, as well as special equipment and installations if included in the scope of classification.

#### 3.7 Electrical installations

**3.7.1** On main and emergency switchboards, after cleaning when necessary, feeder circuit breakers being open, busbar circuit closed, measuring and monitoring instruments disconnected, the resistance of insulation measured across each insulated busbar and hull, and across insulated busbars is not to be less than 1 megohm.

**3.7.2** For generators, the equipment and circuits normally connected between the generator and first circuit breaker being connected, preferably at working temperature whenever possible, the resistance of insulation, in ohms, is to be more than 1000 times the rated voltage, in volts. The insulation resistance of generators separate exciter gear is not to be less than 250000 ohms.

**3.7.3** With all circuit breakers and protective devices closed, except for the generators, the insulation resistance of the entire electrical system is to be checked.

In general, the resistance is not to be less than 100000 ohms. However, the variation of the resistance with time is to be checked by comparing the current figure with previous readings. If insulation resistance drops suddenly or is insufficient, the defective circuits are to be traced by disconnecting the circuits as necessary.

**3.7.4** These measurements are subject to a report to be submitted to the Surveyor. In case the results are not satisfactory, supplementary investigation and necessary repairs have to be carried out to the Surveyor's satisfaction.

**3.7.5** The proper operation of the remote stopping systems of:

- transfer and fuel oil pumps
- forced draught fans and engine room ventilation fans,

are to be verified.

**3.7.6** The proper operation of navigation lights and associated alarms and signal devices has to be verified.

### **3.8 Automated installations**

**3.8.1** The class renewal survey of classed automated installations consists of

- a general examination of the control systems and random check of the proper operation of the main measuring, monitoring, alarm and automatic shut-off systems
- the checking of the fire detectors and bilge flooding alarms
- the checking of a number of other alarm channels selected at random, according to complementary program of the examinations, tests and checks prepared in agreement with the Owner and based upon operating conditions of the vessel and the experience of previous surveys.

These checks are to be carried out in normal operation, when practicable, or by simulation.

### **3.9 Pipes in tanks**

**3.9.1** Where pipes are led through tanks, they are to be examined and, if required by the Surveyor, subjected to hydraulic tests, if for the respective tanks an internal examination is required. Depending on the results obtained, thickness measurements may be required.

## **3.10 Fire extinguishing and fire alarm systems**

### **3.10.1 General requirements**

Proof is to be furnished to the Surveyor that the entire fire extinguishing equipment is ready for operation and in a satisfactory condition.

On the occasion of every class renewal survey, the installation must be subjected to a visual inspection and test, if deemed necessary by the Surveyor.

Equipment (cylinders, bottles, fire extinguishers, etc.) has to be inspected according to the manufacturer's instructions or applicable codes by an approved or recognized company. Reports of these inspections have to be provided to the Surveyor.

Emergency exits/escapes are to be inspected.

### **3.11 Trials**

**3.11.1** Upon completion of the surveys for class renewal, the Surveyor must be satisfied that the machinery installation including electrical installations and steering gear, as well as special equipment and installations are operable without restrictions. In case of doubt, trials and/or operational tests may be necessary.

## **4 Pressure equipment**

### **4.1 General**

**4.1.1** For steam boiler installations, thermal oil plants and pressure vessels, see Ch 3, Sec 6.

## SECTION 4

# SURVEY OF PROPELLER SHAFTS, PROPELLERS AND OTHER PROPULSION SYSTEMS

### 1 Normal survey of propeller shafts

#### 1.1 Survey with drawing of the shaft

**1.1.1** The normal survey of propeller shafts consists of the following, as applicable:

- a) removal of propeller and key, where fitted, and their examination
- b) complete withdrawal of shaft to permit the examination of sterntube bearings (outboard or inboard depending on the type of shaft)
- c) examination by an appropriate crack detection method of the after end of the cylindrical part of the shaft and forward one third of shaft cone, or the fillet of the flange in the case of a flanged coupling
- d) examination of shaft bearing surfaces, liners, joints, threaded end and nut
- e) examination of oil sealing glands with the necessary dismantling
- f) measurements of clearances and/or wear down (prior to and after the survey) and their recording.

#### 1.2 Survey without drawing of the shaft

**1.2.1** Where the prerequisites as defined in Ch 2, Sec 2, [5.5.2] apply, for oil lubricating arrangement the scope of normal survey without drawing of the shaft consists in the following:

- examination of all accessible parts of the shaft including the propeller connection to the shaft
- non-destructive examination by an approved crack-detection method of the aft end of the cylindrical part of the shaft and of about one third of the length of the taper from the large end and of the area of the keyway for keyed propellers, or of the forward part of the aft shaft taper for keyless propellers, or of the after fillet flange area of the shaft for solid flange coupling propellers. The area to be examined is to be sufficiently exposed, if necessary by shifting of the propeller shaft or backing-off of the propeller
- examination of the bearing clearances, respectively wear down of the aft bearing
- overhaul of the shaft sealing glands according to manufacturer's instructions (sealing rings, liners, etc.)
- examination of the records of all regularly carried out lubricating oil analyses
- examination of the records of the oil consumption.

Where doubts exist regarding the findings, the shaft is to be drawn to permit an entire examination.

The crack detection test of the aft flange fillet area of the shaft for solid flange coupling propellers may in the case of proven designs be omitted with the agreement of the Society. See also Ch 2, Sec 2, [5.5.2].

### 2 Modified survey of propeller shafts

#### 2.1 General

**2.1.1** A modified survey may be carried out for those propeller shafts which fulfill the conditions described in Ch 2, Sec 2, [5.5.3].

#### 2.2 Performance

**2.2.1** The modified survey for all types of shafts consists of the following:

- check of oil sealing glands in place
- measurements of wear down and their recording
- examination of the results of sterntube lubricating oil analyses, to confirm they have been regularly performed and the recorded parameters are within acceptable limits
- check of the records of lubricating oil consumption, to confirm it is within permissible limits.

In addition, for the different types of shafts, the following is required:

- a) for shafts with keyed propeller coupling:
  - removal of propeller and key, and their examination in way of the connection area
  - examination by an appropriate crack detection method of the after end of the cylindrical part of shaft and forward one third of shaft cone
- b) for shafts with keyless type propeller coupling:
  - check of the tightness of the propeller hub (propeller hood, fore gland)
- c) for shafts with a solid flange coupling at the aft end and variable pitch propeller:
  - check of tightness in way of blade glands and distribution box
  - check of analysis of hydraulic oil
  - working test, as far as practicable, of the blade manoeuvring.

**2.2.2** Where the Surveyor considers that the data presented is not entirely to his satisfaction, further dismantling may be required, including withdrawal of the propeller shaft.

### 3 Propellers

#### 3.1 General

**3.1.1** Propellers are to be examined visually on the occasion of each propeller shaft survey.

**3.1.2** Damages, such as cracks, deformation, cavitation effects, etc. are to be reported and repaired at the Surveyor's discretion.

Controllable pitch propellers are to be checked for oil leakages. The function of the controllable pitch propellers has to be tested. The maintenance according to manufacturer's instructions has to be checked.

### 4 Rotating and azimuth thrusters

#### 4.1 General

**4.1.1** A scope of survey equivalent to that described in [4.1.2] may be agreed upon with the Surveyor, depending on the manufacturer's instructions/recommendations.

**4.1.2** The periodical survey of rotating and azimuth thrusters consists of:

- a) removing the propeller(s) in order to examine the following items, as applicable:
  - exposed parts
  - cone and keyway to be checked by an appropriate crack detection method
  - sealing glands
  - threaded end and nut
- b) examining the results of a lubricating oil analysis (water content and presence of material particles) to detect possible deterioration of internal gears and bearings
- c) examining the orientation device.

If the foregoing checks are not satisfactory, dismantling of the internal parts may be required.

### 5 Vertical axis propellers

#### 5.1 General

**5.1.1** A scope of survey equivalent to that described in [5.1.2] may be agreed upon with the Surveyor, depending on the manufacturer's instructions / recommendations.

**5.1.2** The periodical survey of vertical axis propeller systems consists of:

- checking the tightness of the oil glands and the backlash of the gears from outside by action on the blades
- checking the condition of gears and couplings from inside the vessel
- examining the results of a lubricating oil analysis (water content and presence of material particles) to detect possible deterioration of internal gears and bearings.

If the foregoing checks are not satisfactory, dismantling of the internal parts may be required.

### 6 Pump jet systems

#### 6.1 General

**6.1.1** A scope of survey equivalent to that described in [6.1.2] may be agreed upon with the Surveyor, depending on the manufacturer's instructions / recommendations.

**6.1.2** The periodical survey of pump jet systems consists of examining the following parts:

- impeller, shaft and clearances of bearings
- tightness of gland
- water duct
- steering nozzle
- reversing arrangements and control gear.

If the foregoing checks are not satisfactory, further dismantling may be required.

### 7 Pod propulsion systems

#### 7.1 General

**7.1.1** The scope of complete and - where applicable- modified survey of the pod propulsion system shafting arrangement is the one detailed in [1] and [2] for propeller shafts.

**7.1.2** Where the system is fitted with:

- a vibration monitoring of roll bearings
- a temperature monitoring of bearings, and
- a monitoring of automatic bilge pumping system,

the shaft need not be withdrawn at the complete survey and items b) and d) of [1.1] need not be covered provided that all condition monitoring data (vibrations and temperatures in way of bearings, consumption and analysis of lubricating oil, running rate of bilge system) are found to be within permissible limits and the remaining requirements for the complete survey are complied with.

Where the Surveyor considers that the data presented is not to his satisfaction, further dismantling are to be required.

## SECTION 5 BOTTOM SURVEY

### 1 General

#### 1.1

**1.1.1** Examinations of the outside of vessel's bottom and related items of vessels is normally to be carried out with the vessel in dry-dock or on a slipway. However, consideration may be given to alternate examination while the vessel is afloat as an in-water survey, subject to provisions of Ch 2, Sec 2, [5.4] and [3].

### 2 Dry dock survey

#### 2.1 General

**2.1.1** Vessels are generally to be subjected to a bottom survey once during the class period. As a matter of principle, class renewal includes a bottom survey in dry-dock.

**2.1.2** Intermediate surveys have to be carried out in dry-dock in the following cases:

- the vessel's shell is riveted, at the Surveyor's discretion
- the vessel's age exceeds 20 years, at the Surveyor's discretion
- the vessel's age exceeds 20 years, the service notation granted is **Tanker** and the vessel is intended for the carriage of dangerous goods
- the vessel is granted with the range of navigation **IN(1,2 < x ≤ 2)**, at the Society's discretion, depending on the frequency of operation in restricted maritime stretches of water or lakes (wave and salt or brackish waters).

Moreover, for each bottom survey performed in addition to the bottom surveys stipulated by the classification requirements, a Society's Surveyor shall be called to attend.

#### 2.2 Performance of dry dock survey

##### 2.2.1 General

For the survey, the vessel is to be placed on sufficiently high and secure blocks, so that all necessary examinations can be carried out in a satisfactory manner. It may be necessary to clean the bottom and outer shell and/or remove rust from some areas to the Surveyor's satisfaction.

##### 2.2.2 Hull bottom survey

The survey covers an examination of the bottom and side plates of the shell plating, including any attachments, the rudder, the scuppers and water drain pipes, including their closures.

##### 2.2.3 Steering gear

The rudder, rudder couplings and bearings, as well as stocks and pintles, are to be surveyed in place, the rudder clearance is to be measured and documented. The steering gear is to be subjected to an operational trial.

If considered necessary in view of the inspection results, the rudder or parts of the steering gear will have to be dismantled.

Bow thrusters are normally to be inspected in place.

##### 2.2.4 Machinery and propulsion systems

For propeller(s), propeller shaft(s), see Ch 3, Sec 4.

River inlet and discharge valves - including those of special equipment, if any - are to be checked as to their condition during each dry docking survey and to be opened up and overhauled once within a period of class.

### 3 In-water survey

#### 3.1 General

**3.1.1** With the prior agreement from the Society, in-water survey may be performed on a case by case basis under the conditions set out in [3.2] to [3.4].

#### 3.2 Approval

**3.2.1** The diving firm assisting in in-water surveys must be approved by the Society for this purpose according to the Society's procedures.

#### 3.3 Performance of survey

**3.3.1** Unless accessible from outside with the aid of the vessel's trim and/or heel, underwater parts are to be surveyed and/or relevant maintenance work is to be carried out with assistance by a diver whose performance is controlled by a Surveyor, using an underwater camera with monitor, communication and recording systems.

**3.3.2** Surveys of the underwater body are to be carried out in sufficiently clear and calm waters.

The vessel should be in light vessel condition.

The shell sides below the waterline and the bottom must be free from fouling.

**3.3.3** The underwater pictures on the surface monitor screen must offer reliable technical information such as to enable the Surveyor to judge the parts and/ or the areas surveyed.

**3.3.4** Documentation suited for video reproduction including voice is to be made available to Society.

### **3.4 Additional examinations**

**3.4.1** Where, for instance, grounding is assumed to have taken place, the Surveyor may demand individual parts of the underwater body to be additionally inspected from inside.

If during the in-water survey damages are found which can be assessed reliably only in dry-dock or require immediate repair, the vessel is to be dry docked. If the coating of the underwater body is in a condition which may cause corrosion damages affecting vessel's class to occur before the next dry docking, the vessel is to be dry docked.

## SECTION 6

## PRESSURE EQUIPMENT

### 1 Steam boiler installations

#### 1.1 General

**1.1.1** Auxiliary steam generators/boilers external and internal inspections are to be carried out at intermediate survey and at class renewal survey.

**1.1.2** More extensive Regulations of the country, where the vessel is registered, are to be observed by the Owner.

#### 1.2 External inspection performance

**1.2.1** The operability and general condition of the boiler, including its valves and fittings, pumps, piping, insulation, foundation, control and regulating systems and its protective and safety equipment, are to be examined.

**1.2.2** In detail, the following items are to be examined:

- the steam boiler plant for leakages
- the condition of the insulation
- the functioning of the indication, control and safety equipment
- the remote controls for the shut-off and discharge valves
- the leakage monitors for the heaters
- the emergency switch-off devices (oil firing, pumps)
- the safety switch-off devices for the oil burner
- lighting, emergency lighting and labelling.

#### 1.3 Internal inspection performance

**1.3.1** Where deemed necessary by the Surveyor, the boiler is to be cleaned on the water and flue gas sides and, if required, its outside surfaces are to be uncovered as well, so that all walls subject to pressure may be examined.

**1.3.2** Where the design of the boiler does not permit an adequate internal inspection, hydraulic tests may be required. It is left to the Surveyor's discretion to have the internal inspection supplemented by hydraulic tests, if considered necessary on account of the general condition/appearance of the boiler.

**1.3.3** Where there are doubts concerning the thickness of the boiler walls, measurements shall be made using a recognized gauging method. Depending on the results, the allowable working pressure for future operation is to be determined.

The hydraulic pressure test is to be carried out to a test pressure of 1,3 times the allowable working pressure. Only after repairs of major damages the test pressure shall be 1,5 times the allowable working pressure. If the maximum allowable working pressure is less than 2 bar, the test pressure shall be at least 1 bar above the maximum allowable working pressure. In no case the test pressure should exceed the test pressure applied during the first inspection of the boiler after completion.

**1.3.4** Steam pipes and heating coils shall be examined according to agreed procedures.

#### 1.4 Non periodical inspection

**1.4.1** Beyond the above periodical inspections, the Surveyor may require hydraulic tests or extraordinary inspections to be performed on other occasions, e.g. following repairs and maintenance work.

### 2 Thermal oil plants

#### 2.1 General

**2.1.1** Thermal oil plants are subject to periodical surveys. Thermal oil plants are to be subjected to external inspection and functional tests while in operation. At the class intermediate and renewal surveys proof of continued usability of the thermal oil made by a competent testing institution, shall be furnished.

**2.1.2** More extensive Regulations of the country, where the vessel is registered, are to be observed by the Owner.

#### 2.1.3 Tightness and pressure test

Tightness and pressure test of the whole plant to the admissible working pressure is to be performed at intervals of **p** years, counting from commencement of initial operation and possibly in connection with a class renewal survey.

Following repairs and renewals of plant components exposed to pressure, a pressure test is to be carried out to 1,5 times the admissible working pressure.

#### 2.2 Internal inspection performance

**2.2.1** During the internal inspection every **p** years the heating surfaces and, where appropriate, the combustion chamber, are to be examined for contamination, corrosion, deformations and leakages.



## 2.3 External inspection performance

**2.3.1** For external inspection performance, the following items are to be examined in detail:

- the thermal oil plant for leakages
- the condition of the insulation
- the functioning of the indication, control and safety equipment
- the remote controls for the shut-off and discharge valves
- the leakage monitors for the heaters
- the emergency switch-off devices (oil firing, pumps)
- the safety switch-off devices for the oil burner
- lighting, emergency lighting and labelling.

Reference is to be made to the test reports on the annual checks to be performed by an appropriate testing institution for continued usability of the thermal oil. This is to be confirmed in the report.

## 3 Pressure vessels

### 3.1 General

**3.1.1** Pressure vessels are to be inspected internally and externally every **p** years (see Ch 1, Sec 2, [4] for definition of **p**), possibly in connection with class renewal survey.

Pressure vessels for which pressure [bar] times cubic capacity [l] is less than or equal to 200 are to be surveyed on the occasion of checking of the pertinent piping system.

**3.1.2** Where pressure vessels cannot be satisfactorily examined internally and where their condition cannot be clearly stated during the internal inspection, approved non-destructive test methods and/or hydraulic pressure tests are to be carried out. The hydraulic pressure test is to be performed at a test pressure of 1,5 times the maximum allowable working pressure. If the maximum allowable working pressure is less than 2 bar, then the test pressure should be at least 1 bar more than the maximum allowable working pressure. Pressure vessels manufactured in accordance with non-class standards are to be tested according to those standards. The test pressure must in no case exceed the initial test pressure.

### 3.1.3 Pressure vessels survey performance

Pressure vessels are to be examined internally and externally every **p** years, possibly in connection with a class renewal survey.

CO<sub>2</sub> cylinders and other gas cylinders for fire-extinguishing purposes including vessels for powder extinguishers are to be submitted to periodical survey according manufacturer instructions or applicable Standards. Reports relative to these surveys carried out by recognized company have to be submitted to the Surveyor.

Receivers in hydraulic or pneumatic control systems are to be examined during maintenance and repairs at the system; air receivers with a product of pressure by cubic capacity:

$p \cdot l \geq 1000$  (p in bar, l in litre),

are to be subjected to an internal inspection at least once during each class renewal.

The intervals between surveys as referred to may be reduced, depending on the findings.

SECTION 7

ADDITIONAL SURVEYS RELATED TO SERVICE NOTATIONS

1 General

1.1

1.1.1 The purpose of this Section is to give details on the scope of surveys of certain vessels which, due to the service notation assigned and related equipment, need specific requirements to be verified for the maintenance of their class.

1.1.2 These specific requirements either are additional to or supersede those stipulated in Ch 3, Sec 2 to Ch 3, Sec 6 which give general requirements for surveys applicable to all types of vessels (see indication in each Article of this Section). These surveys are to be carried out at intervals as described in Ch 2, Sec 2, [5], concurrently with the surveys of the same type, i.e. intermediate or class renewal surveys, detailed in Ch 3, Sec 2 to Ch 3, Sec 6.

2 Service notations subject to additional surveys

2.1 General

2.1.1 The specific requirements detailed in this Section are linked to the service notation(s) assigned to the vessel at the request of the Owner. Where a vessel has more than one service notation, the specific requirements linked to each one are applicable, insofar as they are not contradictory (in such a case, the most stringent requirement will be applied).

2.1.2 Tab 1 indicates which service notations are subject to specific requirements, and in which Article they are specified.

3 General cargo vessel and Bulk cargo vessel

3.1 General

3.1.1 The requirements of this Article are applicable to vessels assigned with the service notation **General cargo vessel** or **Bulk cargo vessel**.

3.1.2 These requirements are additional to those given in Ch 3, Sec 2 to Ch 3, Sec 6, according to the relevant surveys.

Table 1 : Service notations for which specific requirements are applicable

Service notations	Article applicable in this Section	Surveys affected by these specific requirements
<b>General cargo vessel</b> <b>Bulk cargo vessel</b>	Article [3]	class renewal
<b>Container vessel</b>	Article [4]	intermediate and class renewal
<b>RoRo cargo vessel</b>	Article [5]	intermediate and class renewal
<b>Passenger vessel</b>	Article [6]	intermediate and class renewal
<b>Tug</b> <b>Pusher</b>	Article [7]	intermediate and class renewal
<b>Dredger</b> <b>Hopper dredger</b> <b>Split hopper dredger</b> <b>Hopper barge</b> <b>Split hopper barge</b>	Article [8]	intermediate and class renewal

3.2 Scope of class renewal survey

3.2.1 The class renewal survey is to include examination, tests and checks of sufficient extent to ensure that the hull and related piping, as required in [3.2.3] is 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.

3.2.2 All cargo holds, ballast tanks, including double bottom tanks, double side tanks as applicable, pipe tunnels, cofferdams and void spaces bounding cargo holds, decks and outer hull are to be examined, and this examination is to be supplemented by thickness measurement and testing required in Ch 3, Sec 3, [2], to ensure that the structural integrity remains effective. The aim of the examination is to discover substantial corrosion, significant deformation, fractures, damages or other structural deterioration that may be present.

3.2.3 All piping systems within the above spaces are to be examined and operationally tested to working pressure to attending Surveyor’s satisfaction to ensure that tightness and condition remain satisfactory.

3.2.4 Where hard protective coating in cargo holds is found in good condition, the extent of close-up surveys and thickness measurements may be specially considered.

## 4 Container vessel

### 4.1 General

**4.1.1** The requirements of this Article are applicable to vessels assigned with the service notation **Container vessel**.

**4.1.2** These requirements are additional to those given in Ch 3, Sec 2 to Ch 3, Sec 6, according to the relevant surveys.

### 4.2 Intermediate survey

**4.2.1** The survey is to include:

- confirmation of the availability of instructions and instruments for stowage of containers, as required or fitted
- examination of container supports welded to the vessel's structure or on to the hatch covers
- examination of cell guides, if fitted.

### 4.3 Class renewal survey

**4.3.1** The renewal survey is to include:

- examination of container supports welded to the vessel's structure or on to the hatch covers, checking for possible cracks and deformations
- examination of cell guides and associated elements, checking for possible cracks, deformations or corrosion.

**4.3.2** Thickness measurements additional to those related to the transverse sections may be required.

## 5 RoRo cargo vessel

### 5.1 General

**5.1.1** The requirements of this Article are applicable after construction to all self-propelled vessels assigned with the service notation **RoRo cargo vessel**.

**5.1.2** These requirements are additional to those laid down in Ch 3, Sec 2 to Ch 3, Sec 6, according to the relevant surveys.

### 5.2 Intermediate survey - Shell and inner doors

**5.2.1** The requirements of this Sub-article apply to all shell and inner doors fitted on these vessels.

**5.2.2** For the scope of survey of shell and inner doors, the following definitions are applicable:

- Securing device:  
A device used to keep the door closed by preventing it from rotating about its hinges
- Supporting device:  
A device used to transmit external or internal loads from the door to a securing device and from the securing device to the vessel's structure, or a device other than a

securing device, such as a hinge, stopper or other fixed device, that transmits loads from the door to the vessel's structure

- Locking device:

A device that locks a securing device in the closed position.

**5.2.3** It is to be checked that the operating procedures for closing the shell and inner doors are kept on board and posted at appropriate places.

When required, the Operating and Maintenance Manual is also to be checked for the verification of its approval and of any modification, reported repairs and proper endorsement by operating personnel.

**5.2.4** The structural arrangements as well as welding are to be examined, including:

- plating, primary structure and secondary stiffeners
- hinging arms, hinges and bearings, thrust bearings
- hull and door side supports of securing, supporting and locking devices
- shell plating surrounding the openings and the securing, supporting and locking devices.

Hinge, bearing and thrust bearing clearances are to be measured when no dismantling is necessary for the measurement, or when the function tests detailed below are not satisfactory.

**5.2.5** A close visual inspection of securing, supporting and locking devices, including their weld connections, is to be carried out and clearances are to be measured as required.

Non-destructive tests and/or thickness measurements may be required by the Surveyor after visual examination or in cases where cracks or deformations have been found.

**5.2.6** A close visual inspection of sealing arrangements (packing material, rubber gaskets, packing retaining bars or channels) is to be carried out. For the tightness hose test, refer to [5.2.8].

**5.2.7** The drainage arrangements including bilge wells, drain pipes and non-return valves are to be visually examined. A test of the bilge system between the inner and outer doors and that of the vehicle deck is to be carried out.

**5.2.8** Function tests are to be carried out as follows, according to the required and/or existing equipment on board:

- Doors are to be examined during a complete opening and closing operation; during this operation, the proper working of hinging arms and hinges, proper engagement of the thrust bearings and proper working of devices for locking the door in open position are to be checked
- Securing, supporting and locking devices are to be examined during a complete opening and closing operation; the following items are to be checked:
  - opening/closing system and securing/locking devices are interlocked in such a way that they can only operate in proper sequence
  - mechanical lock of the securing devices

- the securing devices remain locked in the event of loss of hydraulic fluid, if they are of hydraulic type
- c) Indicators of open/closed position of doors and of securing/locking devices at remote control stations are to be checked; other safety devices such as isolation of securing/locking hydraulic system from other hydraulic systems, access to operating panels, notice plates and warning indicator lights are to be checked
- d) A tightness hose test or equivalent of sealing arrangements is to be carried out
- e) A working test of the indicator system is to be carried out, including checking of:
  - visual indicators and audible alarms on the navigation bridge and operating panel
  - lamp test function, fail safe performance, power supply for indicator system
  - proper condition of sensors and their protection from water, ice formation and mechanical damage.
- f) A working test of the water leakage detection system for inner doors and for the area between the bow door and the inner door (as applicable) is to be carried out and the proper function of audible alarms on the navigation bridge and the engine control room panel (as applicable) is to be ascertained
- g) If fitted, the television surveillance system is to be verified with proper indication on the navigation bridge and engine control room monitors
- h) Electrical equipment for opening, closing and securing the doors is to be examined.

### 5.3 Intermediate survey - Internal platforms and ramps

**5.3.1** The intermediate survey of internal movable platforms and ramps (excluding those considered as inner doors and covered in [5.2]) and related equipment consists of:

- a general examination of the installation, particular attention being paid to the condition of steel cables
- confirmation of the proper operation of platforms/ramps and of mechanical stops and locks
- checking, as far as practicable, of the alarms and safety devices.

### 5.4 Class renewal survey - Shell and inner doors

**5.4.1** A close visual inspection of structural arrangements is to be carried out, supplemented by non-destructive tests and/or thickness measurements, as deemed necessary by the Surveyor.

**5.4.2** The close visual inspection of securing, supporting and locking devices, as required for the annual survey, is to be supplemented by non-destructive tests and/or thickness measurements.

**5.4.3** Clearances of hinges, bearings and thrust bearings are to be measured. Dismantling may be required as deemed necessary by the Surveyor.

**5.4.4** Non-return valves of drainage arrangements are to be checked after dismantling.

### 5.5 Class renewal survey - Internal platforms and ramps

**5.5.1** The condition of pulleys, axles, cables and structure of the platforms and ramps is to be checked.

Electric motors and/or hydraulically operated equipment are to be surveyed according to the scope detailed in Ch 3, Sec 3, [3.6] for the class renewal survey of machinery installations.

## 6 Passenger vessel

### 6.1 General

**6.1.1** The requirements of this Article are applicable after construction to all self-propelled vessels assigned with the service notation **Passenger vessel**.

**6.1.2** These requirements are additional to those laid down in Ch 3, Sec 2 to Ch 3, Sec 6, according to the relevant surveys.

### 6.2 Intermediate survey

#### 6.2.1 Watertight bulkheads

The survey of watertight bulkheads and arrangements consists of:

- examination, as far as practicable, of collision and watertight bulkheads, and confirmation that their watertight integrity has not been impaired
- checking the diagram provided on the navigation bridge showing the location of the watertight doors and related indicators for their open/closed position
- testing operation of local and remote control (from the navigation bridge) of the watertight doors, and in particular, operation from each side of the bulkhead of audible alarms or visual signals and control handles, as required or fitted
- confirmation of operation of watertight doors in the event of failure of main and emergency sources of power
- confirmation that notices are affixed at appropriate locations.

#### 6.2.2 Openings in shell plating

The survey consists of:

- examination of the arrangements for closing sidescuttles and their deadlights, as well as scuppers, sanitary discharges and similar openings and other inlets and discharges in the shell plating below the margin line
- confirmation that valves for closing the main and auxiliary river inlets and discharges in the machinery spaces are readily accessible, and that indicators showing the status of the valves are provided, as required or fitted
- confirmation that gangway access and cargo ports fitted below the margin line may be effectively closed and that the inboard ends of any ash or rubbish chutes are fitted with an effective cover.

### 6.2.3 Miscellaneous

It is to be verified that the emergency escape routes from passenger and crew spaces, including related stairways and ladders, are kept clear.

## 6.3 Class renewal survey

### 6.3.1 Stability

If modifications susceptible to affect the vessel displacement and/or weight distribution have been performed, a lightweight survey is to be carried out to verify any changes in lightship displacement and in the longitudinal position of the centre of gravity. Where, in comparison with the approved stability information, a deviation exceeding 2% in the lightship displacement or a deviation of the longitudinal centre of gravity exceeding 1% of the length between perpendiculars is found or anticipated, the vessel is to be submitted to a new inclining test.

## 7 Tug and Pusher

### 7.1 General

**7.1.1** The requirements of this Article are applicable after construction to all vessels assigned with the service notation **Tug** or **Pusher**.

**7.1.2** These requirements are additional to those laid down in Ch 3, Sec 2 to Ch 3, Sec 6, according to the relevant surveys.

### 7.2 Intermediate survey

**7.2.1** For **Tug**, the survey is to include a general external examination of the towing hook or towing winch, as fitted, and unhooking device, as far as practicable.

**7.2.2** For **Pusher**, an examination of the pushing transom and coupling system is to be carried out.

### 7.3 Class renewal survey

**7.3.1** For **Tug**, the survey is to include:

- checking the condition of the connection of the towing hook or towing winch to the structure, including related reinforcements of the structure
- checking the external condition of the towing hook or towing winch; when applicable, a no-load test of the unhooking device is to be carried out.

**7.3.2** For **Pusher**, a visual examination of the pushing transom and coupling system is to be carried out, completed by thickness measurements and non-destructive tests as deemed necessary by the Surveyor.

## 8 Vessels for dredging activities

### 8.1 General

**8.1.1** The requirements of this Article are applicable after construction to all vessels assigned with one of the following service notations:

- **Dredger**
- **Hopper dredger**
- **Split hopper dredger**
- **Hopper barge**
- **Split hopper barge**.

**8.1.2** These requirements are additional to those laid down in Ch 3, Sec 2 to Ch 3, Sec 6 according to the relevant surveys.

## 8.2 Intermediate survey

**8.2.1** The survey is to include the following items, as far as required or fitted, according to the service notation of the vessel:

- for **Dredger, Hopper dredger, Hopper barge**:
  - visual examination, as far as practicable, of attachments of suction piping and lifting systems to the structure and external examination of piping in dredging machinery spaces for absence of corrosion and leakage
  - checking the condition of the dredging machinery space and related equipment with regard to electrical shocks, protection from rotating machinery, fire and explosion hazards.
- for **Split hopper barge, Split hopper dredger**:
  - visual examination, as far as practicable, of superstructure hinges and blocks, deck hinges, hydraulic jacks and associated piping systems and alarms.

## 8.3 Class renewal survey

**8.3.1** The survey is to include the following items, as far as required or fitted, according to the service notation of the vessel:

- for **Hopper dredger, Hopper barge**:
  - visual examination of hopper bottom doors or valves and accessories, such as hinges, actuating rods, hydraulic systems, with dismantling as deemed necessary by the Surveyor.
- for **Dredger, Hopper dredger, Split hopper dredger**:
  - visual examination, as far as practicable, of attachments of suction piping and lifting systems to the structure and external examination of piping in dredging machinery spaces for absence of corrosion and leakage
  - checking the condition of the dredging machinery space and related equipment with regard to electrical shocks, protection from rotating machinery, fire and explosion hazards.
- for **Split hopper barge, Split hopper dredge**:
  - visual examination, as far as practicable, of superstructure hinges and blocks, deck hinges, hydraulic jacks and associated piping systems and alarms, with dismantling and/or further checks as deemed necessary by the Surveyor.

SECTION 8

ADDITIONAL SURVEYS RELATED TO  
ADDITIONAL SERVICE FEATURES

1 General

1.1

**1.1.1** The purpose of this Section is to give details on the scope of surveys of certain vessels which, due to the additional service feature assigned, need specific requirements to be verified for the maintenance of their class.

**1.1.2** These specific requirements either are additional to or supersede those stipulated in Ch 3, Sec 2 to Ch 3, Sec 7 which give general requirements for surveys applicable to all types of vessels (see indication in each Article of this Section). These surveys are to be carried out at intervals as described in Ch 2, Sec 2, [5], concurrently with the surveys of the same type, i.e. intermediate or class renewal surveys, detailed in Ch 3, Sec 2 to Ch 3, Sec 7.

2 Additional Service features subject to additional surveys

2.1 General

**2.1.1** Ch 3, Sec 7, Tab 1 indicates which additional service features are subject to specific requirements, and in which Article they are specified.

Table 1 : Additional Service features for which specific requirements are applicable

Additional Service features	Article applicable in this Section	Surveys affected by these specific requirements
Type N & DG-N Type C & DG-C	[3]	intermediate and class renewal
Type G & DG-G	[4]	intermediate and class renewal
A	[5]	class renewal and bottom survey
C	[6]	class renewal
W	[7]	class renewal and bottom survey
Battery system	[8]	intermediate and class renewal
Gasfuel Dualfuel	[9]	intermediate and class renewal

3 Type N & DG-N and Type C & DG-C

3.1 General

**3.1.1** The requirements of this Article are applicable to tank vessels assigned with one of the additional service feature **Type N, DG-N, Type C or DG-C**.

**3.1.2** These requirements are additional to those given in Ch 3, Sec 2 to Ch 3, Sec 7, according to the relevant surveys.

3.2 Intermediate survey

3.2.1 Safety systems

The following installations and equipment are to be checked:

- level/overflow alarms
- level indicators
- tank venting systems
- flame arresters
- piping, valves and fittings, pumps
- pump room equipment, including ventilation system
- fire-extinguishing equipment
- pressure/vacuum relief valves.

3.2.2 Cargo piping system

- a) examination of the cargo tank openings, including gaskets and covers
- b) examination of the cargo tank pressure / vacuum relief valves or equilibrating devices
- c) examination of the flameproof devices and flame screens
- d) examination of the cargo piping and their auxiliaries
- e) testing of all cargo tank alarms.

3.2.3 Inert gas system

Inert gas installations of the cargo tanks are to be checked as to their operability.

3.2.4 Cofferdams

The cofferdams are to be inspected, if provided.

### 3.2.5 Cargo pump room

For cargo pump rooms, the survey consists of the verification of the good condition of:

- access ladders
- sumps
- all bulkheads for signs of leakage or fractures and, in particular, the sealing arrangements of the bulkhead penetrations
- piping systems, their pumps and auxiliaries
- pump room ventilation system including ducting, dampers and screens.

### 3.2.6 Electrical installations and equipment

The Surveyor will check that the insulation level of the electrical installation has been verified within the last three years and that the results are to his satisfaction, particularly in pump rooms and in the cargo area. Furthermore, the good condition of the safety electrical equipment in respect to explosive atmosphere has to be checked. Special attention is to be paid to the cable runs and connecting terminals.

## 3.3 Class renewal survey - Hull

**3.3.1** On tankers which - as can be proved - have exclusively carried cargo not causing corrosion, the cargo tanks shall be inspected at each alternate class renewal only, provided that it may be assumed on the basis of random checks that the component parts are still in satisfactory condition, and provided that no objections will result from the tightness and pressure tests as per Ch 3, Sec 3, [2.4.4].

**3.3.2** During each class renewal, the cofferdams of tankers are to be hydrostatically tested to the test pressure as defined in Pt B, Ch 3, Sec 4, [5] and Pt B, Ch 8, Sec 4.

**3.3.3** At each alternate class renewal only, the cargo tanks of tankers including gas collector if any, are to be tested by water and/or air pressure, to the test pressure stated in the Rules. In the case of air tightness and pressure test, the test has to be made according to Ch 3, Sec 3, [2.4.4]. Where substances are carried which cause corrosion in connection with water, the kind of testing is to be specified.

**3.3.4** At each class renewal, cargo tanks of tankers carrying acids and lye solution will be subjected to an internal examination and, at each alternate class renewal, to a hydrostatic pressure test. The test pressure, to be fixed in accordance with Pt B, Ch 3, Sec 4, [5], depends on the density of the cargo.

### 3.3.5 Close-up survey

The minimum requirements for close-up surveys are given in Ch 2, App 1.

## 3.4 Class renewal survey - Machinery

**3.4.1** The requirements of this Subarticle apply to vessels assigned one of the additional service feature **Type N**, **DG-N**, **Type C** or **DG-C**, in addition to those prescribed in [3.2] for intermediate survey.

### 3.4.2 Piping system

Cargo piping, including valves and fittings, pumps as well as gas-freeing and safety equipment is to be surveyed.

At each class renewal, the loading and discharge pipes of tankers are to be tested to 1,25 times the allowable working pressure.

The Surveyor may require dismantling and /or thickness measurements of piping.

Note 1: When components are replaced in the cargo handling installation, it is the responsibility of the Owner to verify their compatibility with the chemical characteristics of the products transported.

### 3.4.3 Inert gas system

Inert gas installations of the cargo tanks are to be checked as to their operability.

### 3.4.4 Electrical installations

For vessels carrying flammable products, the condition of safety electrical equipment in relation to explosive atmospheres has to be verified and particular attention is to be paid to cable runs and connecting terminals, especially in the cargo area.

## 4 Type G & DG-G

### 4.1 General

**4.1.1** The requirements of this Article are applicable to vessels assigned one of the additional service features **Type G** or **DG-G** intended for the carriage of liquefied gases.

**4.1.2** The requirements apply to:

- the surveys of installations and equipment related to the carriage and handling of liquefied gas, and
- the surveys of hull structure and related piping systems in way of cargo tanks, pump rooms, compressor rooms, cofferdams, pipe tunnels, void spaces and fuel oil tanks within the cargo area, and
- the surveys of all ballast tanks.

They are additional to the requirements applicable to the remainder of the vessel, given in Ch 3, Sec 2 to Ch 3, Sec 6, according to the relevant surveys.

**4.1.3** The requirements contain the minimum extent of examination, thickness measurements and tank testing. When substantial corrosion, as defined in Ch 2, Sec 2, [2.2.7], and/or structural defects are found, the survey is to be extended and is to include additional close-up surveys when necessary.

**4.1.4** Thickness measurements of structures in areas where close-up surveys are required are to be carried out simultaneously with close-up surveys.

## 4.2 Intermediate survey

### 4.2.1 Safety systems

The following installations and equipment are to be checked:

- level/overflow alarms
- level indicators
- tank venting systems
- piping, valves and fittings, pumps
- compressor / pump room equipment, including ventilation system
- fire-extinguishing equipment
- pressure/vacuum relief valves.

**4.2.2** Access to cargo tanks and/or inerted hold spaces is not normally required.

**4.2.3** Recorded entries in the log book, if any, since the last survey are to be examined in order to check the past performance of the system and to establish if certain parts have shown any irregularities in operation or if the evaporation rate has been abnormally high.

**4.2.4** Spaces and areas such as cargo control rooms, air locks, compressor rooms are to be examined together with cargo handling piping and machinery including cargo and process piping, cargo heat exchangers, evaporators, compressors, during operation, whenever possible.

**4.2.5** Electric bonding of cargo tanks and cargo piping systems is to be verified.

### 4.2.6 Inert gas system

Inert gas installations of the cargo tanks are to be checked as to their operability.

**4.2.7** Examination and checking of the following items:

- a) Venting system of cargo tanks and hold spaces
- b) All gastight bulkhead penetrations including gastight shaft sealing, if provided
- c) Cargo handling control and safety systems, if practicable, such as:
  - emergency shut down valves at shore connections and tanks
  - control, alarm and safety systems monitoring the pressure in cargo tanks, cargo piping and hold spaces
  - cargo tanks level gauging including alarm and safety functions
  - cargo temperature monitoring systems
  - control, alarm and safety systems of cargo compressors and cargo pumps.
- d) Gas detection equipment including indicators and alarms in operation
- e) Ventilation systems of all spaces in the cargo area
- f) Inert gas or dry air installations in operation, including the means for preventing backflow of cargo vapour to gas safe areas

g) Gastightness of wheelhouse doors and windows

h) Sealing arrangements of tank/tank domes, penetrating decks/tank covers, of portable and permanent drip trays or insulation for deck protection in the event of cargo leakage.

### 4.2.8 Electrical installations and equipment

The Surveyor will check that the insulation level of the electrical installation has been verified within the last three years and that the results are to his satisfaction, particularly in pump/compressor rooms and in the cargo area. Furthermore, the good condition of the safety electrical equipment in respect to explosive atmosphere has to be checked. Special attention is to be paid to the cable runs and connecting terminals.

## 4.3 Class renewal survey - Hull

**4.3.1** On tankers which - as can be proved - have exclusively carried cargo not causing corrosion, the cargo tanks shall be inspected at each alternate class renewal only, provided that it may be assumed on the basis of random checks that the component parts are still in satisfactory condition, and provided that no objections will result from the tightness and pressure tests as per Ch 3, Sec 3, [2.4.4].

**4.3.2** During each class renewal, the cofferdams of tankers are to be hydrostatically tested to the test pressure as defined in Pt B, Ch 3, Sec 4, [5] and Pt B, Ch 8, Sec 4.

**4.3.3** At each alternate class renewal only, the cargo tanks of tankers including gas collector if any, are to be tested by water and/or air pressure, to the test pressure stated in the Rules. In case of air tightness and pressure test, the test has to be made according to Ch 3, Sec 3, [2.4.4]. Where substances are carried which cause corrosion in connection with water, the kind of testing is to be specified.

**4.3.4** At each class renewal, cargo tanks of tankers carrying acids and lye solution will be subjected to an internal examination and, at each alternate class renewal, to a hydrostatic pressure test. The test pressure, to be fixed in accordance with Pt B, Ch 3, Sec 4, [5], depends on the density of the cargo.

**4.3.5** The following examinations, measurements and testing are to be carried out:

- a) Thickness measurements and non-destructive testing of cargo tanks
  - thickness measurements of cargo tanks may be required. During these examinations, the state of insulation is checked around the considered areas
  - during the internal survey of the tanks, a non destructive testing procedure supplements the examination of cargo tanks, according to a programme and control means approved beforehand by the Society



- when independent tanks (cylindrical under pressure) are concerned, in principle, 10% of the length of welded seams, in critical areas are tested: tank supports, reinforcement rings, attachment of hollow bulkheads, weldings of the fittings (domes, sumps) to the tank-plates, supports of pumps, ladders, pipe connections. It may be necessary to remove partially the tank insulation to perform these examinations
- for tanks where anti-corrosion coatings are found to be in satisfactory condition, the extent of thickness measurements may be specially considered, at the discretion of the Surveyor.

#### b) Testing of cargo tanks

- tanks for the carriage of pressurized liquefied gases are to be tested like pressure vessels. Deviating there from, cargo tanks need to be subjected to an internal inspection on the occasion of each other subsequent class renewal only, if in these tanks only gases or gas mixtures have been carried, which have no corrosive effect upon their walls, and if random checks suggest that the tanks are in satisfactory condition
- tightness of cargo tanks and domes is to be verified. However, for a vessel of less than fifteen years of age, a separate tightness test may not be required for each tank, provided the examination of the log book raises no doubts as to their tightness
- where the results of tanks examination and testing, or the examination of the log book raise doubts as to the structural integrity or tightness of a cargo tank, or when significant repairs have been carried out, hydraulic or hydropneumatic testing is to be carried out.

#### c) External examination of cargo tanks

- all independent tanks are to be examined externally wherever practicable. Where the insulation of a cargo tank or of the hull structure is accessible, the Surveyor examines the insulation externally including any vapour or protective barrier. If considered necessary by the Surveyor, insulation is to be removed in part or entirely so as to check the condition of the tank. Cargo tank supports, chocks and keys and the adjacent hull structure are to be examined
- pressure relief valves of cargo tanks are to be opened up for examination, adjusted, sealed and tested to the Surveyor's satisfaction
- pressure / vacuum relief valves or other pressure relief devices in the tank spaces, are to be examined to the Surveyor's satisfaction and, according to their design, opened up, adjusted and tested.

#### d) Examination of the cargo area

- the venting system of cargo tanks and hold spaces is to be checked. All gastight bulkheads are to be examined. Gastight bulkhead penetrations, including eventual gastight shaft sealings, are to be examined

- gas detection equipment, including indicators and alarms in operation, are to be verified to be in good working order
- the inert gas or dry air installation in operation, including the means for preventing backflow of cargo vapour to gas safe areas will be checked
- sealing arrangements of tanks/tank domes, penetrating decks / tank covers, of portable and permanent drip trays or insulation for deck protection in the event of cargo leakage are to be verified
- hose and spool pieces used for segregation of piping systems for cargo, inert gas and bilge are to be examined.

#### 4.3.6 Close-up survey

The minimum requirements for close-up surveys are given in Ch 2, App 1.

### 4.4 Class renewal survey - Machinery

**4.4.1** The requirements of this Subarticle apply to vessels assigned one of the additional service feature **Type G** or **DG-G**, in addition to those prescribed in [4.2] for intermediate survey.

#### 4.4.2 Cargo handling installation

The cargo piping system including valves, their monitoring devices, etc. are to be opened up for examination and their insulation removed as the Surveyor deems necessary. The complete system is tested to 1,25 times the design pressure. If the maximum delivery pressure of pumps is less than the design pressure of the piping system, testing to the pumps maximum delivery pressure may be accepted. In such cases, selected expansion bellows are to be dismantled, examined internally and tested to their design pressure to the Surveyor's satisfaction.

All pressure relief valves are to be opened up for examination, adjusted, sealed and tested to the Surveyor's satisfaction.

The cargo pumps, compressors, heat exchangers and other machinery including their prime movers which are a part of the cargo handling installation are to be examined.

#### 4.4.3 Cargo handling control and safety installations

The cargo handling control and safety installations, such as:

- emergency shut down valves at shore connections and tanks
- control, alarm and safety systems monitoring the pressure in cargo tanks, cargo piping and hold spaces
- cargo tanks level indicators including alarm and safety functions
- cargo temperature monitoring systems
- control, alarm and safety systems of cargo compressors and cargo pumps,

are to be verified on good working.

Note 1: When components are replaced in the cargo handling installation, it is the responsibility of the Owner to verify their compatibility with the chemical characteristics of the products transported.

#### 4.4.4 Inert gas system

Inert gas installations of the cargo tanks are to be checked as to their operability.

## 5 Additional service feature A

### 5.1 General

**5.1.1** The requirements of this Article are applicable to vessels assigned with the additional service feature A.

**5.1.2** These requirements are additional to those given in Ch 3, Sec 2 to Ch 3, Sec 7, according to the relevant surveys.

### 5.2 Class renewal survey

**5.2.1** For vessels assigned the additional service feature A, the highly stressed areas are to be externally examined and dye penetrant checks are to be carried out, as found necessary by the Surveyor.

Thickness measurements are to be carried out, in areas where chaffing or corrosion may have developed, as found necessary by the Surveyor.

### 5.3 Bottom survey

**5.3.1** For vessels built in aluminium alloy, the appendages of the hull are to be examined as found necessary by the Surveyor, with particular attention to their fixation to the hull and to the surrounding area specially where deterioration of the hull protection is found.

## 6 Additional service feature C

### 6.1 General

**6.1.1** The requirements of this Article are applicable to vessels assigned with the additional service feature C.

**6.1.2** These requirements are additional to those laid down in Ch 3, Sec 2 to Ch 3, Sec 7, according to the relevant surveys.

### 6.2 Class renewal survey

**6.2.1** For vessels assigned the additional service feature C, an external examination of the coating condition is to be carried out. This examination is to be directed at discovering significant alteration of the coating or contact damages.

## 7 Additional service feature W

### 7.1 General

**7.1.1** The requirements of this Article are applicable to vessels assigned with the additional service feature W.

**7.1.2** These requirements are additional to those laid down in Ch 3, Sec 2 to Ch 3, Sec 7, according to the relevant surveys.

## 7.2 Class renewal survey

**7.2.1** For vessels built with laminate wood and provided with coating, an external examination of the protection of edges against water ingress is to be carried out.

**7.2.2** For vessels built with plank seams and butts, the condition of plank seams, butts and caulking is to be externally examined and renewal is to be carried out as found necessary by the Surveyor.

Where applicable, the timber of the main structural items is to be tapped specially in place where ventilation is poor.

When traces of worm or rot are found, the damaged pieces are to be added to sound wood or renewed as found necessary by the Surveyor.

### 7.3 Bottom survey

**7.3.1** The seams and butts of the garboard and bilges at midship, the keel scarphs and rabbets are to be examined. The same applies to caulking of the underwater parts specially butts and rabbets. The Surveyor may require caulking to be renewed or the hull to be recaulked as found necessary.

**7.3.2** For hulls built with planks, a particular attention is to be given to the tightness of the junctions between planks.

The condition of the bolting and fastening and, in general, of metal parts, is to be examined.

If decay or rot is found or if the wood is worn, it is to be renewed as found necessary by the Surveyor.

Where the planking is sheeted with composite material, such as fibre reinforced plastic, the edges of planks are to be examined as found necessary by the Surveyor, in order to ascertain that no ingress of water has occurred along them.

## 8 Battery system

### 8.1 General

**8.1.1** The requirements of this Article apply to ships which have been assigned the additional class notation **Battery sytem** as defined in Ch 1, Sec 3, [1.3.7].

### 8.2 Intermediate survey

**8.2.1** The intermediate survey is to include:

- general examination of the battery pack(s)
- general examination of the battery monitoring system
- general examination of the battery support system
- general examination of the battery compartment, including visual check of the safety measures and functions related to battery spaces, i.e. battery installation, ventilation, fire safety measures and alarms
- check of the electrolyte level and pH level
- check of State of health (SOH) of battery system according to the Manufacturer's specification and verification that the battery capacity has been regularly recorded and complies with the parameters specified by the Manufacturer

- test of sensor and alarm associated to the battery at random
- undertaking of measurement of insulation of battery packs
- additional checks when some specific part of battery is or has been replaced (e.g. battery cells, BMS) according to the Manufacturer specification and to the satisfaction of the Surveyor.

### 8.3 Class renewal survey

**8.3.1** The requirements given in [8.2.1] for intermediate survey are to be complied with.

In addition:

- a comprehensive test of indication and alarms is to be carried out
- the traceability of cells replacement is to be checked
- the traceability of software modification is to be checked
- a battery capacity (State of Health - SOH) test is to be witnessed when:
  - release of flammable or toxic gases during battery operation was identified (e.g. hydrogen for lead-acid batteries)
  - loss of battery might jeopardize manoeuvrability of the vessel.

## 9 Gas-fuelled vessels

### 9.1 General

**9.1.1** The requirements of this Section apply to all self-propelled vessels, other than those covered by [4], which utilize gas or other low flash points fuels as a fuel for propulsion prime mover/auxiliary power generation arrangements and associated systems, or which have been assigned one of the following additional service features:

- **Gasfuel**
- **Dualfuel**

**9.1.2** These requirements are in addition to those laid down in Ch 3, Sec 6 as applicable.

These survey requirements do not cover fire protection, fire-fighting installation, and personnel protection equipment.

**9.1.3** More extensive Regulations of the country where the vessel is registered, are to be observed by the Owner.

### 9.2 Intermediate survey

**9.2.1** In addition to the requirements in [9.3] and [9.4], the intermediate survey is also to include:

- random test of gas detectors, temperature sensors, pressure sensors, level indicators, and other equipment providing input to the fuel safety system, to confirm their satisfactory operating condition
- verification of the proper response of the fuel safety system upon fault conditions.

### 9.3 Intermediate survey - Hull items

#### 9.3.1 General

The following requirements are to be verified during the survey of the fuel storage, fuel bunkering system and fuel supply system.

The logbooks and operating records are to be examined with regard to correct functioning of the gas detection systems, fuel supply/gas systems, etc. The hours per day of the reliquefaction plant, gas combustion unit, as applicable, the boil-off rate, and nitrogen consumption (for membrane containment systems) are to be considered together with gas detection records.

The manufacturer/builder instructions and manuals covering the operations, safety and maintenance requirements and occupational health hazards relevant to fuel storage, fuel bunkering, and fuel supply and associated systems for the used of the fuel, are to be confirmed as being aboard the vessel.

#### 9.3.2 Gas related spaces, fuel preparation and handling rooms and piping

The survey is to include:

- examination of portable and fixed drip trays and insulation for the protection of the ship's structure in the event of a leakage
- examination of electrical bonding arrangements in hazardous areas, including bonded straps where fitted.

#### 9.3.3 Fuel storage, bunkering and supply systems

The following requirements are to be examined, so far as applicable. Insulation need not to be removed, but any deterioration or evidence of dampness is to be investigated.

For fuel storage, the survey is to include:

- external examination of the storage tanks including secondary barrier if fitted and accessible
- general examination of the fuel storage hold place
- internal examination of tank connection space
- external examination of tank and relief valves
- verification of satisfactory operation of tank monitoring system
- examination and testing of installed bilge alarms and means of drainage of the compartment
- testing of the remote and local closing of the installed main tank valve.

For fuel bunkering system, the survey is to include:

- examination of bunkering stations and the fuel bunkering system
- verification of the satisfactory operation of the fuel bunkering control, monitoring and shutdown systems.

For fuel supply system, during working condition as far as practicable, the survey is to include:

- verification of the satisfactory operation of the fuel supply system control, monitoring and shutdown systems
- testing of the remote and local closing of the master fuel valve for each engine compartment.

## 9.4 Intermediate survey - Gas fuel machinery

### 9.4.1 Control, monitoring and safety systems

The survey is to include:

- confirmation that gas detection and other leakage detection equipment in compartments containing fuel storage, fuel bunkering, and fuel supply equipment or components or associated systems, including indicators and alarms are in satisfactory operating condition
- verification that recalibration of the gas detection systems is done in accordance with the manufacturer's recommendations.
- verification of the satisfactory operation of the control, monitoring and automatic shutdown systems as far as practicable of the fuel supply and bunkering systems
- operational test, as far as practicable, of the shutdown of ESD-protected machinery spaces.

### 9.4.2 Fuel handling piping, machinery and equipment

The survey is to include:

- examination, as far as practicable, of piping, hoses, emergency shutdown valves, relief valves, machinery and equipment for fuel storage, fuel bunkering, and fuel supply such as venting, compressing, refrigerating, liquefying, heating, cooling or otherwise handling the fuel
- examination of the means for inerting
- confirmation, as far as practicable, of the stopping of pumps and compressors upon emergency shutdown of the system.

### 9.4.3 Ventilating systems

The survey is to include:

- examination of the ventilation system, including portable ventilating equipment where fitted, is to be made for spaces containing fuel storage, fuel bunkering, and fuel supply units or components or associated systems, including air locks, pump rooms, compressor rooms, fuel preparation rooms, fuel valve rooms, control rooms and spaces containing gas burning equipment
- operational test, as far as practicable, of alarms, such as differential pressure and loss of pressure, where fitted.

### 9.4.4 Hazardous areas

The survey is to include:

- examination of electrical equipment and bulkhead/deck penetrations including access openings in hazardous areas, for continued suitability for their intended service and installation area.

## 9.5 Class renewal survey - Hull items

### 9.5.1 General

The class renewal survey is to include, in addition to the requirements of the intermediate surveys, examinations, tests and checks of sufficient extent to ensure that the fuel

installations are in satisfactory condition and fit for intended purpose 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.

### 9.5.2 Fuel handling and piping

All piping for fuel storage, fuel bunkering, and fuel supply such as venting, compressing, refrigerating, liquefying, heating, storing, burning or otherwise handling the fuel and liquid nitrogen installations are to be examined.

Removal of insulation from the piping and opening for examination may be required.

Where deemed suspect, a hydrostatic test to 1,25 times the maximum allowable relief valve setting (MARVS) for the pipeline is to be carried out.

After reassembly, the complete piping is to be tested for leaks.

Where water cannot be tolerated and the piping cannot be dried prior to putting the system into service, the surveyor may accept alternative fluids or alternative means of testing.

### 9.5.3 Fuel valves

#### a) Fuel storage tank pressure relief valves

The survey is to include:

- opening for examination, adjustment and function test of the pressure relief valves for the fuel storage tanks
- if the tanks are equipped with relief valves with non-metallic membranes in the main or pilot valves, replacement of such non-metallic membranes.

#### b) Fuel supply and bunkering piping pressure relief valves

The survey is to include:

- opening for examination, adjustment and function test of pressure relief valves for the fuel supply and bunkering piping
- where a proper record of continuous overhaul and retesting of individually identifiable relief valves is maintained, consideration will be given to acceptance on the basis of opening, internal examination, and testing of a representative sampling of valves, including each size and type of liquefied gas or vapor relief valve in use, provided there is logbook evidence that the remaining valves have been overhauled and tested since crediting the previous class renewal survey.

### 9.5.4 Pressure/vacuum relief valves

The survey is to include:

- opening, examination, test and readjustment as necessary, depending on their design, of the pressure/vacuum relief valves, rupture disc and other pressure relief devices for interbarrier spaces and hold spaces.

### 9.5.5 Fuel storage tanks

Fuel storage tanks are to be examined in accordance with an approved survey plan.

Liquefied gas fuel storage tanks are to be examined based on a survey/inspection plan, in which requirements for the survey of liquefied gas fuel containment systems are to be in accordance with the requirements laid down in [4.3], except as noted below:

- the tank insulation and tank support arrangements shall be visually examined. Non-destructive testing may be required if conditions raise doubt to the structural integrity
- vacuum insulated independent fuel storage tanks of type C need not be examined internally. Where fitted, the vacuum monitoring system shall be examined and records should be reviewed.

## 9.6 Class renewal survey - Gas fuel machinery items

### 9.6.1 Fuel handling equipment

Fuel pumps, compressors, process pressure vessels, inert gas generators, heat exchangers and other components used in connection with fuel handling are to be examined according to the requirement of [4.4], as applicable.

### 9.6.2 Electrical equipment

The survey is to include:

- examination of electrical equipment to include the physical condition of electrical cables and supports, intrinsically safe, explosion proof, or increased features of electrical equipment
- function testing of pressurized equipment and associated alarms
- testing of systems for de-energizing electrical equipment which is not certified for use in hazardous areas
- electrical insulation resistance test of the circuit terminating in, or passing through, the hazardous zones and spaces is to be carried out.

### 9.6.3 Safety systems

Gas detectors, temperature sensors, pressure sensors, level indicators, and other equipment providing input to the fuel safety system are to be tested to confirm satisfactory operating condition.

Proper response of the fuel safety system upon fault conditions is to be verified.

Pressure, temperature and level indicating equipment are to be calibrated in accordance with the manufacturer's requirements.

SECTION 9

SCOPE OF SURVEYS RELATED TO ADDITIONAL CLASS NOTATIONS

1 General

1.1 Application

**1.1.1** The purpose of this Section is to give details on the scope of surveys of specific equipment and systems fitted on board the vessel, which are covered by an additional class notation. Unless otherwise specified in Ch 1, Sec 3, the scope of these surveys provides the requirements to be complied with for the maintenance of the relevant additional class notation.

**1.1.2** These specific requirements are additional to those laid down in Ch 3, Sec 2 to Ch 3, Sec 7. These surveys are to be carried out at intervals as described in Ch 2, Sec 2, [5], as far as possible concurrently with the surveys of the same type, i.e. annual, intermediate or class renewal survey.

**1.1.3** The equipment and systems are also to be submitted to occasional survey whenever one of the cases indicated in Ch 2, Sec 2, [6.1.1] occurs.

**1.1.4** For the assignment of the additional class notations, vessels are to be submitted to an admission to class survey as described in Ch 2, Sec 4, [1] and Ch 2, Sec 4, [2] for new and existing installations, respectively, as applicable.

1.2 Additional class notations subject to additional surveys

**1.2.1** The specific requirements detailed in this Section are linked to the additional class notation(s) assigned to the vessel. Where a vessel has more than one additional class notation, the specific requirements linked to each additional class notation are applicable as long as they are not contradictory.

**1.2.2** Tab 1 indicates which additional class notations are subject to specific requirements, and in which Article they are specified.

Table 1 : Additional class notations for which specific survey requirements are applicable

Additional class notations		Reference or Article applicable in this Section	Surveys affected by these specific requirements
Automated machinery systems	AUT-UMS	[2]	intermediate and class renewal
Comfort on board	COMF-NOISE COMF-VIB	NR467, Pt A, Ch 5, Sec 10, [10]	annual and class renewal
Pollution prevention	Cleanvessel AWT GWT NDO-x days NOX-x% OWS-x ppm SOX-x%	[3]	intermediate and class renewal
Carriage of wheeled vehicles in passenger vessels	Ferry	[4]	intermediate and class renewal
Fire safety	Fire	[5]	intermediate and class renewal
Dry bulk cargo handling	Grabloading	[6]	class renewal
Green passport for vessel recycling	Green passport	[7]	class renewal
Navigation in ice environment	Ice Ice-30 Ice-40 Ice-40+	[8]	class renewal
Stability	Damage stability	[9]	class renewal

## 2 Automated machinery systems

### 2.1 General

**2.1.1** The requirements of this Article apply to vessels which have been assigned the additional class notation **AUT-UMS**, as described in Ch 1, Sec 3, [11.2].

### 2.2 Intermediate survey

**2.2.1** The Owner or his representative is to declare to the attending Surveyor that no significant modifications have been made without prior approval by the Society.

**2.2.2** The intermediate survey is to include:

- an examination of the engineers' log-book to verify the proper operation of automation systems in the period subsequent to the last survey and measures taken to avoid repetition of any malfunctions or failures which have occurred during the same period
- a general examination of the control systems covered by the notation, including a random check of the proper operation and calibration of main measuring, monitoring, alarm, and automatic shut-off devices
- a check of the fire detectors
- a check of the bilge flooding alarms
- a running test which may be also performed by a spot check method.

### 2.3 Class renewal survey

**2.3.1** The requirements given in [2.2] for intermediate survey are to be complied with. An additional program of examinations, checks and tests is to be devised in agreement with the Owner and based on the operational data and experience of previous surveys. This program is to include verification of the calibration of instruments and testing of control and safety functions of the machinery. The Owner is to produce evidence that all these checks and tests have been carried out and this will be verified by the Surveyor at random. In addition, the proper operation of the control system of propulsion machinery is to be checked during river trials.

## 3 Pollution prevention

### 3.1 General

#### 3.1.1 Application

The requirements of this Article apply to vessels which have been assigned one of the following additional class notations related to pollution prevention systems, as described in Ch 1, Sec 3, [11.15]:

- **Cleanvessel**
- **AWT**
- **GWT**
- **NDO-x days**
- **NOX-x%**
- **OWS-x ppm**
- **SOX-x%**

## 3.2 Prevention of water pollution

### 3.2.1 First survey

#### a) Confirmation of no discharge period

During the first survey, the Surveyor collects the results of tests and measurements undertaken by the vessel Owner according to Pt D, Ch 2, Sec 11, [4]. These results are used to confirm or modify the no discharge numeral appended to the notations **NDO-x days**.

#### b) Audit

An on board audit of the procedures, as required in Pt D, Ch 2, Sec 11, is done by the Surveyor in order to ascertain that the Master and crew are familiar with the vessel's on board procedures for preventing pollution and in order to check that the discharge records mentioned in Pt D, Ch 2, Sec 11 are properly completed.

### 3.2.2 Intermediate survey

#### a) General

The survey is to include, as far as practicable:

- confirmation of the installation being in accordance with the plans. If modifications have been made, checking that these modifications are in accordance with approved documentation (for all additional class notations related to pollution prevention systems)
- general examination of the most important components of the sewage treatment plant, the garbage treatment plant, the oil filtering equipment, the incinerators if fitted, the comminuters and grinders, the hazardous wastes recovery unit if fitted (for **Cleanvessel**)
- general examination of the holding tanks, including examination of a possible corrosion protection of the inside surfaces of the tanks which are to be in good condition (for **Cleanvessel**)
- verification of the satisfactory condition of the standard discharge connections for oil and wastewater (for **Cleanvessel**, **AWT** and **NDO-x days**)
- external examination and operating tests of the equipment and systems as required in Pt D, Ch 2, Sec 11 (for all additional class notations related to pollution prevention systems).
- confirmation that the hazardous wastes are properly stowed as specified in the garbage management plan (for **Cleanvessel** and **NDO-x days**).

For some pollution prevention system of [3.1.1], the survey is also to include, as far as practicable:

- ascertainment of the correct concentration of the disinfectant in the effluent (for **Cleanvessel**, **AWT** and **GWT**)
- ascertainment of possible concentration of other chemicals in the effluent (for **Cleanvessel**, **AWT** and **GWT**).

## b) Review of records

The following records for the preceding 12 months are to be reviewed as necessary:

- oil record book (for **Cleanvessel** and **OWS-x ppm**)
- garbage record book (for **Cleanvessel** and **OWS-x ppm**)
- sewage and grey water discharge book (for **Cleanvessel**, **GWT** and **AWT**)
- emissions record (for **NOX-x%** and **SOX-x%**)
- results of the tests on effluents done by the vessel Owner according to Pt D, Ch 2, Sec 11, [4.2.3] for any pollution prevention system of [3.1.1] (for **AWT**).

**3.2.3 Class renewal survey**

The requirements given in [3.2.2] for intermediate surveys are to be complied with. In addition, for all additional class notations related to pollution prevention systems, the following is to be carried out:

- demonstration, under working conditions, of the correct functions of the most important components of the sewage treatment plant or AWT plant if fitted, the garbage treatment plant, the oil filtering equipment, the incinerators if fitted, the comminuters and grinders, the hazardous waste recovery unit if fitted
- ascertainment of the correct function of the alarms.

**3.3 Prevention of air pollution****3.3.1 Intermediate survey**a) Ozone depleting substances (**Cleanvessel**)

A procedure for annual verification of the system and equipment condition by an authorised organisation is to be settled. The interval of this verification may be extended in case of predictive maintenance scheme approved by the Society.

A procedure for weekly verification and maintenance is to be settled enabling to:

- check the tightness of the circuits by satisfactory means (such as weighing or vessel pressure monitoring)
- identify the location of possible leakage
- carry out necessary corrective actions.

Record books tracing all the operations carried out on board the vessel are to be kept on-board and updated after each intervention. They are to include in particular the following records:

- presence of leak and corrective action
- volume of substance recovered and indication of the storage location
- volume of substance recharged
- volume of substance consumed
- volume of substance disposed.

The survey is to include the following items:

- verification that the above procedures for annual and weekly checking of systems with ozone depleting substances are available on-board
- confirmation that appropriate entries are being made in the record book for ozone depleting substances
- test of the proper operation of the leak detectors and related audible and visual alarms.

Review of ozone depleting substance record book.

b) NO<sub>x</sub> emission (**NOX-x%**)

- during the intermediate survey, it is to be confirmed that the NO<sub>x</sub> emission control procedure is available on-board
- NO<sub>x</sub> emission records.

c) SO<sub>x</sub> emission (**Cleanvessel**, **SOX-x%**)

Procedures are to be established to detail the maximum sulphur content in the fuel oil purchase orders, and to check the actual content of sulphur at the delivery of bunker.

In the case the actual sulphur content is checked by sampling testing and analysis, procedures are to be carried out in accordance with a recognised standard acceptable to the Society.

The fuel management procedures are to be established and followed as part of the certified ship management system of the ship.

Records on purchase orders and on type of checking carried out, including results, are to be kept on-board.

The survey is to include the following items:

- verification that the above procedures for defining, ordering and checking fuel oils for control of SO<sub>x</sub> emission are available on-board
- confirmation that fuel oil sulphur content records are available on-board
- emission record (when exhaust gas cleaning is provided (EGC)).

d) On board incinerator (**Cleanvessel**)

The intermediate survey is to include the following items, when fitted:

- external examination of the incinerators and confirmation that such equipment operates satisfactorily
- test of the alarms, exhaust monitoring devices and emergency stop located outside the compartment.

**3.3.2 Class renewal survey**

The requirements given in [3.3.1] for intermediate surveys are to be complied with. In addition, the following is to be carried out:

- confirmation of the operation and calibration of the emissions analysers if fitted (for **NOX-x%** and **SOX-x%**)
- external examination and operating tests of the equipment and systems, as required in Pt D, Ch 2, Sec 11 (for all additional class notations related to pollution prevention systems).



4 Ferry

4.1 General

4.1.1 The requirements of this Article apply to vessels which have been assigned the additional class notation **Ferry** as described in Ch 1, Sec 3, [11.8].

4.2 Intermediate and class renewal surveys

4.2.1 The scope of the intermediate survey and class renewal survey of **Ferry** is to include the scope of surveys required for the service notations **RoRo cargo vessel** and **Passenger vessel**, as detailed in Ch 3, Sec 7, [5] and Ch 3, Sec 7, [6], respectively.

4.2.2 In addition to [4.2.1], for both intermediate survey and class renewal survey, the condition of means of escape as well as of fire protection, detection and extinction is to be checked.

5 Fire

5.1 General

5.1.1 The requirements of this Article apply to vessels which have been assigned the additional class notation **Fire** as described in Ch 1, Sec 3, [11.9].

5.2 Intermediate and class renewal surveys

5.2.1 The intermediate and class renewal surveys are to include:

- a general examination of arrangements for structural fire protection
- a checking of the condition of means of escape as well as of fire protection, detection and extinction.

6 Grabloading

6.1 General

6.1.1 The requirements of this Article apply to vessels which have been assigned the additional class notation **Grabloading**, as described in Ch 1, Sec 3, [11.10.1].

6.2 Class renewal survey

6.2.1 The reinforced area of inner bottom plating, hold sides, bulkheads and adjacent associated structures, as applicable, are to be visually examined for possible deformations, fractures or other damage. If deemed necessary, thickness measurements may be required.

7 Green passport for vessel recycling

7.1 General

7.1.1 Application

The requirements of this Article apply to vessels which have been assigned the additional class notation **Green passport** related to vessel recycling, as described in Ch 1, Sec 3, [11.15.4].

7.2 Class renewal survey

7.2.1 The class renewal survey is to be carried out in compliance with the requirements of NR528 Green Passport.

8 Navigation in ice

8.1 General

8.1.1 The requirements of this Article apply to vessels which have been assigned one of the following additional class notations, as described in Ch 1, Sec 3, [11.13]:

- **Ice**
- **Ice-30**
- **Ice-40**
- **Ice-40+**

8.2 Class renewal survey

8.2.1 Thickness measurements

Additional systematic thickness measurements are required in the areas where strengthening for navigation in an ice environment has been applied in accordance with the requirements in Pt D, Ch 2, Sec 1, [2], as per Tab 2.

Table 2 : Scope of survey for navigation in ice

Class renewal survey		
No. I	No. II	Nos. III and subsequent
–	selected plates	all plates
		selected internal frames, stiffeners and stringers

8.2.2 River chests

During the bottom survey in dry condition which is to be carried out concurrently with the class renewal survey (see Ch 3, Sec 5), the specific arrangements related to river chests protected against ice blocking, such as heating coil and cooling water discharge piping, are to be checked.

9 Stability

9.1 General

9.1.1 The requirements of this Article apply to vessels which have been assigned the additional class notation **Damage stability**, as described in Ch 1, Sec 3, [11.14].

**9.2 Class renewal survey**

**9.2.1** If modifications susceptible to affect the vessel displacement and/or weight distribution have been performed, a lightweight survey is to be carried out to verify any changes in lightship displacement and in the longitudinal

position of the centre of gravity. Where, in comparison with the approved stability information, a deviation in lightship displacement or in the longitudinal position of the centre of gravity exceeding the values prescribed in Pt B, Ch 2, Sec 2, [3.1.3] is found or anticipated, the vessel is to be submitted to a new inclining test.

# APPENDIX 1

# CLASS REQUIREMENTS AND SURVEYS OF LAID-UP VESSELS

## 1 General

### 1.1

**1.1.1** In order to maintain its class during a normal operation period, a vessel is to be submitted to the surveys described in Ch 2, Sec 2 at their due dates and to the satisfaction of the Society, and is to be free of overdue surveys and conditions of class during the considered period.

**1.1.2** When a vessel stops trading and is put out of commission for a certain period, i.e. is laid-up, the normal survey requirements may no longer apply provided that the Owner notifies the Society of this fact. The Owner is also to submit a lay-up maintenance program to the Society for approval.

**1.1.3** The lay-up maintenance program includes:

- the safety conditions to be kept throughout the lay-up period
- the measures taken to preserve the maintenance of the vessel throughout the lay-up period
- the survey requirements to be complied with for lay-up, maintenance of class in lay-up and re-commissioning.

## 2 Safety conditions

### 2.1 General

#### 2.1.1 Power supply

Adequate power supply is to be supplied, or readily available, all around the clock, either from independent means on board the vessel or from shore.

The following safety conditions are to be kept throughout the lay-up period.

#### 2.1.2 Manning

Watch personnel are to be provided. The number of the watch personnel will depend on the size of the vessel, the lay-up site and mooring arrangements, the shore assistance available in case of fire, leakage or flooding, the maintenance required to provide adequate preservation. A permanent shore communication installation (radio, telephone) is also to be available.

#### 2.1.3 Fire protection and fire fighting

The following is to be complied with:

- automatic fire alarm systems, where provided, are to be in working order and in operation

- fire-fighting installations are to be tested regularly and readily available
- the fire main is to be readily available and periodically tested under pressure
- ventilation trunks, air inlets and watertight doors are to be kept closed.

#### 2.1.4 Protection against explosion

Cargo spaces and piping systems are to be cleaned and ventilated to prevent gas from forming any pockets.

An inert gas system in operation is recommended for the cargo spaces of tankers intended to carry dangerous goods.

All flammable materials, sludge, etc. are to be removed from the vessel's bilge, tank tops, double bottom tanks, engine room, pump rooms and similar spaces.

Hot work is not to be carried out during lay-up, unless special precautionary measures are taken.

#### 2.1.5 Safety equipment

All the equipment usually recommended for the safety of the watch personnel is to be provided, kept in working order and tested regularly.

The usual life-saving equipment such as liferafts, life-buoys, breathing apparatus, oxygen masks and distress signals is to be provided and made accessible.

The requirements of the flag Administration and of the local port authorities of the lay-up site are usually to be applied.

#### 2.1.6 Emergency power

Where provided, the emergency source of power, emergency generator and/or emergency air compressor are to be kept in working order and tested weekly.

## 3 Preservation measures for lay-up and maintenance

### 3.1 General

**3.1.1** A lay-up log-book is to be kept on board, in which the maintenance work and tests carried out during the lay-up period are to be entered with the corresponding dates. The nature and frequency of the maintenance, inspections and tests are also to be defined in the lay-up log book.

**3.1.2** The following measures for preservation and maintenance during the lay-up period are to be taken by Owners according to the type of vessel, hull equipment, machinery installations and the specific cases of lay-up conditions.

## 3.2 Exposed parts of the hull

**3.2.1** Underwater parts of the hull are to be protected against corrosion. The condition of sacrificial anodes is to be evaluated at the annual lay-up condition surveys.

**3.2.2** The coating of the hull above the waterline, exposed decks, access doors or covers on exposed decks, and hatch covers is to be maintained in satisfactory condition.

All accesses leading to internal spaces are to be kept closed.

All vent pipes and ventilation trunks are to be kept closed.

## 3.3 Internal spaces

**3.3.1** Cargo tanks and cargo holds are to be emptied, cleaned and kept dry.

Ballast tanks are to be kept either full or empty. When ballast spaces are kept filled with water, special care is to be taken to keep such spaces topped up and protected against corrosion. When provided, sacrificial anodes are to be renewed when deemed necessary. The topping up is to be regularly verified.

**3.3.2** Chain lockers are to be drained, cleaned and kept dry. Coating with bituminous paint is recommended.

**3.3.3** Fuel oil and lubricating oil tanks are to be drained regularly.

Lubricating oil analysis is to be performed regularly and the oil renewed when the result is not satisfactory. Prior to being refilled, tanks are to be cleaned.

Empty lubricating oil tanks are to be cleaned and kept dry.

Fresh water or distilled water tanks are to be kept full or empty. Empty tanks are to be cleaned and kept dry. Where cement wash is used as a coating, this is to be examined and repaired prior to filling.

**3.3.4** The bilge and tank top in engine rooms are to be cleaned and kept dry.

Hull water inlet and outlet valves not in use are to be kept closed.

## 3.4 Deck fittings

**3.4.1** The windlass, capstans and winches are to be regularly greased and turned once a week.

All wire cables are to be kept greased.

Visible parts of chains are to be coal-tarred and examined regularly.

Chocks and hawse pipes are to be coated with bituminous paint or equivalent if deemed necessary.

Cargo piping on deck is to be drained, blown through if deemed necessary and kept dry by opening up drains.

Electrical machinery and navigational equipment are to be protected by watertight covers.

## 3.5 Machinery

### 3.5.1 Machinery spaces

The air temperature inside the machinery spaces is normally to be kept above 0°C.

Humidity is to be kept as low as possible and within acceptable limits.

### 3.5.2 Machinery - General

Exposed mechanical parts of machinery are to be greased.

All rotating machinery such as diesel engines, pumps, turbines, electric motors and generators are to be turned at regular intervals with a limited number of revolutions (the lubricating oil system should be put in operation or proper priming applied). Units are not to be stopped in the same position as the previous one.

Bearing boxes are to be emptied, cleaned and refilled with new oil.

### 3.5.3 Condensers and heat exchangers

Condensers and heat exchangers are to be drained and kept dry.

Desiccant is to be placed in steam spaces.

Water sides are to be washed with fresh water.

The condition of the zinc anodes is to be periodically checked.

When tubes are fitted with plastic or fibre packing, water sides are to be filled with alkaline distilled water.

When tubes are expanded or fitted with metal packing, water sides are to be provided with desiccants and kept dry.

### 3.5.4 Auxiliary machinery

Air receivers are to be drained, opened up and cleaned. Pressure relief valves are to be cleaned and slightly lubricated.

Air compressor crankcases are to be drained, cleaned and refilled with clean oil. Cylinders and valves are to be lubricated. Coolers are to be drained and dried. Air drains are to be opened and the system dried.

Air start lines are to be drained and dried.

Hot-wells/return tanks are to be drained and dried.

De-aerators are to be drained and dried.

Feed pumps and extraction pumps are to be drained and dried.

Air ejectors are to be drained and dried.

Main circulation pumps are to be drained and dried.

Evaporators are to be drained, cleaned and dried.

### 3.5.5 Piping

Pipes not in use are to be drained and kept dry.

### 3.5.6 Diesel engines

Daily tank fuel oil outlet pipes and all injection equipment are to be filled with filtered gas oil.

Fresh water circuits are to be filled with water mixed with rust inhibitors. Fresh water pH is to be checked monthly.

Oil of hydraulic regulators is to be replaced.

River water cooling pipes are to be drained.

Crankcases are to be provided with desiccant.

Starting valves are to be lubricated (internally and externally).  
Motor oil is to be sprayed in cylinders and on all external parts liable to corrosion.

Cams and cylinders are to be motor oil sprayed monthly.

Turbo-compressor/charger ball bearings are to be oil sprayed and rotated for an integer number of revolutions plus one quarter of a revolution.

Engine air inlets and exhaust gas pipes are to be sealed.

Scavenge spaces are to be cleaned.

Engines are to be turned weekly.

### 3.5.7 Shaft lines

Shaft lines are to be coated with grease.

Shaft bearing cooling pipes are to be drained.

For river water lubricated propeller shafts, the packing gland of the engine room stuffing box is to be tightened.

For oil lubricated stern tubes, lubricating oil is to be analysed and renewed if not satisfactory. The oil level in the tank is to be verified regularly.

Propeller shaft lines are to be rotated an integer number of revolutions plus one quarter of a revolution.

## 3.6 Electrical installations

**3.6.1** Main and secondary switchboards, sub-feeder panels, fuse panels and starters are to be made tight. Desiccant is to be provided.

Contacts of relays, breakers and switch-breakers are to be coated with neutral vaseline.

Bearings of generators are to be cleaned of old grease and protected with new oil or grease.

Carbon brushes are to be lifted off their commutations.

**3.6.2** Electrical insulation of each item is to be kept at a minimum 200,000 Ohms and general insulation is to be not less than 50,000 Ohms. Local electric heating may be necessary to improve the level of insulation, particularly in the generators/alternators and large motors.

A insulation resistance test is to be performed regularly.

## 3.7 Steering gear

**3.7.1** Exposed mechanical parts are to be greased or oil sprayed.

For electrical parts the same preservation measures given in [3.6] are to be taken.

It is recommended that the steering gear should be operated monthly.

## 3.8 Boilers

**3.8.1** Smoke sides of boilers are to be swept, washed clean with basic hot water and hot air dried.

**3.8.2** Water and steam sides should preferably be preserved using the dry method, keeping the moisture at the lowest possible level, the ideal level being between 30% and 35%. It is advisable to ensure that no residual water remains to cause rapid corrosion. Drum doors are to be kept closed.

In other cases, it is advisable to keep the boilers, superheaters and economisers filled with water having a pH around 10.5. Hydrazine hydrate treatment of the water is preferable to reduce risks of corrosion caused by dissolved oxygen. The water is to be regularly analysed.

**3.8.3** Air heaters are to be cleaned and kept dry.

Uptake, shell and fan outlets are to be cleaned and kept closed with watertight hoods.

Burners are to be dismantled, and atomisers greased.

Desiccant is to be provided in furnaces where deemed necessary.

Expansion arrangements (sliding feet) are to be suitably greased.

The internal condition of boilers is to be checked every three months.

## 3.9 Automated installation

**3.9.1** Recommendations for electronic components are the same as those given for electrical installations.

For pneumatic parts the manufacturers' recommendations are to be followed and the system is to be checked regularly.

Pressure, temperature or level sensors are generally not affected by damage when not used. However, when available, the manufacturers' recommendations are to be followed.

# 4 Lay-up site and mooring arrangements

## 4.1 General

**4.1.1** The choice and suitability of the lay-up site, as well as the type of mooring conditions, the mooring arrangements and their efficiency during the lay-up period remain the responsibility of the Owner.

However, at the Owner's request, the mooring arrangement may be reviewed by the Society.

## 4.2 Recommendations for the lay-up site

**4.2.1** The following recommendations are to be considered by Owners regarding the choice and suitability of the lay-up site.

The site should be:

- sheltered from strong currents and waves
- not exposed to whirling winds or turbulent tidal waves
- not exposed to moving ice
- clear of corrosive waste waters
- provided with adequate vessel/shore communications.

### 4.3 Recommendations for the mooring arrangements

**4.3.1** The following recommendations are to be considered by Owners with respect to the mooring arrangements:

- ground holding should be adequate
- vessels laid-up to buoys or anchored should be moored in such a way as to be prevented from swinging with normal wind and tidal changes
- chain cables should not be subject to cross-contact or twisting and stern anchorage should generally be provided
- laid-up vessels should be in ballast condition in order to reduce the effects of wind. Due consideration should be given to the still water bending moment. For guidance, normal ballast draft should be roughly between 30% and 50% of the maximum draft.

**4.3.2** Vessels should normally be moored singly. However, when several vessels are moored together, the following provisions are to be made:

- vessels are to be moored bow to stern
- vessels are to be of approximately the same size
- the number of vessels moored together is, in principle, not to exceed six
- breast-lines are to be of similar elasticity
- fenders are to be provided.

### 4.4 Review of the mooring arrangements

**4.4.1** As indicated in [4.1.1], at the Owners' request, the mooring arrangements may be reviewed by the Society.

**4.4.2** The proposal for the mooring arrangements is, in such case, to be submitted by the Owner and is to include the following information, as applicable:

- Mooring site
  - geographical area (to be specified on a map)
  - characteristics of the sea/river bottom
  - water depth
  - preferential angular sectors (effects of wind / tide / current) indicated according to statistical studies
  - wave characteristics (amplitude, periods)
- Geometry of mooring arrangements
  - vessel's position and direction
  - shore anchorage
  - diagram showing mooring equipment (fore and aft)
  - angle between chain cables and vessel's centreline.
- Characteristics of mooring equipment
  - maximum holding strength of each anchor
  - type of mooring lines (chains, cables, sinkers, etc.)
  - length of each section
  - weight of each section
  - mechanical characteristics of each section (breaking load)
  - weight of sinkers.

**4.4.3** On completion of the installation, the mooring arrangements are to be surveyed by the Society. When the vessel is anchored, the underwater installation is to be inspected by a diver whose report is to be presented to the Society.

**4.4.4** It is the responsibility of the Owners to ascertain the efficiency of the mooring arrangements during the lay-up period. The mooring arrangements are to be re-examined at regular intervals (at least each year when the vessel is anchored) and when abnormal weather conditions occur at the lay-up site.

## 5 Surveys

### 5.1 Laying-up survey

**5.1.1** At the beginning of the lay-up period a laying-up survey is to be carried out whose scope is to verify that the safety conditions, preservation measures, lay-up site and mooring arrangements are in accordance with the program agreed by the Society.

**5.1.2** Upon satisfactory completion of this survey, an endorsement to confirm that the vessel has been placed in lay-up is entered on a memorandum, which is subsequently to be kept on board.

### 5.2 Lay-up condition survey

**5.2.1** As described in Ch 2, Sec 2, [11], a lay-up condition survey is to be performed to ascertain that the lay-up maintenance program implemented is continuously complied with.

**5.2.2** It is to be checked that the arrangements made for the lay-up are unchanged and that the maintenance work and tests are carried out in accordance with the maintenance manual and recorded in the lay-up log-book.

**5.2.3** Upon satisfactory completion of the survey, the Certificate of Classification is endorsed.

### 5.3 Re-commissioning survey

**5.3.1** Owners are to make the necessary arrangements to remove the temporary lay-up installations provided for preservation measures and the protective materials and coatings (oil, grease, inhibitors, desiccants), before the survey is commenced.

It is the Owners' responsibility to verify that the vessel parts that are not covered by class are reactivated in satisfactory operational condition.

**5.3.2** The scope of the re-commissioning survey is to include:

- a general examination of the hull, deck fittings, safety systems, machinery installations (including boilers whose survey is not due) and steering gear
- all periodical surveys due at the date of re-commissioning or which became overdue during the lay-up period
- dealing with the recommendations due at the date of re-commissioning or which became due during the lay-up period.

**5.3.3** For the hull the following is to be carried out:

- examination of shell plating above the waterline, deck plating, hatch covers and coamings
- examination of load line items
- overall survey of all cargo tanks/holds
- overall survey of representative ballast tanks when the lay-up period does not exceed two years
- overall survey of all ballast tanks when the lay-up period is two years and over
- function tests of bilge and ballast systems.

**5.3.4** For the deck fittings the following is to be carried out:

- examination of the fire main under working pressure
- where possible, examination of deck piping under working pressure
- function tests of class items
- checking inert gas installation under working condition after inspection of water seal and function test of deck non-return valve and pressure/vacuum valves.

**5.3.5** For machinery installations the following is to be checked:

- the analysis of lubricating oil of main engines, auxiliary engines, reduction gears, main thrust bearings and sterntube
- the general condition of crankcase, crankshaft, piston rods and connecting rods of diesel engines
- the crankshaft deflections of diesel engines. In addition when engines have been laid-up for more than two years, one piston is to be disconnected and one liner is to be removed for examination. Dismantling is to be extended if deemed necessary
- the condition of the water side of condensers and heat exchangers
- the condition of expansion arrangements
- the condition of reduction gears through the inspection doors
- the condition after overhauling of pressure relief devices
- the test of bilge level alarms, when fitted.

**5.3.6** The main and emergency electrical installations are to be tested. The parallel shedding of main generators and main switchboard safety devices are to be checked. An insulation resistance test of the electrical installation is to be performed.

**5.3.7** For the fire prevention, detection and fire-fighting systems, the following is to be examined and/or tested:

- remote control for quick closing of fuel oil valves, stopping of fuel oil pumps and ventilation systems, closing of fire doors and watertight doors
- fire detectors and alarms
- fire-fighting equipment.

**5.3.8** The automated installation is to be checked for proper operation.

**5.3.9** When classed, the installations for refrigerated cargo are to be examined under working conditions. Where the lay-up period exceeds two years, representative components of the installation are to be dismantled.

**5.3.10** For cargo installations on liquefied gas carriers, the following is to be carried out:

- inspection of the primary barrier in tanks
- for membrane tanks, a global gas test of tanks whose results are to be compared with those obtained at ship's delivery
- testing of gas piping at working pressure using inert gas.

A Surveyor of the Society is to attend the first cooling down and loading of the vessel.

**5.3.11** For other specific classed installations, the Owners are to submit a survey program to the Society.

**5.3.12** On completion of the above surveys, navigation trials are to be performed in the presence of a Surveyor of the Society.

The navigation trials are to include:

- verification of the satisfactory performance of the deck installations, main propulsion system and essential auxiliaries, including a test of the safety devices
- an anchoring test
- complete tests of steering gear
- full head and full astern tests
- tests of automated machinery systems, where applicable.

**5.3.13** Upon satisfactory completion of the surveys, an endorsement to confirm the carrying out of all relevant surveys and the re-commissioning of the ship is entered on a memorandum.



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